Archaeology of the Recent Past at Kalawao:
Landscape, Place, and Power in a Hawaiian Hansen's Disease Settlement

By

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Professor Kent G. Lightfoot
Professor Jennifer Johnson-Hanks

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Abstract

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Historical archaeology often focuses on the study of dispossessed, subaltern, or marginalized groups in the modern world. One such group is the community of the Hansen's disease (leprosy) settlement at Kalawao, Molokaʻi, which was established by the Kingdom of Hawaii in 1865. The first people diagnosed by the state with Hansen's disease arrived in Kalawao in 1866, and around 1900 settlement shifted to the other side of Kalaupapa peninsula. Hawaii would not end its quarantine policy until 1969. Archaeological research on Kalawao's recent past draws from the theoretical frameworks of the archaeology of colonialism, which focuses on the study of unequal power relations in situations of intercultural interaction, and the archaeology of total institutions, which focuses on the lives of inmates and staff in socially bounded places of isolation, such as prisons, almshouses, and insane asylums. Archaeology can be used to reveal patterns that are often not apparent in the written record, providing valuable insights into the everyday lives of people living in colonial and institutional situations. These insights in turn can inform different interpretations of the nature of power and its use by individuals coping with stigma and isolation, and living in created communities.

A multiscalar archaeological research project provided some valuable data about the community at Kalawao, focusing primarily on the period from 1866-1900, but also drawing on archaeological evidence from earlier and later periods. Landscape and settlement pattern analyses revealed that the spatial ordering of the settlement followed the form of a Hawaiian village site, rather than that of a typical total institution. Pre-existing Hawaiian ritual sites remain scattered throughout the late-19th century landscape. Detailed study, including excavations, of archaeological house sites in Kalawao revealed continuity as well as change in architectural forms, including the use of traditional Hawaiian domestic architecture through the end of the 19th century. Excavations also revealed the richness and variability of domestic assemblages. Artifact analysis of surface collected and excavated materials yielded evidence for the use of brightly colored ceramics, and the production and use of worked bottle glass tools for cutting and scraping. Glass bottles found in Kalawao provide evidence for continued human activity after what is historically considered the time of abandonment of the settlement. Archaeological patterns at all scales suggest that material in the settlement follows Hawaiian patterns of daily life throughout the modern period.

Ultimately, this research challenges the antisocial stigma associated with Hansen's disease, by showing the extent to which people worked to create a community in Kalawao. Material culture played a crucial role in this process, as goods and objects served to create social bonds. The evidence for the creation, maintenance, and transformation of social structures in Kalawao also provides valuable material for considering the ways that communities form in situations of long-term incarceration. Where the state was able to create a quarantine settlement and to establish rules, the community in the settlement actually determined the form of everyday life in Kalawao, and set about essentially creating a Hawaiian village. This suggests that in institutions that are relatively decentralized, with over-arching rules and standards set by an external power but little day-to-day regulations, people will form communities that make sense in terms of their pre-existing ideas about social organization, and their social habits.

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While I share the credit for this work with many, any mistakes or lacunae are my responsibility alone.

Glossary of Hawaiian Terms

ahupua‘a	traditional Hawaiian land division, usually wedge shaped and running from the uplands to the sea.
‘āina	land
ali‘i	chief
‘auwai	irrigation canal or ditch
hale	house
hihiwai	fresh to brackish water shellfish (*Neritina granosa*), collected for food
kalo	taro (*Colocasia esculenta*)
kama'āina	literally "child of the land", used to refer to local people
kauhale	house compound, composed of functionally distinct structures
kōkua	literally "to help", also used to refer to helpers brought to Kalaupapa by exiled family members
maka‘āinana	commoners in traditional Hawaiian society
makai	directional term, seaward
mai ho‘oka ‘awale ‘ohana	literally "the disease that separates families", Hawaiian name for Hansen's disease, may also appear without the *‘ohana*
mauka	directional term, inland
‘opihi	Hawaiian limpet (*Cellana* spp.) collected for food
pa‘i ‘ai	hard taro paste that can be processed into *poi*
pipipi	shellfish (*Nerita picea*), collected for food
poi	staple food of Hawaii, a starchy paste made of cooked taro
‘uala	sweet potato (*Ipomoea batatas*)
uhu	parrotfish (family Scaridae)

Chapter 1.

Introduction

Leprosy, Leprosaria, and the Archaeology of the Recent Past at Kalawao

Leprosy, also called Hansen's disease after the Norwegian doctor who isolated the microorganism that causes the disease[1] in 1873, is one of the most widely feared and misunderstood diseases known from human history. Unlike many other widely feared diseases, Hansen's disease was never a virulent killer. Rather, the disease is known for the physical deformities it can cause, often informed by contemporary myths, being compared to a kind of "living death" (Brody 1984; Edmond 2006). The panic that this disease could cause in the Western world often led to a widespread call for the institutionalization of those living with Hansen's disease in institutions known as leprosaria (Watts 1997: 41). There were two major periods of isolation for the world's Hansen's disease sufferers. The first, and better known, occurred during the late Medieval period in Western Europe, when leprosaria were established across the continent, largely through the activities of religious institutions (Brody 1984; Foucault 1988; Tabuteau, ed. 2000). The second occurred from the second half of the 19th century through the middle of the 20th century, and coincided with the establishment of germ theory as the major paradigm in modern Western medicine. During the expansion of the discipline of Tropical Medicine, which followed European and North American empires through the humid tropics, leprosaria were established globally, notably in South Asia and the Pacific Islands (Akeli 2007; Buckingham 2002; Moran 2007). In both cases, the fear of Hansen's disease stemmed not only from the physical effects of the disease on the human body, but from ideological beliefs about skin diseases, cleanliness, and morality, related to a series of mistranslations of biblical passages by Medieval and modern medical scholars (Brody 1984: 147-197; Mitchell 2000; Zias 1989). The work that follows focuses on the archaeology of a leprosarium established in the Kingdom of Hawaii in 1865, and the lives of those exiled to the *ahupua‘a* (traditional Hawaiian land division) of Kalawao, Moloka‘i island in the period spanning the late 19th and early 20th centuries. It is the story of one leprosarium that sheds light on patterns with wider implications for similar institutions and colonial contexts.

Colonialism, Total Institutions, and the Archaeology of Modern Leprosaria

During the later period of European-influenced isolation of Hansen's disease sufferers, largely in the late-19th and early-20th century, leprosaria were established throughout the world in Western colonial and imperial settings (though rarely in Europe itself, with Norway being one exception). People living in these leprosaria, as inmates, doctors, missionaries, or colonial administrators (sometimes as many of these things at once), lived in colonialist and imperialist contexts in the modern world, where capitalism and the rationalist ideals of the enlightenment impacted societies globally (Hall 2000; Hall and Silliman 2006; Wolf 1997). Simultaneously, these processes intersected with the establishment of total institutions, places created to control,

1 *Mycobacterium leprae.*

discipline, and reform human behavior according to the normative expectations of nation-states (Foucault 1997; Goffman 1962). Thus 19th century leprosaria in the humid tropics are colonial total institutions, and must be understood according to patterns of social life relating to both phenomena.

Archaeological research on colonialism (e.g. Gosden 2004; Orser 1996; Stein, ed. 2005) is broadly concerned with the role of material culture, spatial organization, and landscapes in the production of unequal power relations in situations of intercultural interaction. The archaeology of total institutions (e.g. Casella 2007; DeCunzo 2006) uses similar materials as that of colonialism, but examines specifically the ways that these phenomena were structured in places of isolation and social normalization. Both kinds of archaeology often use both the material record of artifacts, architecture, and anthropological landscapes, and the written record of personal narratives such as journals and letters, official government documents, and other kinds of recorded history. This study, of the leprosarium at Kalawao, an *ahupua‘a* on Kalaupapa Peninsula, Moloka‘i, Hawaii[2] uses a synthesis of approaches to colonialism and institutions to construct a social archaeology of daily life for the residents of the institution. Specifically, archaeological remains are used to highlight patterns not well documented in the written record. These patterns are interpreted to develop an anthropological understanding of the roles that landscapes and material culture played in colonial and institutional processes in the recent past. This study uses a place-based conception of landscapes, drawing from themes in humanistic geography (Cresswell 2004; Pred 1984, 1990; Tuan 1978). These studies emphasize a distinction between space, a cartesian, measured way of dividing the land, and place, which is concerned with the lived-in, meaning-laden aspects of the areas that people inhabit. The archaeological materials documented and recovered from Kalawao will be used to create an understanding of places and power in the Hansen's disease settlement, an analysis that considers aspects of the life of the institution not often included in histories based on written documents alone. Ultimately, archaeological research revealed the overall village structure of Kalawao during the Hansen's disease period (ca. 1866-1932). Rather than focusing on the tragedy of isolation itself, archaeology yielded insights into the creation of a community in this place of quarantine.

Insights from the Earliest Archaeologies of Leprosy

Archaeological research on leprosaria has a surprisingly long history, given that such places are not at all central to the history of the discipline. Early archaeological research on these settlements was probably quite rare, but two short pieces found in the Library of Congress suggest the deeper history of this line of inquiry. In the 19th century, archaeological work on leprosaria had already begun, albeit in a piecemeal, amateur fashion, as in these two examples from Western Europe:

> An isolated spot lying in a considerable tract of uninclosed land, it cannot fail to attract the notice of the stranger, while to the inhabitant of Lincoln it is known under the appelation of the "Malandry Closes". Here stood in the olden time, the

2 In this study, I will follow other scholars (e.g. Mills 2002) in using "Hawaii" to refer to the entire archipelago, and "Hawai‘i to refer specifically to the easternmost island, in order to minimize confusion.

> Hospital of the Holy Innocents, called Le Malandri or Malardri, corruptions doubtless, of the Norman-French Maladerie or Maladrerie, a word signifying a Lazar House or an Hospital for the reception of Lepers [*sic.*]. Evidences of extensive foundations may be seen in the tumbled surface of the soil, but of the original building not one stone remains upon another; the whole was swept away by a fire, which some eighty years ago destroyed the homestead then in existence, in the occupation of a family of the name of Quip, and known under the designation of the "Malandry Farm;" thus completely was one of the most ancient and in its day one of the most important institutions of our City disappeared from the face of the earth (Cookson 1843: 29-30).

> ...[U]ne figure assise tenant dans les pans de sa robe une forme humaine, laquelle, aux termes de l'iconographie Chrétienne, devait signifier une *âme*; notre étonnement redoubla, lorsqu'à l'exergue nous lûmes les mots: (*Sigillum) Domus Leprosorum Antwerp*; en effet nous avions en main peut-être le seul monument restant et inconnu d'une des plus tristes et, en même temps, des plus remarquables institutions du moyen-âge: *le sceau de la Léproserie d'Anvers* (Broecx 1860: 7-8).

These narratives are concerned with the discovery of ancient leprosaria by people living in 19th century Europe, just prior to the establishment of the leprosarium at Kalawao. The first comes from the papers of the Lincolnshire Topographical Society, and the second comes from a collection of papers on the history of leprosy in Anvers (Antwerp), Belgium. These studies are notable for their focus on location, finding material evidence of known leprosaria in Europe. Subsequent archaeological research on Hansen's disease institutions would focus primarily on the skeletal remains of the people in these institutions (see Chapter 3). This kind of research has provided useful insights into paleopathology, but rarely goes much beyond locating the leprosarium itself on a map. The approach here represents something of a departure from these kinds of studies by adopting an orientation that focuses on the leprosarium as a living place, using archaeological patterns to understand the daily habits that would have shaped the institution.

The kinds of narrative time (Lucas 2005) developed in the passages above are remarkably similar. Both emphasize a connection to the past based on the locality of these institutions, Lincoln was Lincoln in the middle ages, and Anvers was Anvers. The significance of the institution being studied, and reached through material remains is also emphasized. The Malandri of Lincoln is "one of the most ancient and in its day one of the most important institutions in Our city", and the "sceau" of Anvers is from one of the "plus tristes [saddest] et, en même temps, des plus remarquables [most remarkable] institutions du moyen-âge". In a similar way, histories of the Hawaiian leprosy settlements on Moloka‘i emphasize the significance of Kalaupapa peninsula to the history of the islands (e.g. Greene 1985; Inglis 2004; Tayman 2006). These histories are important not only in terms of the significance attributed to leprosaria, but to the kinds of pasts that they represent. To understand the lives of these places, they must be understood in terms of their "histories' anthropologies", their location in between past and present, self and other (Dening 1988, 2006). The writing of a place is a way of bringing it to life, and to do so, we must attempt to represent all aspects of the lives we are constructing, or at least as many as are possible.

Time is a fundamental element of human experience (Hägerstrand 1979; Parkes and Thrift 1978), a part of the anthropology of the people we study. It is also central to the ways that people divide past from present in constructing histories. One way to divide the time frameworks of these histories is in a relative sense, as ancient, recent, or contemporary (see below). The use of the term "ancient" in the past being described in the case from Lincolnshire indicates the era being referred to. For the 19th-century Victorian-era present, the middle ages were ancient, separated from that present by the renaissance and subsequent emergence of "modern" Europe. Simultaneously, the studies reflect at the very least an idiosyncratic fascination with leprosaria from the middle ages during the 19th century, when leprosy was re-emerging in the European mind as a disease that needed to be isolated. Michel Foucault (1988, 1995) uses the symbolism of medieval leprosy explicitly in his analysis of the European Great Confinement, while noting that the disease itself was extremely rare on the European continent by the 17th century. In the 19th century present, when leprosy was being re-encountered and re-institutionalized by European colonizers under the emerging paradigm of tropical medicine (Buckingham 2002; Moran 2007), an interest in medieval leprosaria could also be interpreted as a concern with a recent past based on local proximity and continuity, and apparent familiarity with an old, but re-emerging institutional form.

Archaeology, the Recent Past, Modernity, and Leprosaria

This project is framed within the archaeology of the recent past, a term used widely in historical archaeology (e.g. Orser, ed. 1996), but rarely formulated as an explicit time framework. I will deal with this issue at greater length in Chapter 2. At this point, I want to point out some of the assumptions underlying this formulation of historical archaeology in terms of research on the archaeology of the recent past at Kalawao. Fundamentally, this time framework is based on an assumption about linear chronology, the one-way progression of time from past to present, and specifically, deeper past to less-deep past, to present, which underlies contemporary calendrics and the Western understanding of time. It is also based in a certain kind of narrative time (as opposed to chronological time, see Lucas 2005, 116) which involves the emergence of a "modern world" (Hall 2000; Hall and Silliman 2006). Given archaeology's concern with "rubbish", "salvage", and "ruins" as ways of alienating its objects from the present (Lucas 2005, 127-130), archaeologies of the modern are assumed to be less alienated, deriving from a time period thought to be like today: we are modern, and we are studying the roots of our modernity. This framework is based in historical narratives that see the emergence of modernity as an outcome of the Renaissance, which formed the intellectual framework for global exploration, driven by capitalism, and resulting in the modern nation states of 16th-20th century Europe and North America, which would come to dominate world affairs. The unilinear, progressive nature of such a narrative is problematic if we are to avoid constructing people and places 'without history', so it is worth qualifying archaeologies of the recent past as concerned with *multilinear* analyses of modernity, using what Braudel (1980: 39) called "the innumerable different rivers of time". Thus, situations where European colonialism worked, and where it failed, where capitalism expanded, and where it was transformed by the indigenous exchange systems with which it became involved (e.g. Allen 1973; Gosden 2004; Green 1973; Rubertone 2000). In other words, where a linear narrative for the emergence of modernity exists on a global

scale, archaeologies of the recent past involve smaller-scale analyses of the different historical trajectories stemming from, and possible within that grand narrative.

This conceptualization of time is multiscalar and multidimensional. At the largest, global scale we have a broad line (perhaps better understood as a three or more dimensional space) representing the grandest sweep of history, the narrative time of modernity discussed above. Within this grand sweep, however, are many smaller historical trajectories representing regions, specific places and communities within those regions, and even individual people and objects in those communities. One such community was the late-19th to early-20th century leprosarium at Kalawao, the main focus of this work. The variability of these scales is continuous, and the possible trajectories widely variable, though constrained by previous trajectories as well as physical and cultural constraints. This conceptualization lends itself to the multilinear historical analyses that are valuable in archaeologies of the recent past.

For this study of the leprosarium at Kalawao, the recent past refers to the Hansen's disease period in the *ahupua‘a*, chronologically between 1866, when the first exiles arrived on Kalaupapa peninsula, and the early-20th century, when the *ahupua‘a* was no longer permanently occupied, the last residents being the orphans at the Baldwin home for Boys, who left in 1932 (Greene 1985). While earlier and later periods will be referred to in this study, the focus will be on this recent past, between the ancient period, which began with initial colonization of Kalaupapa by Polynesians, and the contemporary past, represented by the living patient community in Kalaupapa today. Defined within this framework, the study that follows involves an intensive archaeological analysis of the institutional spaces in late-19th century Kalawao, the material culture within those spaces, and the social networks formed by the people, spaces, and material in the leprosarium, providing a model for the daily life of the place as a community.

Plan of the Dissertation

This set of essays on the archaeology of the recent past at Kalawao, a community of Hansen's disease exiles in the Hawaiian Islands, can be divided into two parts. The first three chapters contain the regional and theoretical perspectives that inform the subsequent case study, while the following five chapters cover the historical and archaeological material used in a social analysis of Kalawao as a colonial and institutional place. Following the introductory chapter, Chapter 2 (*Regional Perspectives for Historical Archaeology in Oceania*) outlines previous historical archaeological research in Oceania relevant to this study, facilitating comparisons that inform an understanding of general processes of colonialism and imperialism throughout the Pacific Islands. Post-contact archaeologies in the region are most heavily studied in the European settler societies (Murray, ed. 2004) of Australia and New Zealand, where the descendants of the early settlers took interest in the archaeology of their ancestors and the multiethnic milieux in which they lived. Elsewhere, research in historical archaeology has been largely concerned with first contacts and early phases of colonialism, as well as very recent material, especially the heritage of the Pacific Theater during World War II. A growing frontier in historical archaeology over the last decade or so in the Pacific involves studies of long-term colonial entanglements, and the multiethnic, capitalist societies that emerged from the mid-19th century onwards. Research in Kalawao fits into this growing trend in regional historical archaeology, being concerned with an institution created during a time of increasing Western

involvement in the life of the Hawaiian Kingdom.

Chapter 3 (*A Theoretical Framework for the Social Archaeology of Leprosaria*) is concerned with the theoretical background for a social archaeology of leprosaria. Archaeological research on leprosaria has been largely concerned with the bioarchaeology and paleopathology of inmates of these institutions. Archaeological research on other kinds of institutions, notably prisons, almshouses, and insane asylums has provided powerful insights into the daily lives of the inmates living in these places. Institutions often emerged out of the classificatory projects of the modern world, which created many categories of individuals who "didn't belong": the criminal, the insane, the sick, the poor (all of the latter three were criminalized in different contexts). While institutions fit into general categories, the adaptation of institutional forms to infinitely variable social and historical contexts led to many instances of these institutions as places "in between". Modern leprosaria especially fit such a description, being in between prisons, hospitals, and villages, resurrections of a medieval institution in the modern world, modeled on places of reform, but places for which the only reform that could result in release was death. Leprosaria represent a unique opportunity to study the social life of people living in a situation of life-long incarceration. Archaeological approaches to leprosaria can benefit from approaches that emphasize the life of these institutions, their communities and the people involved with them, rather than simply histories of isolation and death. A crucial element in modern total institutions is power, both the power of the state to isolate, to "discipline and punish" (Foucault 1997), and the power of inmates of the institution to resist, and in many cases, to actually negotiate the terms of their isolation, and I will explore these themes throughout this dissertation. Spatial organization and material culture were both expressions of power relations, and structuring agents of those relations. Place-based approaches, such as the one used here, attempt to understand these relationships in terms of human experience within the institutional community.

Chapter 4 (*Landscape Histories and Island Archaeology: Case Studies from Hawaii*) explores the importance of landscape studies for Pacific archaeology, specifically using several key case studies from the Hawaiian Islands. A landscape archaeology approach was used for this study of a Hawaiian leprosarium order to understand the daily lives of exiles, missionaries, and others inhabiting Kalawao. Because Kalawao was, and remains a Hawaiian place, even given the great historical transformations that have occurred, an understanding of Hawaiian archaeological landscapes is a crucial aspect of spatial analysis and interpretation for the leprosarium. While much of the material for the archaeology of the recent past at Kalawao appears typical of historical archaeology, the overall theoretical and methodological approach was heavily influenced by classic settlement pattern analyses in the Pacific Islands, specifically Hawaii (Green 1980; Weisler and Kirch 1985).

After the background chapters, I will turn to the specific case study of the emerging community of Hansen's disease exiles in late-19th century and early-20th century Kalawao. I begin with an analysis of the ethnohistory of the place in Chapter 5 (*Histories and Archaeologies and the Recent Past in Kalawao*), as based on research of archaeology for the pre-Hansen's disease period, and written documents for the period from 1866-1969, when Kalaupapa was a leprosarium. Several kinds of narratives are examined in this analysis, both the major syntheses written by 20th and 21st century scholars (Greene 1985; Inglis 2004; Tayman 2006), and documents written by people who lived in the 19th century institution (De Veuster 1889; Korn, ed. 1976; Mouritz 1916). The previous histories written of Kalawao inform the archaeological

analysis that follows, which serves as a source of complementary as well as contradictory material enriching what we know about Hawaii's earliest Hansen's disease exiles.

Chapter 6 (*Landscape Archaeology in Kalawao: Site Inventory, Mapping, and Spatial Analysis*) covers this study's findings about landscapes, settlement patterns, and surface architecture as structuring agents of daily life in Kalawao. Kalawao was a dramatic setting for a total institution, a remote peninsula set at the base of the world's highest sea cliffs. To understand the institutional landscape that existed in this place, initial archaeological study involved the creation of a detailed site inventory for the study area, which will be included as an indication of the richness and variability of archaeological remains in the place. An integral part of the survey process was the creation of detailed plane table maps, which provide a means of visualizing the past landscape in which the exiles of Kalawao carried out their daily lives. Finally, a GIS-based spatial analysis will be used to build models of habitation for the settlement, which will in turn be used to further an understanding of the kind of place Kalawao was, informed by work in humanistic geography (Cresswell 2004; Pred 1984, 1990; Tuan 1976). Place-based approaches involve the location of people's daily practices (Bourdieu 1977; Giddens 1984) on the landscape, and an understanding of the power relations encoded in the spaces that people inhabit. For Kalawao, one kind of place-based process that occurred was "domicide", defined by Porteus and Smith (2001: 3) as the "deliberate destruction of home against the will of the home dweller". I will be using the concepts of home and place to develop a new understanding of the historical landscape in Kalawao, what it may have meant to the exiles living in the settlement, the people they displaced, and those they lived alongside.

In addition to developing models of habitation at the landscape level, I will be analyzing patterns of daily life at the household level in Chapter 7 (*Intensive Surface Collections and Test Excavations in Kalawao House Sites*). A multiscalar approach was used to determine what kinds of spatial patterning evident in the landscape were reflected at smaller scales, and what patterns not apparent at a broad scale could be seen on a more intimate level. Household-level research focused specifically on four domestic structures that date to the Hansen's disease period. Surface collections, alongside limited test excavations at these sites yielded evidence on the distribution of material culture among households in Kalawao, possible exchange relations within the settlement, both institutionally sanctioned and illicit, and relative site use intensity, possibly reflecting the importance of certain domestic groups or places within the exiled community in the leprosarium. The study of these houses will also inform understandings of place, home, and exile for those living in Kalawao during the Hansen's disease period.

Following from the detailed contextual analysis of material culture in domestic surface and sub-surface deposits, an overall study of the material life of the leprosarium will appear in Chapter 8 (*Material Culture in the Leprosarium*). The materials recovered from across the Kalawao landscape were much more variable and rich than histories based on written documents, and expectations of material from institutional contexts would suggest. The ceramics found throughout the settlement will be examined in detail. The prevalence of multi-colored sponge-stamped, hand-painted, and transfer-printed refined earthenwares may reflect the extent to which people tried to cope with their otherwise bleak situation by surrounding themselves with colorful, bright, or perhaps new objects. In addition, an analysis of glass artifacts will be presented; first, an analysis of diagnostic glass, including bottle glass with manufacturer's marks and other embossed writing, will be used to trace the global trade networks with which Kalawao was engaged. Second, a study of knapped glass artifacts, alongside lithic materials recovered in the

research area will provide a new understanding of tool making and tool use in the settlement. Metal artifacts produced by industrial society were recovered in the settlement, and will be mentioned as a part of the material life of the settlement. Finally, an analysis of faunal materials recovered from Kalawao will provide some insights into protein sources and foodways for the exiled population in the leprosarium.

This study will close (Chapter 9, *Conclusions*) by considering what it means to interpret Kalawao as a community. As with many places of tragic history, so much of what is written about Kalawao focuses on suffering and death, rather than the life of the settlement. Archaeological research has revealed that Kalawao was, in fact, a place like many others in the 19th century Hawaiian Islands. Without the written record, the early remains from the leprosarium at Kalawao might not be recognizable archaeologically as an institution. This is not to belittle the immense suffering which must have been caused by people's separation from their homes and families, but to note people's apparent propensity for coping with a new situation, attempting to establish or recreate a stable living situation after a deeply traumatic experience. Archaeology provides a testament to the creation of a community at Kalawao within the institutional context of the leprosarium. Where states decided that quarantine was a necessary response to a disease perceived as threatening, social archaeology can shed light on the lives of the quarantined and the institutions in which they were isolated, a link between disease, communities, and power.

Above all, this work contributes to the growth of an expanding frontier in archaeology, the archaeology of hospitals and other modern medical institutions (Wardropper 2006). In a world where the diseases that are part of our environment are increasingly constructed as threatening, like HIV/AIDS, or potentially threatening, like the Avian Flu/H5N1 virus, and most recently Swine Flu/H1N1 virus, an understanding of the social lives of human beings suffering from disease is exceedingly important. As scientific medicine becomes the dominant paradigm in global conceptions of public health, it is up to patients, activists, and scholars to insist upon the humanity of people living with and in medical institutions (Briggs and Mantini-Briggs 2003; Risse 1999; Scheper-Hughes 1992). Historical and archaeological perspectives represent one way to step back from immediate fears and reactions to understand the roots, as well as the long-term implications of public health policies, and for this reason, the archaeology of hospitals will be an important contribution to the future of historical archaeology as a discipline. Archaeological research in Kalawao represents an attempt to grapple with some of the issues raised in studying the lives of a community of Hansen's disease patients in the early years of the Hawaiian quarantine program, a local perspective with global implications.

Chapter 2.

Regional Perspectives for Historical Archaeology in Oceania

Historical Archaeology and the Archaeology of the Recent Past

Before turning to the main focus of this chapter, which is a regional synthesis of post-contact archaeological research in Oceania, I would like to make a brief point about just what is implied in the terms historical archaeology, and archaeology of the recent past, which frame this work. Specifically, I am concerned with the kinds of time that underpin these areas of archaeological inquiry. For archaeologists, the time frameworks we use structure the interpretations we make. While the term "the recent past" has been widely used in historical archaeology, I want to clarify for this study just what kind of time these words imply. The recent past is a time period that is in between what is contemporary, and what is ancient. My use of this concept grows out of my understanding of the historical archaeology of the modern world, European colonialism, and capitalism. The use of a somewhat flexible, relative time framework is related to the significance of the recent past both for its familiarity, and its distance, a time frame that is definitely archaeological, but not so distant from our own world. The framework used here establishes the potential for multilinear analyses of modern history using the archaeological record at the intersection of colonial and institutional processes. I consider the archaeology of the Hansen's disease settlement at Kalawao in terms of the recent past as belonging to a capitalist, institutionalized world, but one which is still unfamiliar enough to hold to Dening's (1988) conceptualization of the "Past" as "Other".

The lines between history and archaeology are often blurred in contemporary practice, with archaeology focusing on increasingly recent material (Buchli and Lucas, eds. 2001; Schofield 2009; Schofield et al., eds. 2006), and with increasing interest among archaeologists in history and historical processes, especially influenced by the *Annales* school (Knapp, ed. 2009; Lightfoot 1995). Nowhere is this more clearly expressed than in the discipline of historical archaeology, from whence the terminology and subdisciplinary traditions for archaeologies of the recent past emerge (Orser, ed. 1996). Historical archaeology developed in North America out of an interest in European Colonial sites in the mid-20th century (Fontana 1965; Harrington 1955, 1962; Wilderson 1975). The distinction of historical archaeology as a sub-discipline involved the debatable premise that the written record is somehow different from the archaeological record (Alberione dos Reis 2005; Sauer 2004). As a result, two definitions emerged for historical archaeology, one that defines historical archaeology in terms of its relationship with written documents (e.g. Andren 1998; Sauer 2004), and another that defines historical archaeology in terms of modernity, specifically the rise of capitalism, and the growth of global society dominated by European colonial powers (e.g. Hall and Silliman 2006; Leone and Potter 1988; Orser 1996). In the former case, certain kinds of record keeping associated with the use of writing allow for different approaches to the temporal dimension of the archaeological record, while in the latter some kind of distinction becomes necessary between "modern" and "pre-modern" times. Historical archaeology may actually be defined as distinct from prehistoric archaeology by its assumptions about time, either based on the kind of time that can be understood from available documents, or the inherent differences in historical time brought about by the emergence of the modern world (Hall 2000; Lucas 2006; Wolf 1997).

Hicks and Beaudry (2006: 2) have defined historical archaeology in strictly chronological terms, suggesting that archaeologists "use the term *historical* to refer broadly to the post-1500 period, strongly resisting any attempt to separate the field from the archaeology of earlier periods". For Oceania, a region that includes Hawaii, an absolute temporal boundary marker is inappropriate for defining the "historical" period across the region, even without considering the rich ethnohistoric record represented in chiefly genealogies from places like Hawaii and Tahiti. When the skiff of the *Trinidad* was stolen by the Oceanic people of who first met Magellan in 1521[3] (Beaglehole 1966: 31), Hawaii was still in its pre-contact "expansion period" (Kirch 1985: 303-306), and would not see men of European descent for over 250 years. This is where the distinction between chronological (absolute, calendrical time) and narrative time (Lucas 2005: 116) becomes important. On the global scale, necessary for historical and archaeological analysis for the 16th-century and later (Orser 1996, 2005), a strictly unilinear, progressive approach to time quickly falls apart because of the multilinear development of events, cultures, and places at different scales. Narrative time takes multilinear (Williamson 2004) or multitemporal possibilities into account in order to connect local and global histories.

To deal with the multilinear nature of time and its varying rhythms across space, many archaeologists have turned to the work of Fernand Braudel (1980), and especially his concepts of *longue durée*, conjuncture, and event or moment as ways of dividing up time (see Kirch 1992; Lightfoot 1995; Mills 2002 for archaeological applications; Sahlins 1987 on historical anthropology, especially the "structure of the conjuncture"). One of the important developments of this approach has been a growing emphasis on long-term cultural practices and beliefs in structuring cross-cultural interactions, as in interethnic households at Fort Ross in California (Lightfoot and Martinez 1997; Lightfoot et al. 1998) and Spanish St. Augustine in Florida (Deagan 1983). In another part of the spectrum, Peter Mills' (2002) work in Hawaii has provided valuable insights into the ways that momentary decisions, made within the different cultural frameworks and shared historical milieu of a multitude of individual actors, had major impacts on both immediate and long-term history concerning Russian involvement in the Islands.

This kind of research involves an understanding of historical time that spans the "prehistory-history divide" (Lightfoot 1995), both as a way of dealing with multiple time-scales, and because we must not construct preliterate people as somehow "without history" (Wolf 1997). This is where a conceptualization of relative time in terms of the recent past becomes useful in the approach to historical archaeology used for this study. Gavin Lucas (2006: 46) suggests that, "[T]here is a deep irony in the use of chronology to define archaeological time, in that while archaeology actually serves to connect the past to the present through a single system, archaeology routinely separates the present from the past in order to construct its object". Modern Western, linear time, with its notions of past, present, and future, its division of a continuous stream of experience into arbitrary, regular divisions (years, days, hours, minutes, etc.), and its persistent movement forward (every second of every day, we are simultaneously creating and experiencing new time) serves to separate past and present. At the same time, archaeological research serves to make the past a part of the present, requiring the use of more non-linear approaches to understand the kinds of time frames being constructed (Lucas 2005).

In terms of human experience, relative time plays an equally important role when compared with arbitrary, absolute divisions of time in the Western sense. Archaeologists are

3 Because of this event, Magellan would refer to these islands, now known to be Guam and Rota in the Marianas group, as the "Ladrones", or "Thieves".

familiar with the ways that relative and absolute chronology work in our research (e.g. Renfrew and Bahn 2000: 117-170; Thomas and Kelly 2007: 98-146). The history of archaeology can be related to developing chronometric technologies, from the seriation methodologies of the culture-history school, to the advent of radiocarbon dating as it related to the development of processualism as a measure of absolute time (Trigger 1989; Willey and Sabloff 1980). The idea of the recent past can be used as a way of experimenting with relative time in structuring certain kinds of archaeological inquiry on a broad scale, particularly in historical archaeology.

Archaeologies of the recent past focus on places that are more recent, in absolute chronology, in memory, in terms of the apparent degree of recognition of the people and objects being studied by people in the present. An archaeology of the recent past is not concerned so much with "presencing absence", intentionally making the apparently familiar unfamiliar, as with archaeologies of the contemporary past (Buchli and Lucas 2001a). Rather, the relatively recent past is about what is *more* familiar, when compared with that which is more ancient. The recent past fits in between what is *contemporary*, the material world that confronts and at times overwhelms people in the present on a daily basis, and what is *ancient*, seen as fragmented, mysterious, difficult to know, or far away. The former is often considered the domain of "material culture studies", while the latter is often considered the domain of "prehistoric" archaeologists. It is not a stretch to imagine material from the recent past as archaeological, but the material is familiar enough that we as contemporary people can recognize many or most of the objects in question in terms of their correlates in the world in which we live, though the meanings of these objects may have changed greatly, a concept I will deal with in a later chapter on material culture in the leprosarium at Kalawao (see Chapter 8). In the case studies from Oceania that follow, what is remarkable in many cases are the varying interpretations of introduced ideas and materials within Pacific Islands cultural contexts.

Oceanic Modernity

Modernity is an integral part of much of historical archaeology (e.g. Hall 2000; Hall and Silliman 2006), and it could be argued that the term is one possible version of the recent past. The establishment of a leprosarium in the *ahupua‘a* of Kalawao was a specific and powerful event in the history of the Hawaiian experience with modernity. To fully understand the context of this event, and the resulting archaeological patterns of life in the leprosarium, it is necessary to explore the emergence of modernity in Oceania at large. This process was shaped by various global economic and social phenomena, including European colonialism and imperialism, changing Western understandings of the proper socio-spatial order of places, and expanding global capitalism (Hall 2000; Orser 1996). Oceania refers to a geographic region consisting of islands in the Pacific Ocean, from the isolated volcanic archipelago of Hawaii in the northeast, to the continental landmass of Australia in the southwest. Note that Oceania as a region excludes some of the islands bordering the Pacific Ocean. For example, the Japanese archipelago in East Asia, and the Aleutian Islands in the North Pacific will not be addressed in this statement. This is in part to emphasize Oceania as a distinct geographic and cultural region, where histories are dominated by islands and water rather than continents (though Australia provides a kind of hybrid example of the latter).

The study of island histories and island archaeologies presents a unique set of problems,

in which the island itself can not be taken as a *closed* unit of analysis[4], the sea played an important role in cultural life, and material culture is "*significant of island social practices*" (Broodbank 2002: 33-35). Contact between Oceanic peoples and other cultures throughout the Pacific Rim increased dramatically in the historic period. By 1805, less than twenty years after European contact, with the arrival of Captain Cook in 1778, Native Hawaiians in Honolulu had been joined by Englishmen, Americans, Spaniards, and Native Alaskans, among others (Mills 2002: 95). Despite intensive contact with people from various continents, the history of Oceania as a region dominated by islands and Oceanic cultures remains distinct through the present.

To frame this overview, the implications of the *longue durée* of cultural development in Oceania will be explored through the initial moments of European contact. Divisions of Oceania will be made on a thematic as well as geographical basis in summarizing the archaeology of a region of time-space, based on observations of broad historical trends and varying traditions of historical archaeology in different parts of the region. The modern, Western geographical practice of dividing Oceania into Melanesia, Micronesia, and Polynesia has been problematized by evidence of contact and fluidity across regional boundaries both before and after European contact (e.g. Kirch 2000; Rainbird 2004). The historical archaeology of *Oceanic Chiefdoms*, which include Hawaii and Fiji; *Settler Societies*, such as New Zealand, Australia, and New Caledonia; and *Other Colonized Lands of Oceania*, including the islands of New Guinea and the Solomon Islands, among others, will each be treated separately, with the understanding that these thematic divisions are neither absolute nor stable. After examining the ways in which historical archaeology in each of these historical-geographical areas varies, some common themes of colonialism in Oceania will be described. Finally, these themes will be tied to more general anthropological frameworks established in historical archaeology and elsewhere before turning to some possibilities for future research in the historical archaeology of Oceania.

The Pacific Stage through European Contact

While some specific pre-contact histories will be examined in depth as they relate to the historical archaeologies explored below, a brief overview of pre-contact history will be pertinent in presenting the great variability of human experience in Oceania as a region. The earliest evidence for human presence in Oceania comes from New Guinea and Australia, where thermoluminescence dates provide evidence for human occupation from over 50,000 years ago (Kirch 2000: 63; Terrell 1998: 197). In contrast, current scholarship suggests that New Zealand, the last island group in Oceania to be permanently occupied, was initially settled by humans more recently than once thought, perhaps 750 years ago (Anderson 2002: 25). Oceanic societies ranged from small bands of hunter-gatherers and fishers to complex chiefdoms with an economy based on the production of agricultural surplus, and possibly "archaic states" in Hawaii (Hommon 2008; Kirch 2000, 2005, *in press*). Long-distance voyaging, trade, and contact between different groups of people occurred for millennia before the first European ships entered the waters of the Pacific (Kirch 2000; Rainbird 2004; Terrell 1998). Oceanic people developed

4 This is not to say that islands are not useful as analytical units. Quite the opposite, islands make excellent units for comparison when studying cultural and historical processes (see Kirch 1997, 2000: 324). However, research on islands must acknowledge contacts and divisions within and between individual landmasses surrounded by water.

sophisticated maritime technologies, not only watercraft, but also navigation skills. Broodbank's concept of "islandscapes", in which "the diversity of ways in which islanders perceive land and sea, together with the physical diversity of islands themselves" is taken into account (2002: 22), is pertinent in terms of thinking about the geographical world of Oceanic people, as will be discussed in Chapter 4. Contacts resulting from Oceanic voyages of thousands of kilometers were not unknown to seagoing Polynesians, as in Hawaiian oral histories recording voyages to and from Kahiki (Kirch 1985: 65-66, 2000: 291). With the arrival of ships bearing European explorers, another chapter of contact and interaction with long-distance voyagers was opened. Following variable pre-contact developmental trajectories, Oceanic cultures would continue to be uniquely Oceanic after European contact, each following its own path. At the same time, colonialism precipitated transformations in the history of the sea of islands with emerging common themes throughout the region, and historical archaeology provides a unique way of approaching these transformations.

Oceania Encounters Europeans

On the 18th of January, 1778, "in about latitude 21°" (Beaglehole 1966: 296), the Hawaiian Islands were first recorded in writing by Captain James Cook of His Britannic Majesty's Royal Navy.[5] This event marked the discovery of the last major group of uncharted Islands in the Pacific Ocean by Europeans. Cook's discovery of Hawaii was the conclusion of a process begun two and a half centuries earlier on the Isthmus of Panama, when Vasco Nuñez de Balboa looked across what was, to him, a new ocean on the 25th of September 1513 (Beaglehole 1966: 15). This process began as an exuberant series of daring acts, and ended as a rational and modern project, involving the systematic discovery and recording of new lands according to the scientific principles of the Enlightenment (Beaglehole 1966: 324). By the end of Cook's third voyage, moments of first contact between Europeans and Pacific Islanders had ended for most of the maritime people of Oceania. However, some parts of highland New Guinea and western Australia would not be visited by Westerners until the mid-20th century (e.g. Gosden 2004: 100). The long-term results of contact with European people in the Pacific varied, from the development of cargo cults in New Guinea (Gosden 2004: 95, 102-103), to the rise of European "settler societies" in places like New Zealand and Australia (Bedford 2004; Harrison 2004; Murray 2004a, 2004b; Williamson 2004). In each case, events following contact took place according to an entanglement of historical actors in a universe of Native as well as Western cultural beliefs, a process formulated by Marshall Sahlins as the "structure of the conjuncture" (1985), or, more poetically, in Greg Dening's metaphor of "the beach" (e.g. 1992, 2004).

European people, goods associated with the capitalist world system (Wolf 1997), and Judeo-Christian religion collided with a *longue durée* (see Braudel 1980) of colonization, cultural evolution, and contact in Oceania (Gosden 2004; Kirch 2000; Terrell 1998). Early colonialist histories of islands in Oceania (e.g. Reeves 1987 [1898]), like other places in the colonized world, implicitly or explicitly stressed the acculturation or disappearance of indigenous people after initial contact with Europeans. The acculturation paradigm, "was often used by anthropologists [and others]...to indicate an essentially unidirectional process of change

5 Rumors exist of a 16th century Spanish shipwreck supposedly recorded in native Hawaiian tradition (Beaglehole 1966: 39), but no substantial evidence of such an event has been uncovered at this time.

in a recipient culture through contact with a donor culture" (Deagan 1998: 28). Acculturation models often rest on implicit assumptions of inequality between "recipient" and "donor", in which the recipient culture is passive and powerless against the active, powerful donor. This kind of model for acculturation is challenged by archaeological evidence for "complex, multidirectional transculturation... approaching the adoption, rejection, and transformation of specific and distinct cultural elements" (Deagan 1998: 28). It is now well understood that the varying results of colonialism in Oceania are the product of many historical trajectories, as enacted by individuals, driven both by the *longues durées* of the native populations of the Pacific Islands prior to European contact, and the separate *durées* of the non-native people who would re-colonize the same Islands. Native people throughout the world did not simply "assimilate" European culture. Rather, they incorporated newly discovered material culture and symbols into their existing cultural worlds, transforming them as they created them. Because of this interpretation, historical archaeology in Oceania is strongly connected to studies of the agency of people in the more recent past, which has important bearings on the politics of the contemporary world (Moore 2000).[6]

Historical Archaeologies of Oceanic Kingdoms

Hawaii and Fiji are archipelagos with structural similarities for the historical archaeology of Oceania. Both supported highly formalized hierarchical societies at the moment of initial European contact, and the post-contact histories of both archipelagos saw the rise of a prominent paramount chief or eventually king who would emerge as a powerful figure in each group of islands; Kamehameha in Hawaii and Cakobau (or Cakabau) in Fiji (Kuykendahl 1965: 29-60; Sahlins 2004). These "Oceanic kingdoms" are notable for the extent to which traditional power structures both facilitated and dictated the nature of culture contact and colonialism in each case. Indigenous architecture and material culture are especially important in the developmental trajectories of both archipelagos in the modern period.

Hawaii

Hawaii was home to what was arguably the most highly stratified society in Oceania prior to European contact (e.g. Kirch 1985, 2000, 2005). As Kirch writes, "At Kealakekua [a Hawaiian bay where Captain Cook landed with the *Resolution* and *Discovery* in 1779], one chiefdom met another, recognizing in the other the essential structures of hierarchy and power" (Kirch 2000: 248). In a pattern repeated throughout Oceania, the first moments of contact between Native Hawaiians and foreigners were characterized by reciprocal fascination concerning strange new objects and people. Material culture flowed across cultural boundaries in both directions from the arrival of Captain Cook and his ships in 1778 off the coast of Kauaʻi. While, "a constant succession of canoes brought out pigs and potatoes to trade for nails" (Beaglehole 1966: 297), sailors vied to accumulate "cargo" in the form of feathered cloaks and

6 The often controversial politics of agency in historical archaeology are reflected, for example, in responses to Kirch and Sahlins' *Anahulu* (see below), especially in the contrasting opinions of Greg Dening and Lilikala Kame'eleihiwa regarding the first volume (Dening, Kame'eleihiwa, and Anderson 1994).

other artifacts of indigenous origin (Dening 1988; Thomas 1991). The history of Hawaiian engagement with the political economy of the world system takes place according to Hawaiian structures. Hawaiian chiefly elites participated in a "political economy of grandeur", purchasing everything from bolts of cloth, to metals, to sailing ships in great quantities in the pursuit of *mana*[7] (Sahlins 1992; Mills 2003). Sailing ships and western weapons were particularly important in Kamehameha's conquest and unification of the archipelago, though equally important to his status as paramount of all Hawaii were his hoards of cash and specie, and eventually the latter would come to dominate the chiefly repertoire (Daws 1968: 29-49; Sahlins 1992). As a result, economic competition overtook warfare in structuring power struggles among Hawaiian *ali'i*, members of the chiefly class (Sahlins 1992: 65).

For much of the history of the islands, *haole* (foreign) interest in Hawaiian politics was linked to economic goals, while Hawaiian interest in foreign economics was linked to political goals (Sahlins 1992:3). This adventure in world system economics was not limited to the *ali'i*, as goods such as imported ceramics from England, perfume from Paris, and buttons from imported clothes, among other exotic artifacts, turn up on archaeological sites from the mid-19th century in the uplands of rural valleys such as Anahulu on O'ahu and Halawa on Moloka'i with increasing frequency over time (Kirch 1992: 180; Anderson 2001). A remarkable example of the diffusion of world system goods into remote parts of Hawaii exists in an assemblage of domestic refuse from a mid-nineteenth century sweet potato farm on Kalaupapa Peninsula, Moloka'i, which included a Spanish silver coin dating from between 1759 and 1788, among other exotic artifacts (Goodwin 1994: 131).

Tied to the incursion of traders and whalers was the interest of missionaries in the Islands. The collision of cosmologies in the Hawaiian Islands began when Captain Cook unwittingly began following the *Makahiki*[8] route around the island of Hawai'i in 1779, an act that would result in his death as the incarnation of Lōno (e.g. Daws 1968: 11-28; Sahlins 1987: 104-135, 1995). Four decades later, the first group of American protestant missionaries would arrive, with the goal of simultaneously converting and civilizing the Hawaiian people (Daws 1968: 62). They would soon be joined by French Catholics, in 1827 (Daws 1968: 80). The remains of the activities of these missionaries are spread throughout the Hawaiian Islands, in the form of churches and mission stations, such as those at Waialua (Sahlins 1992: 155-159) and Kalaupapa (Greene 1985). Christianity in Hawaii was transformed as much by Polynesian religion as it was transformative of Hawaiian practices. The *Makahiki*, "a structure of the long run, an enduring organizing principle of Hawaiian history" (Sahlins 1992: 121), continued to intervene in the unfolding of Hawaiian events. After the abolition of *kapu* (ritual restrictions on behavior) by the monarchy in 1819 (Kuykendall 1965: 65), the acceptance of missionaries by Hawaiian people followed the *Makahiki* structure, in which the system of *kapu* was lifted annually, to be reinstated by chiefly and priestly authorities at a proper time (Sahlins 1992: 69-72). The chiefly class also used physical manifestations of religion as another kind of competitive project through church building activities, manifestations of power at the intersection of religion, education, and politics

7 *Mana* is a term used throughout Oceania, and refers to various kinds of power, both worldly and spiritual.

8 The *Makahiki* was a ritual cycle associated with the god Lōno, discussed at length in other works (e.g. Sahlins 1987). The period was defined by the rise and fall of the constellation Pleiades (Hawaiian *Makali'i*), during which time the normal *kapu* restrictions were lifted and the god would make a cycle of the island, restoring the life of the land before being ultimately defeated in mock battle by the chief to restore the normal cosmological order.

(Sahlins 1992: 91).

Historical archaeology in Hawaii tends to draw heavily from the historical and anthropological interpretations sketched briefly above, which emphasize continuities and changes in Hawaiian culture during a long period of colonialism. Other important transitions in Hawaii include demographic collapse due to introduced diseases for which Hawaiians had no natural immunity (Stannard 1989); the effects of land disenfranchisement during the Māhele, when lands were officially transformed into commodities and thus became alienable (Sahlins 1992); and the development of economic dependency in the islands (Kent 1993). Archaeologically, persistent traditions and transitional innovations become manifested in the cultural landscapes and homes of Hawaii from the late eighteenth century onwards. Research on agricultural field systems in the Anahulu valley suggests variability in productivity was linked to historical events occurring throughout the Hawaiian Islands (Kirch 1992: 173).

Architectural transformations are a critical aspect of the interpretive material for Hawaiian historical archaeology. Ladefoged has suggested that the transition from house compounds with separate architectural features to internally differentiated but attached household architecture reflects the relaxation of *kapu* practices in the 1820s (1991, 1998). Kirch and Sahlins cite a number of "architectonic changes" in the nineteenth century, including the appearance of large stone walls meant to control the movement of livestock, and to outline "newly acquired allodial property rights" following the Māhele, as well as the "compression" of household architecture noted above (1992b: 175-177; a more detailed analysis of observations about the landscape in Anahulu follows in Chapter 4 of this study). Anderson's (2001) work in the Hālawa valley confirms the patterns suggested by Ladefoged, and Kirch and Sahlins, suggesting that these patterns also reflect changes in Hawaiian commoner ideologies about the house (*hale*) and the land (*ʻāina*). She also suggests that more fertile agricultural plots were associated with continued habitation later in the post-contact period (Anderson 2001: 301). Archaeologists have made some early attempts at characterizing the archaeology of urban centers in Hawaii, notably Honolulu (Garland 1995; Pearson 1995). Certain changes in post-contact settlement patterns have been linked to demography, specifically the movement of Hawaiians to growing urban centers (Sahlins 1992: 153), or depopulation as a result of introduced diseases (Kirch and Rallu, eds. 2007; Stannard 1989; Sweeney 1992).

The work of Peter Mills on the architecture and landscape of Pā ʻulaʻula o Hipo (Fort Elisabeth), examines the relationship between the "Russian fort" and Hawaiian *heiau* (temple) in constructing "new" history, following the tenet that transformations occur in the histories of all people living in a situation of contact (1996, 2002). Mills' (2002) work is especially important in light of the concept of agency in the recent past alluded to above, repeatedly stressing the importance of choices made by Native Hawaiians, and the importance of Hawaiian culture in structuring the history of Russian involvement in the islands. The modern sign pointing to a "Russian Fort" on a Kauaʻi highway is misleading, ignoring the Native Hawaiian people who "had much to do with building this fort and used it long after the Russians had departed from Hawaiʻi" (Mills 2002: 3). In addition to re-analyzing the ethnohistory surrounding Pā ʻulaʻula o Hipo and the Russians in Hawaii, archaeological fieldwork focused on the structure itself and the surrounding area revealed much about the changing use of space over time, including cycles of domestic use, and internal functional and ideological divisions within the Fort (Mills 2002: 194-225).

The artifacts of the world system were alluded to above, brought into the islands largely

through the conspicuous consumption practices of the *ali ʻi*, though also collected by enterprising Hawaiian commoners from the first moments of contact. The world system bombarded Hawaii with objects (sometimes literally, as with the guns of Kamehameha). However, the adoption of foreign material culture by Hawaiians was not simply a matter of accumulating status through wealth, or adopting "technologically superior" material. Bayman has examined evidence for the persistence of stone adze technology, despite the availability of metal from an early period of contact, citing Native Hawaiian preference of the former for canoe manufacture as one reason (2003). Similarly, ceramics from the Anahulu valley were represented primarily by bowl forms, which "were likely used in communal serving of such dishes as *poi* or stews", a continuation of Hawaiian foodways (Kirch 1992: 182). At Pā ʻulaʻula o Hipo, the spatial patterning of domestic refuse may reflect a separation of the sacred and secular in terms of Hawaiian ideological structure in both architecture and daily activities (Mills 2002: 225). Evidence in architecture and material culture in post-contact reflects the adaptability of Hawaiian culture during a period of dramatic historical changes, when people adopted some new materials and practices while continuing many of the same patterns of daily life.

Fiji

Fiji has been characterized as "in between" Polynesia and Melanesia, settled by the same Lapita people who colonized Western Polynesia in the second millennium BC, and sustaining contact with "Melanesian" people to the west and "Polynesian" people to the east through the proto-historic period (Kirch 2000: 155-156). Initial European contact in the Fiji archipelago occurred with the arrival of Abel Tasman in January 1643 (Beaglehole 1966: 153). By this time, Fijians may have heard of men with light skin, strange objects, and stranger customs from their neighbors in Niuatoputapu and Futuna, both of which were visited by the Dutch expedition of Le Maire in 1616 (Beaglehole 1966: 133-134).

Archaeology of the period following European contact in Fiji, which was sighted sporadically if at all by Europeans until the nineteenth century (Beaglehole 1966), has focused primarily on the town of Levuka, located Ovalau Island. The town's history has been divided into periods as an "indigenous Fijian village (pre-1820s), beachcomber community (1820s–1850s), raucous South Pacific port of call (1860–1870), entrepôt and capital for a trial indigenous/European government of Fiji (1871–1873), capital and administrative center of the Crown Colony of Fiji (1874–1882), stable postcapital regional service center (1882–1920s), and community in decline with its economy in part reliant on its heritage resources to attract tourism (1920s to present)" (Chatan et al. 2003: 239-240). Burley's initial interpretations suggest that a relatively open, egalitarian society of Native Fijians, beachcombers, and maritime traders developed into, "a more socially segregated and economically ranked European community structure" over time (2003: 244). A major element of life in Levuka, according to historic documents, and reflected in the archaeological record, was the consumption of alcohol (e.g. Burley 2003: 251-252). Interestingly, archaeology reveals the persistence of alcohol consumption on a large scale even after Levuka had been "sanitized" as part of the development of British colonial culture (Burley 2003: 259). The persistence of alcohol consumption is interpreted in terms of British norms and etiquette, but what of indigenous consumption of introduced beverages? Native Fijians overall are conspicuously absent in Burley's interpretations

of historical archaeology in Levuka. One of their only appearances is as modern freedom fighters from outside of Levuka who interrupt archaeological fieldwork carried out in 2000 (Burley 2003: 247). For the sake of Fijian historical archaeology, it would have been informative to problematize the presentation of British hegemony, in favor of an examination of Fijian resistance, especially given the importance of indigenous Fijian material culture and practices in general in Levuka.

In contrast to Burley's article, Chatan's (2003) analysis of the governor's *vale levu* (big house) addresses the notion of hybridity in colonial architecture in Fiji. Nasova House, which served as the Parliamentary and administrative building of the Cakabau government from 1871-1874, and as the house of the British colonial government in Fiji from 1875-1882, "was the largest, most prominent building in Fiji until the colonial capital moved to Suva in 1882" (Chatan 2003: 268). As such, the building fell into traditional Fijian practices of reserving the largest, most elaborate structures for chiefly elites. Nasova house was, "a hybrid structure that integrated both western and Fijian architectural vocabularies and grammars" (Chatan 2003: 278). As a Fijian *vale levu*, the "symmetrical layout of the Cakobau Government Building seems to be a modification or adaptation of the ideal traditional Fijian village plan that emphasized chiefly dominance and commoner subordination" (Chatan 2003: 284). Over time, especially with the arrival of Sir Arthur Hamilton Gordon, first British governor of the colony beginning in 1875, this public building became the locus of colonial rituals, such as the reception of important people and enactment of important events. The need for order in the house expanded over time (Chatan 2003: 274-277). Yet even as the home of a colonial government, Nasova House became a manifestation of, "Gordon's vision of 'Fijian-ness'", as, "his chiefly status within the colony was reified at his residence at Nasova. It became his *vale levu* as the paramount chief of the colony" (Chatan 2003: 287). The use of traditional Fijian architectural elements in Nasova House reflects the incorporation of island cultural elements as an aspect of British imperial hegemony in the Pacific. Gordon was consuming Fijian culture as he was transformed by it, just as the Fijians were transformed as the subjects of empire. Hybrid architecture in the governor's palace in Fiji was meant to reflect the power of outsiders over local people through the appropriation of indigenous spatial layouts (Chatan 2003: 289).

Another, more popular form of colonial architecture was the bungalow, which became "an instantly recognizable imprint of British imperial presence" throughout the tropical world by the late nineteenth century (Purser 2003: 295). Bungalows are wooden houses, typically associated "with pyramidal or hipped roofs, and the presence of encircling verandahs often at least partially partitioned to form small rooms" (Purser 2003: 295). This vernacular form of settler architecture is represented by several well preserved examples in Levuka (Purser 2003: 300-306). The presence of these houses is seen as part of the creation of a symbolically laden colonial landscape, and bungalows do appear in historical archaeology projects in Australia (Allen 1973) and New Zealand (Trotter 2003). Yet the expansion of a settler population in Levuka was not a monolithic process. "Houses built by descendants of European settlers bespeak an increasingly localized frame of reference in the choices made regarding built form, materials, and the organization and use of space" (Purser 2003: 312). The variability of colonial architecture in Fiji is a reflection of the heterogeneity of power relations in historical Pacific empires.

Settler Societies

New Zealand and Australia represent typical examples of what are known as "settler societies" in the literature on archaeologies of contact and colonialism. Tim Murray defines settler societies as, "the product of a mass European immigration where people settled on land appropriated by conquest, treaty, or simple dispossession from indigenous groups" (2004a: 5-6). The two nations have the richest traditions of historical archaeology in Oceania, and the material reflects the demographic realities of a concerted immigration effort by European people. In addition to the British colonies of New Zealand and Australia, the French colony of New Caledonia, which was founded, like Australia, as a penal colony, will be included in this section. Recent work on the historical archaeology of French settler sites in New Caledonia has become entangled in reinterpretation of settler and indigenous identities.

New Zealand

Initial moments of European contact with the Maori (native people of *Aotearoa*, now called New Zealand) were marked by conflict. When Abel Tasman reached the islands in 1642, he lost four men to a Maori attack. The islands were marked as hostile, which discouraged European visitors for over a century (Beaglehole 1966: 149; Salmond 1991: 63-84; Walker 1990: 78). After a more positive report from James Cook, who visited the islands in 1769, Europeans began to exploit some of the resources of New Zealand, especially whales, seals, and timber (Walker 1990: 78). Early European settlements in New Zealand were typically coastally oriented whaling stations or trading posts (Coutts 1976; Stokes 2002: 37). In New Zealand, as elsewhere in Oceania, contact with Europeans, and especially European diseases, brought about demographic collapse, with mortality estimated to be as high as 75% (Walker 1990: 81). Over time, large populations of settlers, primarily from Great Britain, would arrive, especially after the dispossession of the Maori from their land by the Waitangi Treaty of 1840 (e.g. Stokes 2002: 46; Walker 1990: 98-99). Historical archaeology in the Hauraki plains has suggested that, "Maori were very much the senior partner in their relationship with the fledgling settler society" in New Zealand in the century following Cook's arrival in the islands in 1769 (Bedford 2004: 147). Archaeological sites dating to the early and mid-nineteenth century tend to reflect sustained practices of Maori traditions, while late-nineteenth century sites, despite some evidence for continuity, yielded exclusively non-traditional material remains (Bedford 2004: 148-149). In addition to the exchange of material culture in the nineteenth century Maori world, the exchange of genes was probably not uncommon between Maori and European settlers (e.g. Coutts 1976: 292).

Much of the modern landscape in New Zealand, from hills covered with sheep and introduced grasses, to urban botanical gardens, is a reflection of "ecological imperialism" in the historic period, in which a variety of plant and animal species were introduced to the islands, and the landscape was transformed into one suited to European-style settlement (Crosby 1986). During this period, the countryside of Aotearoa, as the Maori called it, was burned, deforested, separated into farms and urban centers, a transition representing environmental as well as demographic colonialism by people primarily of British descent (e.g. Arnold 1994; Guthrie-Smith 1999 [1921]; Reeves 1987 [1898]; Vaggioli 2000; Walker 1990). Of course, the Western

settlers of New Zealand were transforming an existing anthropogenic landscape. Prior to European contact, Maori had caused the extinction or extirpation of a number of endemic faunal species, including birds such as the huge flightless *moa*, marine mammals, especially seals, and countless invertebrates, either directly through hunting, or because of predation or competition with introduced mammals such as rats and dogs (Anderson 2002). Maori had also contributed to deforestation, burning land on the North Island for agriculture, and on the South Island for ease of access to increasingly scarce *moa* while simultaneously encouraging the growth of bracken fern, a staple plant food (Anderson 2002; McGlone and Wilmshurst 1999; McGlone, Wilmshurst and Leach 2005). Finally, Maori settlement patterns had caused visible changes in the way the landscape was arranged, especially on the North Island, where dense clusters of agricultural fields and fortified hilltop villages, or *pa*, were established, elaborated, and expanded from the early sixteenth century (Anderson 2002: 33; see also Kirch 2000: 280-283).

In New Zealand, colonial settlement resulted in open warfare with the British Army. Archaeological evidence of historic and proto-historic warfare in New Zealand includes both European forts and Maori *pa*, fortresses often built on extinct volcanic hills, which developed a unique form, called the "gunfighter *pa*", in the historic period (Ladefoged 1995; Prickett 2005; Stodart 2002; Wylie 2006). While the struggle between Maori and *Pakeha* (whites) can be seen to continue in contemporary New Zealand (e.g. Walker 1990), much of historical archaeology in Aotearoa continues to focus on the material remains of European settler heritage. Much literature is devoted to the archaeology of industrial remains, such as gold mining sites (Hamel 2002a; McCraw 2005), forestry tramways (Petchey 2001; Wylie 2006), and rail and shipping centers (Bickler et al. 2004). Hamel's (2002b) archaeological study of developing sanitation practices in Queenstown from 1860 onwards represents a useful study of adaptation to problems within emerging urban centers in an unfamiliar environment. The archaeology of the early twentieth century is also of interest in New Zealand, represented by a leprosy quarantine hut excavated in 2002 (Trotter and McCullough 2003), and an investigation of the homestead of Richard Pearse, famous as a rival to the Wright Brothers as the first man to fly (Petchey 2004). These kinds of studies emphasize the importance of settler heritage in New Zealand.

Angela Middleton's (2003, 2007a, 2007b, 2008) innovative work on the mission station at Te Puna provides a compelling account about colonial entanglements as experienced by a specific family working for the Church Missionary Society (CMS) during the first half of the 19th century. Her detailed analysis of material culture and historical documents reveals patterns in household architecture, household economy, and consumption, especially of food and drink as this family adapted to their living situation at Te Puna. Specifically, evidence for alcohol consumption was related to the apparent social distance between the King Family and other members of the CMS (Middleton 2008: 214). Furthermore, the material reveals the extent to which the King Family attempted to represent themselves as exemplars of proper domesticity to the local people. The study also involves a contextual analysis of the missionary family's role in the Maori community at Te Puna, including the integration of children from the local Pa into the household and its domestic life, and the economic opportunities provided for local people by the presence of the mission station (Middleton 2007a, 2007b, 2008).

Historical archaeology in New Zealand is not focused exclusively on European settlers, even where the history of indigenous people is not at stake. For example, an archaeology of Overseas Chinese settlers in New Zealand is being developed for urban centers as well as the goldfields of Otago (Turner et al. 2005). Artifacts such as opium pipes and Chinese ceramics,

including Jian You brown stoneware and a celadon rice bowl, were found alongside glassware and European ceramics at a site in Auckland, and were interpreted as evidence of daily practices for a Chinese family living in Auckland in the late nineteenth century (Turner et al. 2005: 264-270; see Bowen 2006 for a similar example in Australia). Similar studies have been carried out in North America (e.g. Praetzellis and Praetzellis 1998), and additional historical archaeological work in multiethnic contexts in New Zealand would be a valuable endeavour. Furthermore, studies of the ongoing adaptations of Maori to the changing historical context of New Zealand as a British colony and independent nation-state would enrich the study of long-term developments in Polynesian cultures through the modern period.

Australia

The history of Australia prior to European contact can be distinguished from those of Hawaii, Fiji, and New Zealand for two reasons. One is the size and geographic variability of the Australian landmass. Australia, with a surface area of 7,614,500 sq km, dwarfs all of the islands of Oceania, with environments that vary from tropical rainforest to desert. In a process typical of European settler societies, the original inhabitants of Australia were dispossessed of their land, and erased from its memory through an ideology of *terra nullius*, which stressed that the land didn't belong to indigenous people in the places being colonized (Gosden 2004: 25-27; Jones 1985: 182).

Possession of the land in Australia by Europeans was an ideological process, involving the naming and mapping of the landscape, which was a way of taming the landscape, often characterized by Europeans as "harsh" or "forbidding" (Seddon 1997: 20-27). The issue of settler survival is taken up in one of the earliest studies of historical archaeology in Australia, involving, "technological skills so limited as to reflect continually the processes of improvisation rather than adaptation" (Allen 1973: 57). Port Essington was established in 1838, as part of the third attempt by the British to colonize northern Australia (Allen 1973: 44). Unlike many remote settlements in Australia, Port Essington did not rely on convict labor, except for in a brief period from 1844-1845. The population of the settlement consisted primarily of a detachment of Royal Marines, and death rate for the settlement from 1838-1849 was 23%, mostly due to malaria (Allen 1973: 46). While the site rested on a "classically defensive position", it lacked suitable drinking water and soil for agriculture (Allen 1973: 47). Archaeological evidence at the site suggests three habitation phases, with buildings ranging from bark huts for the enlisted men, to prefabricated structures placed on piles (Allen 1973: 47-54). Settlers at Port Essington relied on other settlements and trade with local Aboriginal people to meet their subsistence needs, and evidence for the latter appears in the form of worked glass (Allen 1973: 54-55). Interestingly, despite the remoteness and generally poor conditions of the settlement, there appears to be little time-lag between the introduction of new ceramic styles to the world system and their appearance in Port Essington (Allen 1973: 56). The difficulty of survival in Port Essington is seen to reflect "a microcosmic example of the situation repeated a hundred times in the early history of Australia, and which moulded a new culture from the old – the small artificial male societies which gave rise to the Australian legends of sport, hard drinking, and mateship" (Allen 1973: 58). This conclusion, which emphasized the "newness" of settler culture in Australia contrasts starkly with more recent emphases in historical archaeology on shared history, the

persistence of Aboriginal culture, and the idea that objects produced bridges across time and culture, rather than boundaries between new and old.

The concept of possession was equated with notions of improvement, which in European eyes, meant agriculture. Unlike elsewhere in Oceania, Aboriginal people did not practice agriculture at a scale recognizable to Europeans, which made it easier to characterize their land as empty wilderness, to be converted "into something imbued with human [i.e. Western] values" (Gosden 2004: 114). Anthropological and archaeological research has shown that the concept of *terra nullius* was fundamentally misplaced, in light of complex environmental management techniques practiced by Aboriginal Australians, particularly through the use of fire (Jones 1969, 1981: 204). Nonetheless, the ideology of *terra nullius* was so insidious that Native Title in Australia was not recognized until 1993 (http://www.nntt.gov.au/).[9]

Historical archaeology in Australia often stresses this legacy of conflict and oppression between Aborigines and European settlers. The Dutch were probably the first Europeans to land on the Australian continent, on the ship *Duyfken* in 1605 (Beaglehole 1966: 112-113). In addition, Aboriginal groups in Arnhem land had sustained contact with people from Macassar beginning in the 1720s, who first introduced some of the goods of the world system, such as metal tools. These tools were incorporated into Aboriginal trade networks, possibly along with smallpox and other deadly diseases (Gosden 2004: 146-148). Aboriginal people in Northern Australia were involved with world system exchange long before the concept of *terra nullius* deprived them of their livelihood (Gosden 2004: 148-149). This fatal change in Aboriginal life can arguably be traced to the establishment of a penal colony in New South Wales in 1788, and the subsequent expansion of settler populations from the southeast, largely on the back of ranching and mining operations (Gosden 2004: 145).

The archaeology of penal institutions is an important aspect of historical archaeology in Australia, emphasizing the importance of convict heritage in contemporary Australian society (e.g. Casella 2001, 2005). Institutional power and labor relations are held in the materiality of penal heritage landscapes in Australia (Casella 2005). However, this heritage has been sanitized and commodified as something to be consumed by modern tourists, as with convict sites on the island of Tasmania (Casella 2001: 67). "Australian heritage gaols can be read as commemorations of 'belonging' – of forging a new nation, of fermenting a non-European and uniquely Australian consciousness" (Casella 2005: 464), revealing undercurrents of nationalism in the archaeology of penal settlement. In contrast to settler heritage traced through prison colonies, the colony of South Australia used a system of controlled immigration, where people of a certain age and with certain skills were given assisted passage, while others could pay to immigrate (Piddock 2001: 79). Some of these settlers wound up in almshouses and workhouses, such as the Destitute Asylum of Adelaide (Piddock 2001). The archaeology of institutions such as these represent an important way of approaching the development of state power in the settler society of Australia. The archaeology of penal institutions, including those in Australia, which has one of the richer traditions of this sort of archaeology, will be addressed in greater depth in the following chapter.

Historical archaeology in Australia has shown the importance of the *longue durée* of Aboriginal histories on the continent (Harrison and Williamson, eds. 2004; Williamson 2004).

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9 Laws such as the Northern Territory's Aboriginal Land Rights Act 1976 did allow for Aboriginal people in Australia to make claims of ownership to land, but in western terms, which required not only title but evidence of labor or improvement (see Jones 1981: 184).

While archaeologists have become increasingly interested in the early chronology of human occupation in Australia, "Aboriginal people have tended to be more concerned with recent history, ancestors and ties to place (particularly in light of the *Native Title Act* 1993)" (Williamson 2004: 176). Yet a meaningful history of Australia, from more than 40,000 years ago through the contact period and into the present, must incorporate the work of archaeologists, historians, and Aboriginal people as part of a "polyvocal" project (Williamson 2004: 198). This sentiment is reflected in a multidisciplinary project involving archaeologists, historians, and Aboriginal people in Yarrawarra, which challenged power relations that emphasized archaeological knowledge as more legitimate than oral history, and written history as dominant over both (Beck and Somerville 2005: 471). This project focused on the concept of "conversations", in an attempt to "value Aboriginal and non-Aboriginal perspectives on equal terms" (Beck and Somerville 2005: 471). Four types of interdisciplinary conversations are identified; co-opting, intersecting, parallel, complementary, and contradictory. Contradictory conversations are seen as the most productive type, as they can lead to more complex interpretations (Beck and Somerville 2005: 474-478). For example, oral histories concerning the structures that once existed at the Fig Tree site, where archaeology did not yield definite architectural remains, but did reveal evidence for food and drink consumption, added a layer of meaning to the creation of that site as a historic place (Beck and Somerville 2005: 479). In addition, the presence of worked glass in the archaeological record and in oral history is examined as part of a complementary conversation, which builds, "A more complete picture about the artefacts, the site and its activities" (Beck and Somerville 2005: 477).

The archaeology of pastoralism in Australia involves the study of ecological as well as economic and social changes in the history of Australia (Harrison 2004a, 2004b). Old Lamboo station, located in the east Kimberly region, contains archaeological remains dating to the early twentieth century, of two settler homesteads associated with a large sheep herding operation, the campsites of "Aboriginal station workers and fringe campers", a wet season camp used during holiday time, and a "large station stone quarry" (Harrison 2004a: 123-124). Among the artifacts recovered from the site were projectile points and tools of stone, glass, and metal. Spatially, there appears to be a definite division between "inside" and "outside" the station fence, where the inside is characterized by local chert, finished tools, European goods including flaked glass and ground metal, and the outside is characterized by the presence of non-local stone, and less dense settlement (Harrison 2004a: 134). Yet in many ways, the two realms overlapped. Just as "many white pastoralists developed large collections of indigenous artifacts...Aboriginal people appropriated and 'Aboriginalised' such European activities as tea drinking" (Harrison 2004a: 141). Australian pastoral history reflects the fact that, "All contact landscapes are crowded and ambiguous" (Murray 2004b: 218). As a result, historical archaeology in Australia simultaneously involves writing the history of Aboriginal people and non-Aboriginal people, of "death and dispossession" alongside "labouring, farming, creating communities, maintaining identity and surviving" (Murray 2004b: 224).

New Caledonia

The history of heritage in New Caledonia is a conflicted one, in which historical archaeology has only recently begun to play a role. Until the 1980s, "non-indigenous heritage

was not considered of any importance" (Sand et al. 2005: 146). While the Kanak (indigenous New Caledonians) sought to preserve their heritage, the Caldoches, who are ancestors of the French convict settlers of New Caledonia, were dealing with historical issues of their own. New Caledonia's history as a French colony began in 1853, but it was not until the establishment of a penal colony in 1864 that the main settlement of Noumea began to grow. Between 1864 and 1897, "over 33,000 convicts, originating from mainland France but also from Italy, Spain and North Africa, were sent to New Caledonia" (Sand et al. 2005: 147). While around 80% of contemporary Caldoches are thought to have convict ancestry, many people in the past sought intentionally to destroy any evidence of such a legacy (Sand et al. 2005: 147).

Current archaeological research at two prison sites, Nouville and Teremba, is bringing the importance of Noumea's history as a penal colony back to the forefront of politics of the past in New Caledonia. Sand and his colleagues have excavated the remains of a bakery, a toilet area, and stone pavements at these sites, revealing some interesting trends in New Caledonia's colonial history. For example, artifact analyses have revealed that, after a brief period of reliance on imported products of non-French origin, there was a shift to "near-total reliance on metropolitan products" in the colony, at the exclusion of products from Australia and New Zealand (Sand et al. 2005: 156). In addition, the presence of "a massive quadrangular pavement of very fine workmanship" is seen as an indicator of "the presence of professional stonemasons among the prisoner population at the site of Teremba" (Sand et al. 2005: 152). This interpretation echoes findings from Port Essington in Australia, where work carried out by convicts on a hospital kitchen, "bears all the aspects of professionalism" (Allen 1973: 52). The use of prisoners with professional craft skills in the penal colonies in Oceania is an interesting phenomenon, and the intentionality of such a pattern by colonial powers remains to be explored.

The way in which heritage has been constructed and deconstructed by the people of New Caledonia has led Sand and his colleagues to conclude that, "...the development of colonial archaeology is taking place at a very special moment in the history of New Caledonia" (Sand et al. 2005: 156). As Caldoches are beginning to face the realities of their heritage in New Caledonia, collaborative work with the Kanak people has also brought to light a shared history. Historical archaeology of the penal colonies in New Caledonia also addressed Kanak oral traditions about colonial history, where "Kanaks took part in the functioning of the convict administration as guardians and troops, but the convicts also influenced Kanak clans through the installation of convicts in the tribes, with the agreement of the traditional chiefs, and often their subsequent marriage with Kanak women" (Sand et al. 2005: 157). Thus, like Australia, historical archaeology works to produce a sense of shared history, emphasizing the reality of cultural entanglement created by colonial situations.

Other Colonized Lands of Oceania

All of the islands in the Pacific Ocean have felt the effects of European expansion and the emergence of global capitalism at some point. Historical archaeology, however, has yet to examine all of the implications of these impacts. Several more case studies are worth examining, however, involving more ephemeral contacts, ranging from the anthropologically famous "cargo cults" of New Guinea, to shipwrecks of explorers and mutineers elsewhere in the Pacific. Archaeological analyses of these phenomena are important to understanding some of the other

processes at work when studying the trajectories of Pacific Island cultures through the twenty-first century.

Historical Archaeologies of Isolation in Oceania

Archaeological remains of settlements and shipwrecks associated with early explorers stranded in Oceania provide a unique opportunity to explore the results of initial moments of contact between island people and Europeans. Archaeological research in the Solomon Islands led to the surface discovery of glazed pottery that was clearly not of local origin. The an area is interpreted as a Spanish settlement established on Santa Cruz during the voyage of Mendaña and Quiros in 1595 (Allen and Green 1972). Excavations carried out in the area of the surface remains revealed additional pottery that was confirmed to be of 16th century Spanish or Spanish Colonial origin (Allen and Green 1972: 84-88). These excavations also yielded evidence of architectural features, including a ditch, presumably built by the Spanish for defensive purposes, and a house floor, which is also probably associated with the sixteenth century Spanish settlement based on its rectangular plan and associated artifacts (Allen and Green 1972: 80-83). This research also confirmed the presence of a previously unknown 16th century Spanish camp associated with the voyages of Mendaña and Quiros on San Cristobal island, located uphill from a traditional Melanesian settlement (Green 1973). Ethnohistoric accounts suggested that the impact of this settlement was minimal, and indeed, habitation of the site was interpreted in terms of "months and not years" (Green 1973: 27). Yet the accounts of sixteenth century Spanish explorers suggest the presence of numerous introduced cultigens beginning with initial moments of contact, a tangible legacy of even brief European contact with Island people (Yen 1973).

Similar research in Vanikoro has combined terrestrial and underwater archaeology to explore the remains of a shipwreck and French camp associated with the 1788 voyage of Lapérouse (Galipaud 2005; Galipaud and De Biran 2006; L'Hour and Veyrat 2005). Finally, one of the most famous events in the history of Oceania, the mutiny on the *Bounty* (e.g. Dening 1992), has been the subject of recent archaeological investigations. In addition to surveying the remains of the ship itself, which was sunk by the mutineers after their arrival at Pitcairn Island, archaeological survey and excavation on land has revealed a variety of artifacts from the mutineer's settlement (Erskine 1999). Research on the settlements of stranded sailors and mutineers in Oceania provides an opportunity to examine a unique aspect of the archaeology of isolation (Veth 2006, pers. comm.).

New Guinea

Papua New Guinea's colonial history did not truly begin until the late nineteenth and early twentieth century, despite "sporadic coastal contacts with explorers, whalers, and traders from the early seventeenth century onwards" (Gosden 2004: 93). Colonial culture throughout New Guinea exhibited shared elements, but also saw local developments which were a reflection of pre-colonial regional histories. The doctrine of *terra nullius*, which reached a peak in the seventeenth and eighteenth centuries, was not applied in New Guinea, allowing a colonial middle ground to form (Gosden 2004: 93-103). It would appear that during the period of early

colonialism in New Guinea, western powers had learned to restrain some of their more violent impulses.

The importance of material culture to colonial processes in New Guinea can be seen in the development to what have become known as "cargo cults" in the Western world, complex rituals involving the integration of foreign goods into indigenous cosmology. Cargo cults, which involved the reinterpretation of Western material practices in various forms, have been misinterpreted in many ways by modern scholars, but can be seen as an indigenous response to the material inequalities between Papua New Guinean people and European colonizers by trying to gain access to the spiritual basis of accumulation of goods through the ancestors (Gosden 2004: 95). Cargo cults fit well with Appadurai's (1986: 52) assertion that, "given [indigenous people's] sudden subjection to a complex international economical system of which they saw only few and mysterious aspects...their response was occasionally to seek to replicate what they regarded as the magical mode of production of these goods". The fascination with unfamiliar material culture, however, was mutual between Europeans and Pacific Islanders, and cargo was equally likely to travel in the form of masks, and feathered and beaded items to the West, as it was to flow into the interiors of Pacific Islands as glass bottles, furniture, and metal tools (Thomas 1991).

Broad Themes of Colonialism in the Pacific

A number of major themes centered around colonialism are expressed in the brief outline of historical archaeology in Oceania presented above. One is the persistence of Oceanic cultures, and the flexibility of Island people in the face of often violent, destructive colonial powers. In each of the case studies above, island lifeways continued to structure history after European contact, from the *Makahiki* of Hawaii, to the hybrid *vale levu* in Fiji. Another theme is the inflexibility and stubbornness of European colonizers, who often failed to recognize and adapt to the uniqueness of island situations. The rigid application of Western-style settlements and European cultural ideals to island settings often met with extreme difficulty or failure from a colonial perspective, as was the case with Fort Elisabeth, Port Essington, and Spanish attempts at settling the Solomon Islands. This apparent opposition is mitigated by evidence for the fluidity and syncretism of social relations in historical Oceania. Pastoral history in Australia is as much an Aboriginal as a Settler history, just as a shared history exists for Caldoches and Kanak in New Caledonia. As mentioned above, islands and islandscapes were central structuring elements of contact and colonialism in Oceania. First contact between Oceanic people and Europeans often occurred in the water, across the bows of exploring ships and canoes. In places where colonialism was sustained for longer periods of time, the water, whether through whaling or other maritime trades, continued to facilitate connections between remote islands and empires. At the same time, the attraction of Western powers to the largest landmasses of Oceania, especially Hawaii, New Zealand, and Australia, reflects the importance of geographical variability in historical trajectories across Oceania.

Finally, archaeology is crucial in understanding the importance of material culture in making Oceanic history (see Thomas 1991). In moments of early contact, the fascination of Oceanic people for the metal and cloth of the Europeans often matched the Europeans' fascination with "curiosities", native material culture (Dening 1992: 76; Thomas 1991).

Archaeological investigations of prolonged European contact throughout Oceania are saturated with the physical remnants of the world system, which were simultaneously transformative of, and transformed by island cultures. The rise of cargo cults is a dramatic reminder of this process. These themes are crucial in terms of understanding continuity and change in the *longue durée* of cultural development in Oceania, and the applicability of historical archaeology to the contemporary worlds of Oceanic people.

Deeper Issues

Kirch (2000) identifies a number of "big structures and large processes" in the history of Oceania prior to European contact. Included among these are the importance of long distance voyaging, the complex relationship between language, biology, and culture, the crucial role that demography played in structuring Oceanic history, the close association of political economy and landscape change, and finally, intensification, specialization, and the centralization of power (Kirch 2000: 302-323). Meanwhile, archaeologists have provided various frameworks for comparing colonialism on a global scale. Gosden suggests the use of three general models of colonialism, based on increasing efforts of the colonizer to possess or otherwise control the colonized: "Colonialism within a shared cultural milieu"; "the Middle ground"; and "*terra nullius*" (2004: 26). Lightfoot suggests "seven dimensions of colonial encounters": enculturation programs meant to change the way that indigenous people lived; native relocation programs; the ability of native people to permeate the rigid social structures of the colonizer; the experience of labor practices for native people; the prevalence of interethnic unions and the growth of "mixed" populations; the impact of demographic changes; and changing interactions between colonizer and colonized over time (2005: 20-29). Finally, Martin Hall identifies "six principal themes" of colonialism in the modern world: the movement of material culture and its verbal and material representations throughout the world; the presence of global processes on a local scale; the ability of material culture to evoke many meanings; material culture's ambiguous nature; the presence of history in the contemporary world; and violence as a structuring and revealing aspect of colonialism (Hall 2000: 196-198).

While many of the ideas outlined above permeate the narratives of historical archaeology in Oceania on some level, several are worth examining in greater depth. Perhaps primary among these is the importance of population dynamics to culture history (see Kirch 2000: 307-311; Lightfoot 2005: 27-28). Demographic trends in Oceania, from the voyages of Polynesian navigators, and subsequent variability in population structure across space and time (especially Native demographic collapse from introduced diseases), to the exploration, colonization, and migrations of non-Native people throughout the period following European contact, are an integral part of the *longue durée* (Braudel 1980), but they are also deeply connected to the history of events throughout the region. For example, the *ōkuʻu*, an 1804 epidemic in Hawaii, has been associated with novel economic trends following Kamehameha's conquest of Oʻahu (Sahlins 1992: 44). Closely tied to the migration patterns of people is the concept of "ecological imperialism" (see Crosby 1986; Kirch 1992: 168-170). Both Polynesian voyagers and their European counterparts later in time intentionally transported a portmanteau biota of plants and animals, simultaneously and inadvertently carrying a host of floral and faunal stowaways, invertebrates, and microorganisms on voyaging ships. The foundation of the leprosarium at

Kalawao was just one result of the transport of a feared microorganism, the leprosy bacillus *Mycobacterium leprae*. The arrival of a new group of people on an island in Oceania meant the transformation of the landscape on many scales, from the planting of newly arrived crops, to widespread deforestation and environmental change due to the spread of introduced species. The relationship of colonialism, the environment, and landscape change represents a relatively new direction in historical archaeology in general (Mrozowski 2006), and Oceania provides a compelling area to test hypotheses about the topic.

The importance of material culture as a facilitator of cultural interaction is a central tenet of historical archaeology in general. Colonialism in the Pacific was intimately connected to the world of things (Gosden 2004; Thomas 1991). Martin Hall provides a framework for expressing the power of material culture, while acknowledging "the multiplicity of meanings" (2000: 197) that things could evoke, especially in contexts where many cultures came into contact. The refined earthenware *poi* bowls of Anahulu, and the bottle glass fragments worked into projectile points by Aboriginal sheep station employees are powerful reminders that all objects form part of a complex, symbolic network of meaning for the people who encounter them. Finally, historical archaeology in Oceania always, at least implicitly, must engage with the concept of *power*, "a nebulous and variegated entity, which was constantly being asserted and redefined" by historical agents (Mills 2002: 234). Historical archaeology provides a lens to see the ways in which people in colonial contexts created powerful material and cultural worlds. Power, whether in the study of Polynesian chiefdoms before contact, or in the penal colonies of the British Empire, must always be placed squarely in the hands of people. This is not only true for those who, like Kamehameha, Cakombau, Lapérouse and Cook, speak loudly in the historical record. Power also rested in the hands of the more numerous settlers, migrants, and Native inhabitants of the sea of islands, whose voices can be discerned in the objects they left behind and in the landscapes they created.[10]

Future Directions

Where, then, to take historical archaeology in Oceania? In addition to some of the suggestions mentioned throughout this chapter, the expansion of historical archaeology to places where field research has not yet ventured would be vastly beneficial for the discipline. Australia and New Zealand, reflecting their settler heritage, are exemplars of global historical archaeology, represented by a sizable literature covering a number of time periods and themes. In contrast, the presence of untested historical features in archaeological projects focused on the period prior to European contact in the Cook Islands (Walter 1998; Walter and Anderson 2002) and Mangareva (Conte and Kirch, eds. 2004) hint that regional historical archaeology has room to grow in Oceania. In addition to expanding the geographical scope, an emphasis on prolonged interethnic contact throughout the region, from Chinatowns and ports of call, to rural settlements, missions, and prison colonies would provide an opportunity to study the long-term effects of colonialism in all of their complexity. This study represents one way of expanding this frontier, involving both a more recent time period in the historical archaeology of Hawaii, and a different kind of site, given Kalaupapa's institutional context. Globalization of historical archaeology in terms of theoretical scope as well as field research has expanded the potential to examine culture contact

10 Though just what kind of power this was is debatable (see Sahlins 2004).

and colonialism as they occurred in many places. Ultimately, the utility of historical archaeology in Oceania lies in the propensity of islands for facilitating comparison (see Kirch 2000: 323-325) of the myriad ways that people dealt with their environment, colonialism, power, and the cultural world of things on a daily basis.

Chapter 3.

A Theoretical Framework for the Social Archaeology of Leprosaria

Introduction

Theories of time, material culture, landscape, and colonialism are integral bodies of thought that inform this study of the archaeology of the leprosarium at Kalawao. This chapter will explore material from the archaeology of institutions, leading to a framework for the social archaeology of leprosaria, in two parts. In the first part, I will explore some of the archaeological, historical, and theoretical approaches that people have taken to institutions as a class of social phenomena. I will begin by outlining a definition of the institution. The term institution to refers to any number of material manifestations of isolation and control, used by modern societies to deal with people who are seen as threatening, subversive, or otherwise unwanted. Included among the most commonly studied manifestations of the institution as defined here are prisons, almshouses, hospitals, and insane asylums. Following from this brief definition, I will turn to a brief outline of archaeological research on the institution, and some of the relevant themes in this literature. I will examine a possible division of total institutions based on the nature of the inmate population as "voluntary" versus "involuntary". Finally, I will briefly sketch out the ways that resistance permeates archaeological research on the institution, and consider the role that institutions play as cultural heritage sites.

Expanding from the archaeological literature, I will briefly address social theory that is pertinent to studies of the institution, notably that of Michel Foucault (1988, 1994, 1995). Focusing on the 19th century, but drawing from historical trajectories from before and after, I will then explore some local and global trends in emerging views of society and the social during an unprecedented period of growth for institutions. Particularly relevant in this case is the creation of theories and concepts of a social body, which were prevalent in Victorian England and elsewhere (e.g. Poovey 1995). I will argue that we must understand the ways that modern people viewed society as a whole in order to understand the proliferation of institutions socially and physically constructed around the isolation of people who were viewed as somehow not fully included within the society (see Bashford and Strange 2003). As mentioned throughout this study, the emergence of the modern world is tied to the development of a capitalist world-system economy and the rise of European colonialism (see Hall 2000; Wolf 1997). Thus the modern institution must be understood in terms of modernity, and I will include a section outlining the connections between labor, world-system capitalist economics, colonialism, and the institution.

In part two of this chapter, I will examine leprosaria as a sub-set of institutions which figure prominently in the historical and theoretical literature on the topic, if less so in the archaeological literature. The goal is to provide an in-depth view of the development of a specific kind of institution within the theoretical framework outlined in part one. I will begin by describing Hansen's disease (more commonly known as leprosy)[11] from a historical as well as

11 The implications of terms like "leprosy" remain somewhat controversial, because of the history of social stigma associated with the disease. It is generally agreed that the term "leper" is unacceptable. The bacterium that causes leprosy, *Mycobacterium leprae*, was discovered in 1873 by Dr. Gerhard Hansen (e.g. Greene 1985: xxv), and "Hansen's disease" is used as an alternative term to leprosy. I will use Hansen's disease here, referring to people with Hansen's disease, exiles, or inmates instead of lepers, except where an alternative term appears in a

clinical point of view. Hansen's disease is deeply misunderstood in both the historical and contemporary world, and this misunderstanding has contributed greatly to the development of the leprosarium. This section will draw from medical history (e.g. Buckingham 2002; Burns 2003), more recent medical texts (e.g. Britton and Lockwood 2004; Bullock 1989; Jacobson and Krahenbuhl 1999), and theories of disease, stigma, and isolation (e.g. Dovidio et al. 2000; Goffman 1963). I will also examine archaeological approaches to Hansen's disease, many of which focus on the skeletal remains of people who had the disease (e.g. Blau and Yagodin 2005; Blondiaux et al. 2002; Donoghue et al. 2002; Haas et al. 2002; Lee and Magilton 1989; Molto 2002; Roberts 2002; Schultz and Roberts 2002; Spigelman and Donoghue 2002). These approaches are valuable to the study of Hansen's disease in historical and social perspective. However, I will argue that a purely osteoarchaeological approach does not completely address the material of daily life for people with Hansen's disease, and the societies of which they were a part. This is especially important, as social structures surrounding Hansen's disease varied greatly, from the "leper guilds" of 16th and 17th century Germany (Schelberg 2000) to modern clinical settings such as Carville, Louisiana (Gaudet 2004). As a result, I seek to develop archaeological approaches to daily life for people with Hansen's disease. In the end, the background of this chapter informs what I see as a new direction for archaeologies of Hansen's disease, namely a theoretical and methodological approach for studying the social life of leprosaria over the long term. This approach will inform the interpretations made in subsequent chapters of the archaeological material recovered from Kalawao.

Defining the Institution

institution
1. a) The action or an act of instituting something; the fact of being instituted. b) *CHRISTIAN CHURCH*. The establishment of a sacrament, esp. the Eucharist, by Christ. Also, a passage (e.g. *this is my body, this is my blood*) of the prayer used in consecrating the Eucharist.
2. a) *CHRISTIAN CHURCH*. The appointment of a person to a cure of souls. b) *ROMAN AND CIVIL LAWS*. The appointment of an heir.
3. a)An established law, custom, or practice. b) A well-established or familiar practice or object (*colloq.*).
4. The giving of form or order to a thing; orderly arrangement; the established order by which a thing is regulated.
5. Training, instruction, education.
6. =**INSTITUTE**
7. A society or organization, *esp.* one founded for charitable or social purposes and freq. providing residential care; the building used by such a society or organization
(From the *Shorter Oxford English Dictionary*, Fifth ed.).

The *Oxford English Dictionary* definition shows the variety of meanings that the word "institution" holds in the English language. The goal is not to dwell too much on semantics, but to point out the association of institutions with law and lawfulness (def. 3), order (def. 4), and what are seen as higher social ideals (def. 7). Definition 7 is especially important, as it is

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direct quote or historical reference.

pertinent to archaeological studies of the institution, notably linking a charitable or social organization to a physical structure. Social scientists have also used the term institution in a variety of ways. Anthony Giddens suggests that:

> The most deeply embedded structural properties, implicated in the reproduction of societal totalities, I call *structural principles*. Those practices which have the greatest time-space extension within such totalities can be referred to as *institutions* (Giddens 1984: 17).

By this definition, institutions are like the "established law[s], custom[s], or practice[s]" of definition 3. They can be classed into institutional orders, depending upon the structure to which they are related, thus structures of domination are linked to political and economic institutions (Giddens 1984: 31). For Giddens, institutions are widespread phenomena that look like the manifestation of social structures (though he would probably argue that they were not exactly the manifestation of social structures), which are reproduced, created, transformed through, and comprised of people's daily practices or routines (see Bourdieu 1977 for a similar argument).

Contrast Giddens' definition of institution, which can be used to refer to any number of people, places, or things, with Goffman's description of the *total institution*:

> Their encompassing or total character is symbolized by the barrier to social intercourse with the outside and to departure that is often built right into the physical plant, such as locked doors, high walls, barbed wire, cliffs, water, forests, or moors (Goffman 1962: 4).

This definition, which was not meant to be "neat, exhaustive, nor of immediate analytical use" (Goffman 1962: 5), is nonetheless closer to the core focus of the archaeology of institutions. For Goffman, the total institution is constructed around the daily lives of the inmates, "a large managed group" and the staff, a smaller population who take on a more "supervisory" role (1962: 7). Notably, total institutions are marked by highly ritualized social relations that demarcate the social distance between inmates, staff, and the outside world, and these rituals are one way of understanding the experience of people involved in the life of an institution (Casella 2007: 71-75; Goffman 1962).

Lu Ann De Cunzo, in an overview of the historical archaeology of institutions, also uses Goffman's definition as a point of departure, making the archaeology of institutions "an archaeology of places":

> Places of reformation, surveillance, confinement, protection, control, ritual, punishment, resistance, inscription, segregation, labor, purification and discipline...almshouses, poorhouses, prisons, asylums, hospitals, and schools (De Cunzo 2006: 167).

The concept of place is integral to the landscape analysis later in this study (see Chapter 6), and I will follow this conceptualization of institutional places. The term institution encompasses a range of phenomena, even using a more limited definition. I will focus on total institutions for their spatial and temporal characteristics, and define institutions as *the material manifestation of modern attempts to organize, regiment, and control social life in terms of space and time* (see Foucault 1995: 144-152). This definition is useful for archaeologists, as our methods are highly

developed for dealing with those two aspects of social life, and fits with previous archaeological studies of total institutions.

Syntheses of the Archaeology of Institutions

The extensive literature on the archaeology of total institutions has warranted several synthetic works, which focus largely on 17th-20th century sites, primarily in Europe, North America, and Australia (Casella 2007; De Cunzo 2006; Gibb and Beisaw, eds. 2009). De Cunzo (2006) provides a useful thematic and topical overview for the archaeology of institutions, notably focusing on rituals of the body. Casella (2007) has written an extensive synthesis of the archaeology of institutions, focusing especially on confinement as a part of the American experience. From its origins in early modern Europe, Casella traces the development of penal institutions in the Americas, especially following the great enthusiasm with which Americans approached confinement from the Jacksonian era (1830s) through the present (2007: 15-26). Perhaps one of the most notable developments in American total institutions was the creation of two competing models of penality, the so-called "Auburn system", in which individual inmates were incarcerated in separate cells during the night, but worked silently in common areas during the day, and the "Philadelphia system", in which inmates were constantly isolated from the world, laboring, sleeping, eating, and exercising in solitary silence (Casella 2007: 28; Foucault 1995: 237-239; Garman 2005: 41-44).

Casella's work defines three approaches to the institution: 1) analyses of punishment, reform, and deterrence mechanisms, as well as domination and resistance, which spring from the other three; 2) interpretations of the embodied rituals of disciplinary life within the institution; and 3) conceptualization of power in terms of social relations, especially those created by exchange, which drives strategies of coping and survival among the institutionalized (2007: 58-81). These theoretical approaches can all be meaningfully linked to archaeological data, and indeed, some are best approached through archaeology. For example, in Garman's study of the Rhode Island State Penitentiary, "[a]rchaeology represents virtually the only way to experience the structure's internal configuration and to interpret the lives of the confined" (2005: 14).

The kinds of institutions studied by archaeologists vary widely, from sites associated with oppressive capitalist labor regimes (e.g. McGuire 2006; Mrozowski et al. 1989; Symonds and Casella 2006), to almshouses and other charitable institutions (e.g. Garman and Russo 1999; Piddock 2001; Spencer-Wood 2001), to prisons (e.g. Casella 2001, 2005; Garman 2005), arguably the ultimate extension of institutional power. In light of this diversity, it is worth noting Foucault's question: "Is it surprising that prisons resemble factories, schools, barracks, hospitals, which all resemble prisons?" (1995: 228). Yet there are subtle differences that should be teased apart when examining these structurally similar manifestations of power. One way of doing so is by distinguishing between "voluntary" total institutions, in contrast to the more involuntary institutions generally considered under the definition of total institutions (see below). Given this distinction, what does institutional power look like in these categories?

Archaeologists have suggested a number of ways for addressing institutional power. Power in the institution is manifested in a multiplicity of ways, from the generosity of middle class merchants in the almshouses of New York (Baugher 2001), to the expression of "a firm ideology of patriarchy and paternalism" (Garman and Russo 1999: 122) in a town farm in rural

Rhode Island, to state-sanctioned imprisonment of entire classes of people, whether Indians in "need of acculturation" at state-run boarding schools (Casella 2007: 127-133; Lindauer 1997) or Japanese-Americans who were seen as a security threat during World War II (Burton 1996; Casella 2007: 133-142). Through archaeological research, an understanding of the individual paths people would have followed in their daily encounters with the material world begins to emerge. These "hidden transcripts" (see Hall 2000) allow us to see into the world of the inmate, the staff, and the administrator, and to understand how the people from each of these groups created a social world in the total institution. It is vital for archaeologists to study the interior social life of the total institution, but just as important to begin to uncover their relations to the larger social world. For example, Rhode Island State Penitentiary inmates engaged with the production of fans to fund their own imprisonment, were also contributing to the regional capitalist economy of the 19th century American northeast (Garman 2005: 132-144), not to mention the construction of gendered identities for the consumers of those fans. This link between the total institution and the world outside is a key aspect of the archaeology of institutions.

"Voluntary" vs. Involuntary Institutions

Total institutions are socially and materially highly variable, as is the way that power is manifested and enacted in the institution. One way of addressing power in the institution is to examine the nature of the inmate population, specifically whether it is comprised of individuals incarcerated against their will (i.e. "involuntary" institutions), individuals who entered the institutions through their own choice (i.e. "voluntary" institutions), or if the population is somewhere in between. The nature of the entrance of the inmate population into the institution then has bearing on the interior and exterior social life of the institution, which should be reflected archaeologically.

The prototype of the involuntary institution is the prison. Archaeological studies of the prison include Casella's (1999, 2001) study of the Ross Factory women's prison in Tasmania, Garman's (2005) study of the Rhode Island State Penitentiary, and studies of the Louisiana State Penitentiary in Baton Rouge, Louisiana (Hahn and Wurtzburg 1991; Nobles 2000). In addition, Casella provides a brief account of contemporary "super-maximum" penitentiaries, which are essentially sensory isolation chambers, "in single-person pods of concrete and reinforced plastic" (2007: 81). Prison sites represent the most highly structured total institution containing a population that is almost entirely incarcerated against its will. They are marked by the highest, thickest walls, the most restrictive architecture, and the highest prevalence of technologies of discipline, such as shackles or bars. Yet the spaces of power in the prison are not as total as they would seem, as at the Ross Factory where conservative architecture actually enhanced the possibility for resistance (Casella 2001: 56, see below). In the Baton Rouge State Penitentiary, an apparently male space was also used for the incarceration of women and children, muddling the supposed clarity of its purpose (Nobles 2000). Finally, in the Rhode Island State Prison, daily life transformed the planned functional design of the penitentiary into a subverted landscape of rubbish, illicit communication, and corrupted monumentality (Garman 2005: 111-113).

In his study of labor in the Rhode Island penitentiary, Garman speculates that shoes

produced in the prison were purchased by South Carolina plantation owners: "Thus, a neat irony: shoes made by northern prisoners, funneled through one of Rhode Island's wealthiest merchants, to cover the feet of enslaved southerners" (2005: 132). Drawing from work on the Walnut Street Prison in Philadelphia (e.g. Cotter et al. 1988), Casella suggests that, "the everyday experience of noninstitutional agrarian enslavement may not have been materially dissimilar from that of penal incarceration" (2007: 87). Literature on the total institution may be relevant, then, to another population of individuals incarcerated against its will: enslaved Africans on plantations in the American South and the Caribbean. The archaeology of enslaved people in the New World has a rich literature of its own, which will not be addressed in depth here (Ferguson 1992; Wilkie and Farnsworth 2005 provide good examples of this kind of work). That said, it is interesting that archaeologists studying modern slavery tend to synthesize power and resistance (e.g. Singleton 1998) with creolization (Ferguson 1992), colonialism and identity (Wilkie and Farnsworth 2005), or community-based approaches (e.g. Kowal 2007). Leone (1995) synthesizes plantations and prisons in a critical Marxist framework, in examining landscape planning in colonial Maryland, including William Paca's garden in Annapolis (which would presumably have been maintained at least in part by African slaves), and the "panoptic" Central Jail of Baltimore. Regardless of theoretical preferences, it is clear that a space exists for constructive dialogue between archaeologists studying slavery, and archaeologists studying other populations in involuntary institutions, where attempts to solidify power relations materially tend to be most obvious, blunt, and elaborate.

Contrast prisons and plantations with more voluntary institutions, entered into as a personal choice of the inmate. One of the best archaeological studies of this type of institution is Gilchrist's (1994) work on medieval religious women. Unlike the high walls and cold bars of the prison, architecture in the medieval nunnery provided a different kind of confinement, one centered on notions of purity and sacredness. In nunneries, "it was more difficult to gain access to the nuns' cloisters from their surrounding precincts. The greater enclosure of religious women was guarded by a higher number of physical, as well as ideological barriers" (Gilchrist 1994: 166). Yet this enclosure is not interpreted as a manifestation of male dominance, nor any kind of dominant power. Rather, it is interpreted as a choice to arrange space in terms of "*habitus*", based upon upper-class dispositions, "an unconscious, practical logic of gender ordered materially through architecture and space" (Gilchrist 1994: 168).[12] Choices in spatial arrangement could also be echoed in choices of social organization for religious women, as in nunneries organized by households, "*familiae*", rather than along communal lines (Gilchrist 1994: 123). Finally, religious women in the medieval period had a wider variety of options in terms of their style of voluntary institutional life when compared with their male counterparts. They could choose between beguinages, informal communities; hospitals, where women could live a semi-religious life caring for the poor, sick, and elderly (including *leprosariae*); anchorages, where they could live solitary lives "attached to monastic or parish churches"; or hermitages, private, communal retreats (Gilchrist 1994: 170-186).

Above all, the voluntary total institution is interesting in terms of the choices available to the inmates. While the lives of individuals living in religious communities are subject to certain structural limitations, these limitations are imposed through a commitment to piety and the sacred, through a set of choices or dispositions, rather than through force. Another potentially

12 Gilchrist also uses this notion in her study of the lives of women in medieval castles (1999: 109-145), which arguably provide some of the seeds for disciplinary spaces in the modern institution.

interesting study of the voluntary institution comes from Wilkie's work on a University of California fraternity, especially in the analysis of architectural spaces in the house, arguably the material symbol of the fraternity (Wilkie 2009; see also Wilkie 2001: 113-116, 2006: 25-32). Notably, both of these voluntary institutions are segregated strictly along gender lines. Yet in both of these institutions, gender roles themselves were often enacted in terms of power, the power of religious women to keep men out of certain sacred spaces, and in the case of the fraternity, an assertion of imperiled white masculinity in the early 20th century.

As with any binary framework, many (if not most) institutions fall somewhere in between the extremes of voluntary and involuntary incarceration. For example, mental institutions or insane asylums could have an inmate population with individuals committed both voluntarily and involuntarily. Furthermore, a comparison of ideal architectural forms for this specific type of institution often revealed great discrepancies (Piddock 2007). Almshouses and asylums, among other charitable institutions, provide an excellent example of institutions "in between". The Destitute Asylum of Adelaide, Australia, planned as a workhouse for unemployed immigrants, wound up providing for the needs of a diverse population which was increasingly composed of the aged and ill (Piddock 2001). DeCunzo's (1995, 2001) study of the Magdalen Asylum of Philadelphia revealed an institution in flux, where a place of respite for young women, who often entered voluntarily to escape the pressures of the outside world, was transformed over time into a place where younger women were admitted to be "saved" from a life of antisocial behavior (in Victorian terms) before it was too late.

In the Albany Almshouse, inmates were entangled in an economic system structured, at least in part, by indigenous exchange systems, as represented by archaeological evidence for the production of wampum (Pena 2001). Archaeological research in the New York Municipal Almshouse suggested that inmates were engaged in clothing manufacture to instill a Protestant work ethic, while the architecture and landscape of the almshouse was meant to provide a monument to the charitable values of the middle and upper class (Baugher 2001). Like prisons, the goal of the almshouse and asylum was to transform the individual into a productive member of society, often through material means best approached archaeologically, whether in the products and by-products of inmate labor (Pena 2001; Baugher 2001), or in the refined earthenwares used to promote proper dining etiquette among the inmates at mealtime (e.g. DeCunzo 2001: 27, 29). As an attempt to materialize power, the total institution takes on a multiplicity of forms. Total institutions can be entered voluntarily, or inmates are incarcerated forcibly. Most of the time, the situation was somewhere in between, as with charitable institutions, where inmates could enter voluntarily as economic, emotional, or other needs dictated, *if* they submitted to the discipline awaiting them inside, or could be forcibly admitted because of inability to pay debts, for example. Archaeological work at many scales, from the landscape to the potsherd, provides a valuable way of assessing the variability of institutions as a cultural artifact, and institutional life as a social phenomenon. The framework presented above, classifying institutions as involuntary (e.g. prison), voluntary (e.g. nunnery), or "in between" (e.g. almshouse), is one of many possibilities, but, will be useful for understanding the varying degrees of social and material control over the lives of incarcerated individuals in modern societies.

Resistance and the Archaeology of Institutions

A vital aspect the archaeology of institutions, voluntary or not, is the ability of archaeologists to uncover the material traces of resistance. Total institutions are often contained within imposing structures, the accumulation of massive amounts of planning and labor (see Pratt 2003). One of archaeology's important contributions is to look within these imposing walls for the fragmentary remains of acts of resistance, such as the "olive-glass bottle fragments, kaolin clay tobacco pipes, British currency, and decorative buttons and beads recovered from both the crime class dormitory and the solitary cells" of the Ross Factory women's prison in Tasmania. Additionally, archaeologists approaching the material culture of institutions can see the ways that these institutional projects were unintentionally complicit in the resistant process, as at Ross Factory, where the trade in contraband was enhanced by the conservative architecture of the institution (Casella 2001: 56). For the Rhode Island State Penitentiary, Garman also identifies several strands of resistance, especially in his documentary work (2005: 25-28, 112-113, 170-175).

Resistance has, in some cases, been used as a catch-all term for archaeologists wanting to take a critical approach to studies of modernity, using the idea that, where there is power, there is resistance. However, the term must be used carefully, as it refers to a specific response to power relations, one of many possibilities. Teresa Singleton points out that, "Power relations involved not only control and resistance to that control, but also accommodation, alliance-building, negotiation, and many other factors" (1998: 181). Power does not exist as a simple set of binary oppositions as experienced by people during daily life (Casella 2007: 76). Rather, it is a phenomenon that exists in the interactions between people, which is defined and redefined in relationships that are being constantly structured within a larger cultural and historical environment. Archaeologists are especially aware of this, as material culture provides a medium for both domination and resistance, but also clearly defined and less explicit spatial and material sensibilities, often displaying many aspects of power simultaneously (Hall 2000; Singleton 1998: 182).

Institutions and Heritage

The relationship between the archaeology of institutions and heritage is another critical issue that merits exploration. Works by Casella in Australia and Ireland (Casella and Fredrickson 2004; Casella 2005), and Sand and his colleagues in New Caledonia (2005) provide important examples of the ways that archaeological studies of institutions are relevant to a larger audiences who see themselves as stakeholders of such places. Gorman (2007) has written about the connection between space-age rocket launch sites, imprisonment, and modern protest movements. Total institutions, especially prisons, were historically meant to present a message to the public about state power, especially to young people (Garman 2005: 102-110; Pratt 2003). As archaeologists study institutions, they uncover material remains from powerful places, often evoking emotional and politically meaningful responses in contemporary people. De Cunzo (2006: 185) suggests that, "archaeologists working at institutional sites must negotiate an emotion-laden terrain with compassion, outrage, and openness to their multilocality and multivocality in the past *and* in the present". Indeed, it is our constructions of the past in these

places through archaeology that can shape people's reactions to the total institution, and perhaps, the ways that total institutions are framed, created, and understood in the present and future by a wide audience.

Institutions, Power, and Social Structures

Archaeologists who study institutions often rely heavily on historical and theoretical literature in making interpretations about the lives of the institutionalized. Michel Foucault is among the most influential theorists of the institution in the social sciences. Three of his studies have influenced the field to such an extent that practically all historical and social scientific work on institutions makes reference to at least one, if only to critique Foucault's totalizing vision of power. These works are *Madness and Civilization: A History of Insanity in the Age of Reason* (orig. published in 1961), *The Birth of the Clinic: An Archaeology of Medical Perception* (orig. published 1963), and *Discipline and Punish: The Birth of the Prison* (orig. published in 1975). These are, essentially, historical studies, focused mostly on Western Europe and, to a lesser extent, North America from the 17th to the 19th century, where Foucault traces the origins of modern disciplinary power, through the insane asylum, the medical clinic, and finally, the prison. Relevant to this study, both *Madness and Civilization* and *Discipline and Punish* utilize leprosy as a symbol for exclusion and exile, though in different contexts. In *Discipline and Punish*, Foucault contrasts the image of the plague, representing confusion and disorder, which must be transformed and ordered by disciplinary projects, with the image of leprosy and its sufferers, which "underlies projects of exclusion" (1995: 199). In *Madness and Civilization*, he chooses to focus on the persistence of "the values and images attached to the figure of the leper as well as the meaning of his exclusion, the social importance of that insistent and fearful figure which was not driven off without first being inscribed within a sacred circle" (1988: 6). In both cases, Hansen's disease and its apparent sufferers are used as a metaphor for confinement and subjection to institutional power, which is relevant for the second part of this chapter.

Foucault traces the development of modern power structures through the growth of institutions in the modern period. Foucault's emphasis on power and the body is especially important in this context, following the observation that, "the archaeology of the institution is also the archaeology of the body" (De Cunzo 2006: 170). Institutional power, whether medical, psychological, or penal, is focused on knowledge, the institutional gaze which provided, "the forbidden, imminent secret: the knowledge of the individual" (Foucault 1994: 170). Surveillance is a critical aspect of social relations in the total institution[13] (Goffman 1962: 7). The ideal material embodiment of institutional power in Foucault's analysis was the panopticon, "a privileged place for experiments on men, and for analysing with complete certainty the transformations that may be obtained from them" (Foucault 1995: 204). The panopticon (upon which the Philadelphia system of incarceration was based; see above) was the vision of Jeremy Bentham, a Victorian idealist and utilitarian thinker (see Newsome 1997: 51-58), and was designed with the sole purpose of "the physical and psychological subjugation of its inhabitants" (Casella 2007: 19). The panopticon was the ultimate locus of disciplinary power, which

13 Indeed, Foucault uses the title *Surveiller et Punir* for his original work in French, suggesting *Discipline and Punish* as the closest translation in English, if somewhat imprecise (see Translator's Note from Alan Sheridan in Foucault 1995).

Foucault sees in this way: "The perpetual penality that traverses all points and supervises every instant in the disciplinary institutions compares, differentiates, hierarchizes, homogenizes, excludes. In short, it *normalizes*" (1995: 183, emphasis in original). Thus normalizing power, as embodied by the total institutions, becomes one of the theoretical frameworks available to archaeologists and other social scientists

Most scholars working with institutions cite Foucault as a starting point. However, Foucault's emphasis on the power of institutions to oversee and normalize human behavior is generally thought to be overstated. The panopticon, discipline, the medical gaze, and other such structures are reified in Foucault's analysis of the institution in ways that leave little room for human agency, and even less for resistance. Yet one of the common characteristics of the archaeology of institutions is precisely direct, material evidence for resistance (see above; Casella 1999, 2001; De Cunzo 2006; Garman 2005). Thus scholars must turn elsewhere. Many cite the work of practice theorists, notably Giddens (e.g. 1984) or Bourdieu (e.g. 1977), which emphasizes the importance of the daily practices of individuals for creating power relations in the world.

Giddens' structuration theory is an attempt to understand society as a process. Structuration is meant to be a way to move beyond the phenomenological or hermeneutic focus on subjective experiences, while also avoiding the rigid, atemporal approach of the structuralists and post-structuralists (Giddens 1984: 1-2). It is a way of including dynamism and change in studies of society. Giddens tries to create a space for agency in which individual actors can create and transform social structures by their daily routines, while these routines are simultaneously the product of the existing, if continually transforming structures (1984: 19-23). For Giddens, power is an inherent component of human interaction, and thus part of the process of structuration (1984: 32).

Bourdieu similarly creates a model for society based in the *habitus*, a set of individual dispositions constructed by and constitutive of social structures, which pattern daily practices (1977: 81-87). Particularly relevant for the study of total institutions is the concept of *doxa*, the "taken for granted" system of social structures which match the observable social world such that, "the established cosmological and political order is perceived not as arbitrary, i.e. as one possible order among others, but as a self-evident and natural order which goes without saying and therefore goes unquestioned" (Bourdieu 1977: 166). If this concept is expressed in a spatial model, in which *doxa* surround their polar opposite, opinion, in which the arbitrariness of social order is clear (Bourdieu 1977: 168), then power relations can be addressed directly. Following Bourdieu:

> The dominated classes have an interest in pushing back the limits of *doxa* and exposing the arbitrariness of the taken for granted; the dominant classes have an interest in defending the integrity of doxa or, short of this, of establishing in its place the necessarily imperfect substitute, *orthodoxy* (1977: 169).

Bourdieu's theory of practice thus not only provides a model for power, but a motivation for resistance. Resistance challenges the existing symbolic structures which constitute the social system. The social system is created by people's everyday actions, which are formed by the *habitus*. Resistance in the form of changes to everyday actions in turn creates changes in the social system to conform to the aggregation of people's individual motivations and dispositions.

Allan Pred joins Bourdieu and Giddens among scholars who try to address the

relationship between individuals, daily life, and social structures by drawing links between the latter two (Pred 1984, 1990). I prefer Pred's formulation of practice as the most explicit means of addressing human behavior and social structures directly:

> Social structures, however defined, are grounded in temporally and geographically specific human activities and discourses, are produced, reproduced, and transformed by knowledgeable, capable human agents practicing in place, by embodied women and men uninterruptedly tracing out paths in time-space from their moments of birth to their moments of death (1990: 12).

Most important to my understanding of the enactment of power are these individual "paths" which people trace during the course of daily life. These paths are structured by institutional projects, imagined, planned, and executed by groups and individuals, tracing paths which sediment and perpetuate the existence of these institutions (Pred 1990: 16). In Pred's formulation, institutional power *is* individual power, as institutional projects require individual action within structured paths, manifested as a spatializing of human behavior (Foucault would call it "normalizing" [1995: 183]). In the total institution (after Goffman 1962; see above), paths will be more heavily determined for individuals than for mainstream society, but the structure of the paths is by no means unbendable, which is why there is space for resistance. It is this spatial view of power, explicitly created and constituted by the paths that people choose to follow in their daily lives, that I use in addressing the total institution. Foucault's vision of the institution provides a useful framework, but it is just that. Literally a model, composed of visions of the world that must be filled in through institutional projects as enacted by individuals (and which can be struggled over, see Pred 1990: 29-30). Pred's version of practice theory provides a way to understand the negotiation of daily life within these visions, these institutions which "are always in a state of becoming" (Pred 1990: 30) through the paths traced within them.

Institutions and the Social Body

The theoretical framework established above needs to be connected with the historical developments surrounding the growth of the institution in the 19th century. We can imagine concepts of power, institutional projects and individual paths, but they will remain formless until infused with the material of historical reality. The origins of the modern total institution are arguably found in the 17th century Dutch *rasphouse* or *rasphuis*, where individuals unable or unwilling to participate in modern capitalist society were forced to do manual labor, sawing brazil wood into powder for pigments (Garman 2005: 31-44; Spierenburg 1987). The *rasphuis* was part of a larger movement sometimes referred to as the "great confinement", an explosion of institutions meant to impose order based upon a synthesis of economic, civil, and moral ideals (Foucault 1988: 38-64). Yet the existence of these institutions has its roots in much older Western concepts of law and order, materialized in the Classical world (e.g. Boegehold et al. 1995; Stambaugh 1988: 101-122), rediscovered and reinterpreted during the Renaissance, and solidified during the social and intellectual movement known as the Enlightenment. Particularly, Foucault notes that, "[t]he Enlightenment, which discovered the liberties, also invented the disciplines" (1995: 222). It is this era that saw the invention of Bentham's panopticon, as

described above. The disciplines discovered society and concepts of the social, and this new knowledge was used, following the "great confinement", for unprecedented projects of control.

The real growth of disciplinary power emerges after the initial period of the great confinement. Historically, sanitary projects, imprisonment, and discipline as institutional projects followed the growth of imagery of a "social body" and other models for society, in the 19th century, especially Victorian England (Poovey 1995: 40-41). Note that the concept of the social body emerges at a time of increasing industrialization, wealth, and global reach in the western world (see Newsome 1997; Schlereth 1991). With the growth of capitalism, the dominant classes developed a marked interest in "utility", which apparently meant happiness, and from this interest grew some of the more bizarre contraptions of the age, such as, for example, Bentham's *Panopticon* (Newsome 1997: 51-53). In a world in which space-time was being compressed by "the potentially calamitous effect of ever-increasing speed" in travel and communication (Newsome 1997: 36-37), and in which people, and thus labor, were increasingly mobile (Schlereth 1991: 16), it made sense for the capitalists to create projects and institutions meant to keep the social body whole.

According to Mary Poovey (1995: 37), "The image of the social body was one of the two principle images used to depict society in the 1830s. The other was the figure of the social machine". The ideal of society, "as a giant body that required a physician's care" (Poovey 1995: 37) provided the origins of the sanitary movement. If society was to be seen as an organism to be taken care of, than an ethic of striving for and upholding the morals of health and cleanliness would follow. Health and cleanliness then became social ideals, often involving an entanglement of biological and moral precepts created by the middle and upper class. Specifically, social health was often tied to an emerging concept of progress, the ideal and incomparable value, "of national development out of the mists of barbarism towards the ideal of civilization" (Gilbert 2004: 28). The space created by the ideal of the social body provided little room for that which was deemed unhealthy. Hence those members of society who were isolated; the sick, the criminal, the insane, can be classed as the "pathologized subject" suggested by Foucault (1995: 277).

For the social body to be kept whole, it needed to be kept sanitized. Poovey (1995) and Gilbert (2004) have concerned themselves with 19th century sanitary projects in urban Britain as they relate to the concept of the social body. Gilbert's work is concerned primarily with sanitary maps, and thus the imposition of rational, Cartesian order on what was perceived as disordered urban space (2004: 5-7). Importantly, this Victorian cholera mapping project was multiscalar, mapping cholera onto small-scale domestic as well as large-scale urban spaces (Gilbert 2004: 49). Mapping projects were an important part of the Victorian world, a way of modelling, and thus controlling individual paths. With sanitary projects, this became highly important, as one could find the unhealthy portions of the social body, the sources of disease, crime, and poverty, all of which were linked in the Victorian world view, and deal with them appropriately, given that a healthy social body was composed of healthy, moral members who did what they were supposed to (Poovey 1995; Newsome 1997: 39-49). It was in this environment that the institution grew, and this historical background should be connected to local manifestations of larger trends in Western thought, as well as synthesized with social theory when attempting to understand the social life of an institution.

Institutions, Colonialism, and Global Capitalism

The link between institutions and the need to control the labor force was suggested in the preceding section, as labor was a major concern of the creators of the social body. Most of the early institutions were essentially designed to reform the errant laborer, or to contain those incapable of performing labor for whatever reason. This comes through in Foucault (especially 1995), and in many other works concerning the institution (e.g. Garman 2005). However, the success of capitalism required the establishment and domination of new markets, and the systematic exploitation of labor (Wolf 1997). What form did institutional projects take when placed on this global scale?

In one sense, European economic and territorial expansion after AD 1400, commonly placed under the umbrella term colonialism, can be seen in its own right as an institutional project (following Pred 1990), albeit a far-reaching and multifaceted one. One interesting result of this is the development of a floating institution revolving around maritime discipline, which was perhaps best expressed in the British Royal Navy (see Dening 1992). Another is the application of cholera mapping projects, and the development of a sense of "public health" in colonial India under British rule (Buckingham 2002; Gilbert 2004). Spierenburg provides an important argument about the relationship between violence and the state during the early period of globalization, outlining the growth of the Dutch *rasphuis*, which was not exported to New Amsterdam (now New York City) in the 17th century, leaving the development of total institutions in colonial North America for the 19th century (1987).

During British Imperial rule of India, the Andaman Islands served as a place of exclusion for Indian people. Interestingly, the British believed that in Indian cosmology, "the journey across the ocean ('black water' or *kala pani*) threatened convicts with loss of caste and hence social exclusion" (Anderson 2003: 40). Indeed, caste appeared to have a powerful impact upon life of the penal institution in the Andaman Islands, though the historical development of incarceration reveals a complex set of beliefs that shaped daily life for prisoners in the islands. Interestingly, one of the primary narratives to emerge in contemporary histories of the Andaman Islands as prison site is that of colonial-era struggle, as the prison set up by the British in the islands was "the Indian Bastille", home to "freedom fighters" who suffered under Imperial rule (Anderson 2003: 48). Robben Island, famous as Nelson Mandela's 20th century prison, was also the place of a rich, complex institutional history (Deacon 2003), featuring similarly in the popular imagination of contemporary South Africans. The Songhees reserve in British Columbia provides a different context, one in which Euro-Canadian settlers engaged in "the forced exclusion and confinement of Native communities", reconciling the contradiction of such practices with liberal ideology "through the legitimacy of law" (Mawani 2003: 187). In this last case, the only crime of which the Songhees were guilty was the crime of not being white, thus legal language was a mask for institutionalized racism. The case studies mentioned above represent the variety of ways in which the Western institution was exported to the wider world. Connected by narratives of power, they are manifestations of "locality-the constitution of the global in the local, [containing] the relationship between widely held world-views and individual action" in colonial contexts (Hall 2000: 197).

Hansen's Disease in Historical and Epidemiological Perspective

Historical and medical approaches to Hansen's disease critically inform the framework for a social archaeology of leprosaria. Hansen's disease is one of history's most misunderstood and feared diseases. No other historically known disease evoked such a variety of theories as to its causes, such a plethora of proposed cures, or such a variety of institutions meant to isolate the sick (see Brody 1984; Buckingham 2002; Roberts et al. 2002, eds.; Tabuteau, ed. 2002). Foucault (1988: 1-7) deals with the disease in the opening chapter of *Madness and Civilization*, outlining the basic imagery of isolation, exclusion from social life, and stigma, which he sees as transferred to other projects of exclusion by the 17th century. Mary Douglas (1991) has connected the disease to witchcraft in a similar manner. Historian Sheldon Watts contrasts three possible conceptions of leprosy along a possible spectrum:

> leprosy as *moral* impurity moving on to leprosy as imagined disease (a Construct, but in official perceptions, requiring *no* police action);
> leprosy as the full Construct and call to action by accusers and magistrates: this led to the imprisonment of "lepers" in lazar houses;
> leprosy as Hansen's disease, i.e., clinically true leprosy (1997: 41).

Thus reactions to this disease vary, and construct leprosy, a tool of social categorization and control can be contrasted with Hansen's disease as a biological condition.

There is some debate as to how Hansen's disease originated and spread throughout the world. The earliest known written reference to the disease comes from "the Sushruta Samhita, an Indian document from the period around 600BC" (Roberts and Manchester 1995: 145). From South or East Asia, the disease is believed to have spread to the Mediterranean during or immediately following the conquests of Alexander the Great, based on a combination of documentary and skeletal evidence (Mark 2002; Roberts and Manchester 1995: 146). From there, the disease spread to mainland Europe, where it developed many of the ideological associations that would result in the perceived need for institutionalization of people with Hansen's disease in the modern period.

During the medieval period, Hansen's disease was seen as the manifestation of moral impurity, following Biblical implications (Brody 1984), and this view continues to influence Western understandings of the disease through the present. Medieval understandings of leprosy came from the Book of Leviticus, which had passages such as this one:

> Now whosoever shall be defiled with the leprosy, and is separated by the judgment of the priest, shall have his clothes hanging loose, his head bare, his mouth covered with a cloth, and he shall cry out that he is defiled and unclean. All the time that he is a leper and unclean, he shall dwell alone without the camp (Leviticus 13:44-46).

Yet the morally based understanding of leprosy is now understood to be related to various mistranslations and confusions between the Hebrew term *ṣāra'at* or *tsara' ath*, which referred to a state of ritual impurity, the Arabic *judham*, which appears to refer to biological Hansen's disease, and the Latin *lepra*, from the Greek word for "scaly", which was used in some medical texts to refer to various skin diseases, possibly including scabies, psoriasis, and Hansen's disease,

with serious undertones of moral judgment (Mitchell 2000; Zias 1989). Medieval literature often associates the appearance of leprosy with sin, whether marital infidelity, spiritual infidelity, lust, or pride, drawing from the Judeo-Christian biblical traditions (and mistranslations) cited above (Brody 1984: 147-197).

One result of this is a modern mythology of the medieval "leper", sitting alone outside the town wall with clapper and alms cup. While such people were certainly to be found in medieval society, this view partly masks the reality and variety of social life among people with Hansen's disease in the medieval and early modern period. A group of scholars working in Europe has attempted to address this issue by examining varying trends in "sociability" for Hansen's disease sufferers from the 12th to 17th centuries (e.g. De Keyzer 2000; Jankrift 2000; Jeanne 2000; Schelberg 2000; Thévenin 2000). This is an important step in revealing the voices of the subaltern in studies of Hansen's disease, and early modern history in general. Sufferers of Hansen's disease in the medieval world experienced a variety of circumstances, ranging from guild membership in 16th and 17th century Germany (Schelberg 2000) to more typical, ritualized ascetic life in a monastic institution (De Keyzer 2000).

Foucault notes that construct leprosy ceases to be a social imperative in Western Europe by the 17th century (1988: 6-7). However, during the period of colonial and imperial expansion that followed, the disease reappeared, both in places such as India, where it had persisted from ancient times (Buckingham 2002), and elsewhere in the colonized world, where the disease spread among native populations with no natural immunity. A compilation of 19th and 20th century leprosaria based on the International Leprosy Association's "Global Project on the History of Leprosy" shows a geographic distribution heavily skewed away from Europe to the colonized world, especially India and Brazil.[14] The British in India "possessed a greater revulsion for the disease than did the Indian population", and thus took a more drastic approach to attempting to contain and control its spread (Buckingham 2002: 28). Historian Jane Buckingham's study of Hansen's disease in South India during British rule is notable for several reasons. She explicitly uses the concept of institution in her approach, in determining whether Hansen's disease sufferers were patients, prisoners, or both (Buckingham 2002: 36-60). Buckingham also outlines the interaction between indigenous and British medical knowledge (2002: 7-35, 61-106), which is pertinent to the discussion of institutions and colonialism above. Finally, Buckingham provides a detailed (if graphic at times) description of the manifestations and causes of Hansen's disease as understood in the 19th century, both by British and indigenous Indian medical specialists (2002: 7-35).

Contemporary understandings of Hansen's disease have vastly improved over the humoral theories of the 19th century, though there is still a good deal of debate over certain characteristics of the disease. Hansen's disease is caused by a bacterium (*Mycobacterium leprae*), which was isolated by Dr. Gerhard Hansen, a Norwegian, in 1873 (Greene 1985: xxv). There was long-standing debate about the causes of Hansen's disease, ranging from a claim that leprosy was the fourth stage of syphilis, an echo of medieval Construct leprosy, to hereditary

14 India and Brazil continued to have the highest populations of people with Hansen's disease until very recently. As of the end of 2005, the only countries that have yet to reach the World Health Organization's goal of elimination (defined as less than one case per 10000) were Brazil, the Democratic Republic of the Congo, Madagascar, Mozambique, Nepal, and Tanzania (http://www.who.int/lep/situation/BurdenEnd2005.pdf). That said, some debate remains as to the relationship of elimination to total eradication of the disease, which some suggest should be a goal (Britton and Lockwood 2004: 1216; Jacobson and Krahenbuhl 1999).

transmission, to transmission through contact with open sores.[15] Recent research suggests that the disease is spread through sputum (mucus and saliva), where the highest concentrations of *Mycobacterium leprae* appear in clinical samples. Interestingly, skin tissue samples often contain relatively low amounts of *Mycobacterium leprae*, belying the myth that Hansen's disease is a "flesh eating" disease. Hansen's disease attacks the nervous tissue. It is manifested in a number of possible ways, depending upon the immune response of the individual, and it initially ranges from natural immunity, to the appearance of one or several small antiseptic lesions. The two most easily recognized clinical forms of Hansen's disease are tuberculoid, which can result in rapid nerve damage and death, and lepromatous, the most visible form, which is a chronic condition associated with long-term symptoms, including the swelling of the extremities and facial area, where nervous tissue is most highly concentrated, sometimes resulting in severe physical disfigurement and disability. People with Hansen's disease often suffer from a number of secondary conditions and complications, especially because the disease results in loss of feeling, particularly on the hands and feet, which are prone to injury in daily life. Since the 1940s, antibiotics such as dapsone, and more recently multi-drug therapy (MDT) to combat dapsone-resistant strands of *Mycobacterium leprae* have been widely available, resulting in a dramatic global decrease in the prevalence of Hansen's disease (see Britton and Lockwood 2004; Bullock 1989; Jacobson and Krahenbuhl 1999 for contemporary clinical overviews of Hansen's disease).

A historical understanding of Hansen's disease, both in terms of broad trends and local beliefs is vital to understanding the contexts in which Hansen's disease institutions were established and the environments in which they operated. An understanding of the biology of the disease is equally important, because it provides some insight into the ways that the clinical symptoms of the disease would have affected daily life for people suffering from Hansen's disease. These two kinds of understanding enrich the numbers of ways that archaeologists can approach Hansen's disease institutions as places of isolation.

Potential Futures for the Archaeology of Hansen's Disease

In archaeological approaches to Hansen's disease, the literature suggests that the pursuit has been almost entirely concerned with the physical aspects of the disease as expressed in human bones (e.g. Blau and Yagodin 2005; Blondiaux et al. 2002; Donoghue et al. 2002; Haas et al. 2002; Lee and Magilton 1989; Molto 2002; Roberts 2002; Roberts and Manchester 1995: 142-150; Schultz and Roberts 2002; Spigelman and Donoghue 2002). Chronic Hansen's disease can leave definitive skeletal evidence that often provides interesting insights into the past, as with potential evidence for prehistoric Hansen's disease in Micronesia (Trembly 2002). However, the emphasis on skeletal remains need not be the exclusive focus of the archaeology of people with leprosy, notably where there are political or ethical issues preventing or limiting the

15 Hansen's disease is closely related to another chronic illness that figured prominently in the imagination of 19th century Westerners, tuberculosis, caused by the microbial agent *Mycobacterium tuberculosis*. There is some suggestion that individuals exposed to tuberculosis develop some immunity to leprosy, but not vice versa (Roberts and Manchester 1995: 149-150). Interestingly, both of these diseases were institutionalized in the 19th century (Bashford 2003; Buckingham 2002), and could provide interesting comparative cases for modern cultural responses to chronic disease.

archaeological study of human remains, as is the case in Hawaii. An archaeology of social life for Hansen's disease sufferers could be extremely rich and valuable. Historical studies provide some hints for places where archaeology could be interesting. For example, did the "leper guilds" of 16th and 17th century Germany (Schelberg 2000) solidify their common identity through material culture? In what way? How does this compare with the ways that other groups of people with Hansen's disease used material culture? We know that patients with Hansen's disease in Panama and the Philippines had special coins that they used for economic transactions (Goldman 1955). Did such coins exist elsewhere historically? What other kinds of material culture specific to Hansen's disease patients can we find, and what meanings can be traced from them?

Spatio-social aspects of Hansen's disease institutions are similarly hinted at in the leprosarium at Saint-Lazare de Falaise, especially in light of bodily rituals (Jeanne 2000), and archaeological exploration of such places would be warranted and potentially very valuable. Archaeology as a discipline is notable for its emphasis on space and time as expressed through the material world, and total institutions like leprosaria are notably spatial and temporal phenomena. Where leprosaria such as those at Chichester in England are simply marked on a map (Magilton 2000: 90), archaeology provides a unique way to examine the inner spaces of these places of isolation, whether ancient, medieval, or modern. Importantly, the study of space and place in the leprosarium can help us to understand the individual paths traced by all the people involved with the project of isolation, exclusion, or stigmatization of people with Hansen's disease, reconnecting the study with the theoretical framework established in part one.

The Spatial Analysis of Power

The archaeology of an institution can be approached as a "spatial analysis of power"[16], both the power of institutional projects to structure people's daily lives, and the power of individuals to work within the institution's demands, or to resist, and follow their own paths. Spatial analysis applies both to landscape and architectural analyses, and analyses of the complex spatial and symbolic networks of material culture that existed within larger spatial frameworks, both global and local. Because of archaeology's ability to grasp space and time through the methods we use, notably mapping and excavation, an explicitly spatial approach to the material and social life of an institution can advance the study of power and social space in archaeology and other social sciences. A focus on Hansen's disease can help contribute to the development of concepts of isolation, disease, and sociability (Tabuteau 2000). Archaeological research into the total institution is consistently marked by surprises, artifacts that appear in contexts that would be inappropriate according to documentary or oral accounts, providing evidence for practices that people don't think about, or don't want to record. When the spaces of archaeological mapping and excavation are infused with a temporal element, movement of people and objects in the landscape, it is possible to model the distribution of power within the landscape, and to understand these models as holistic models of place. Ultimately, the goal of this study is the construction of an archaeological place model of the daily life of the leprosarium

16 I have come across this phrase in the context of French economic geography, "Analyse spatiale du pouvoir du vote", but it seems to be used in the context of contemporary politics, game theory, and ideology (Barthélémy and Martin 2006). I think it's something very different than what I'm proposing here.

at Kalawao during the late-19th and early-20th centuries.

Material evidence provides valuable insights into the daily lives of the inmates of the leprosarium, and the rich material and social worlds in which they participated, from medieval and early modern Europe (Tabuteau, ed. 2000), to Carville, Louisiana (Gaudet 2004), to Yu-no-zawa, Japan (Burns 2003). By studying the ways in which societies reacted to Hansen's disease (i.e. institutional control or other mechanisms) across time and space, and trying to understand the ways in which people with Hansen's disease dealt with their social situation (resistance, complicity, or the creation of new social organizations such as guilds), we can gain a valuable perspective on the lives of stigmatized individuals in our own society. These perspectives can have critical impacts on public policy and social relations in a society that is increasingly forced to face the ambiguities and contradictions that permeate the modern world, as manifested in our continued reliance upon the total institution to remove and keep separate those who "don't belong".

Chapter 4.

Landscape Histories and Island Archaeology: Case Studies from Hawaii

Introduction

Two strands of archaeology, commonly referred to as "landscape archaeology" and "settlement pattern archaeology" (Sherratt 1996) were vitally important to the development of the discipline in the Pacific Islands (see Graves and Ladefoged 2002 for a general overview; also Kirch 1985: 247-283, 2000: 32-34). While my archaeological project in Kalawao was focused on historical archaeology, the methodology followed closely the patterns of classic settlement pattern surveys in the Hawaiian Islands (Green 1980, Ladefoged et al. 1987, Weisler and Kirch 1985). This type of survey is tied to a landscape approach that provides the theoretical links between analyses of institutional spaces as outlined in the previous chapter, and the archaeological materials that will be discussed in Chapter 6. The goal in this chapter is to outline concepts of island archaeology and settlement pattern archaeology that are informative for understanding the historical dynamics of settlement patterns and landscapes in Kalawao.

The concept of landscape is useful for understandings of social life among island cultures. Archaeologists and anthropologists have approached this topic in many ways, ranging from the application of biogeographic approaches (Kirch 1994), to the use of concepts such as "islandscapes" (Broodbank 2002), to a call for an archaeology of "maritime identity" (Boomert and Bright 2007). These theoretical concepts are important in terms of the ways that archaeologists conceptualize landscapes in Oceania. The refinement of these theories is dependent upon the ability of archaeologists to understand the histories of different landscapes in the Pacific sea of islands. One of the keys to interpreting these histories lies in the ability to determine what kinds of landscape changes occurred before and after initial periods of European contact, which ranged temporally from the early 16th century in the Western Pacific, to the late-18th century in Hawaii, the last major group to be discovered by European explorers (Beaglehole 1966).

Landscapes of first contact provide a starting point for understanding the landscapes of the terminal pre-contact period. Trajectories of long-term landscape change on various islands and island groups can be reconstructed by working backwards from evidence for contact-period landscape change, to the initial moments of human colonization. Landscapes of contact also provide a boundary for documenting the transformations that occurred after European contact among indigenous Oceanic cultures throughout the Pacific, processes that continue through the present. The intrusion of European people in the Pacific could have lasting effects on island biota, ranging from the introduction of new plant species after only brief moments of contact (Yen 1973), to wholesale transformation of island environments under processes of ecological imperialism (Crosby 1986). In addition, European contact was often disastrous for indigenous populations in the Pacific, as European diseases often led to major demographic collapse (Kirch and Rallu, eds. 2007; Stannard 1989), which in turn may be linked directly to changes in the settlement pattern of an island or island group (Sweeney 1992). Disentangling the different processes of landscape change before and after European contact can be crucial to interpreting island histories, and to developing theories of the conceptualizations of land and sea for island people. Hawaii provides a number of useful case studies that may elucidate the methodological

and theoretical applications of such a landscape history approach.

Conceptualizing Landscapes in the Pacific

Archaeologists conceptualize landscapes in many ways, typically using a combination of cultural and biological factors. As Gosden and Webb note, "The landscape is the point at which natural and cultural forces meet" (1994: 30). This definition if taken in isolation masks the historical nature of landscapes, which are the result of a *longue durée* (Braudel 1980) of biological and cultural development. Rather than being the manifestation of a meeting of natural and cultural forces at one particular point in time, landscapes are accumulations of a series of continuous intersections and interactions throughout history. Landscapes can be thought of as palimpsests, "documents" that have been written and rewritten through the interaction of human agency and biogeographical systems over time. Because of this documentary aspect of landscapes, archaeologists interested in cultural life can attempt to unravel the landscapes they study, beginning with the present and working through a series of transformations in reconstructing the life of the landscape over time.

In applying this set of ideas to the Pacific Islands, it is worth mentioning some of the unique developments in island archaeology, as they can be applied to Oceania as a region. In a recent critique, Boomert and Bright (2007) have suggested that the concept of island archaeology is problematic, as it rests on an (often unstated) assumption that there is an intrinsic difference between islanders and island societies, and continental people and societies. Unfortunately, the literature review provided in that article belies the problem in that line of reasoning, as archaeologists supporting the utility of an "island archaeology" (e.g. Broodbank 2002; Fitzpatrick and Erlandson 2006, 2007) consistently note that it is the islands themselves that make the sub-discipline vital, not any inherent difference between islanders and continental people. Boomert and Bright's proposed alternative, an archaeology of "maritime identity" is poorly defined, lacks any substantive backing (i.e. data) as a useful concept for understanding island and coastal societies, and isn't clearly different from existing island archaeology paradigms.

In contrast, the concept of the islandscape (Broodbank 2002) that was developed for island archaeology is quite useful when studying landscape change in Oceania. This concept takes into account "the diversity of ways in which islanders perceive land and sea, together with the physical diversity of islands themselves" (Broodbank 2002: 22). In islandscapes, the sea must be taken to be as important as the land when thinking on a landscape scale (Broodbank 2002: 34). In addition, islands as geographically bounded (*not* completely isolated or closed) entities provide some unique cultural developments in terms of the ways that people relate to land.[17] Working in Micronesia, Rainbird (2004: 53) has cautioned against the interpretations of "continent-centric scholars who, unaware of the sailing skills of islanders, regard the islands [of Micronesia] as isolated dots in the Pacific, rather than viewing their world as a mapped 'sea of islands'". The Pacific Ocean can be viewed as both a barrier and a thoroughfare for island peoples (Lape 2003). Thus the pre-Lapita settlers of Near Oceania were limited by their maritime technology in settling new lands, while Austronesian-speaking Lapita people, the

17 It will be argued later (Chapter 6) that it was the bounded nature of Kalaupapa that led to the choice to use the peninsula as a place of quarantine.

ancestors of Oceanic cultures, were able to settle much of Remote Oceania in rapid fashion because of their technology, and probably their cultural beliefs (Kirch 2000: 63-116). In studying the landscape histories of the Pacific sea of islands, it is worth noting that there is something different about island biological and cultural geography when compared to continents, though precisely *what* is different will vary from island to island. As a result, the concept of islandscapes is a useful one in developing understandings of cultural life on different islands and island groups throughout Oceania. The case studies from Hawaii which follow will elaborate on this concept, especially in terms of the different kinds of landscape transformations that occurred before and after European contact.

Hawaii as a Natural Setting for Human Occupation

Hawaii, which will be the setting of the case studies below (Fig. 4.1), consists of a chain of high islands at the north of the "Polynesian Triangle", which stretches to Rapa Nui (Easter Island) in the southeast and Aotearoa (New Zealand) in the southwest. The Hawaiian chain contains eight main islands, each over 100 km^2 in area, beginning with Hawai‘i, the largest island in the archipelago, in the southeast and stretching through Maui, Kaho‘olawe, Moloka‘i, Lana‘i, O‘ahu, and Kaua‘i to Ni‘ihau in the northwest. Geologically, island age increases from Hawai‘i, which is still a site of active volcanism, to Kaua‘i and Ni‘ihau, which are over 5 million years old. Erosion and the creation of deep valleys increase towards the oldest islands. The islands feature a sub-tropical climate, ranging in latitude from about 19 to 22ºN. They are subjected to a rainfall gradient, with marked leeward (dry) and windward (wet) sides separated by mountain peaks, resulting from the dominant trade winds, which originate from the north and east for most of the year. The islands are home to over 12000 endemic species of plants and animals. As a human environment, the Hawaiian archipelago was relatively resource poor in terms of wild plant foods, but the wet valleys of the islands provided ideal locations for growing Polynesian domesticated crops such as taro (*Colocasia esculenta*), yams (*Dioscorea* sp.), and various kinds of bananas (*Musa* sp.). Marine resources varied, as coral reefs are more developed and thus richer on the older islands in the chain, though there is evidence for marine resource exploitation throughout Hawaii. Kirch (1997a: 31) suggests that the Hawaiian environment "comprised a highly diverse set of local landforms, offering a graded set of opportunities for agricultural Polynesians" (see Kirch 1985: 22-33 for a more detailed overview). It is this variable environment that provided the setting for culturally-driven landscape evolution in the Hawaiian chain.

Hawaiian Culture History and the Landscape

The Hawaiian archipelago was home to one of the most highly stratified societies in Oceania prior to European contact, arguably home to several competing "archaic" or "primary" states in the period immediately prior to European contact (Hommon 2008; Kirch 2005). Kirch (1985: 302-308) divided Hawaiian culture history into four periods: the colonization period (A.D. 300-600), the developmental period (A.D. 600-1100), the expansion period (A.D. 1100-1650), and the proto-historic period (A.D. 1650-1795). This chronology has recently been

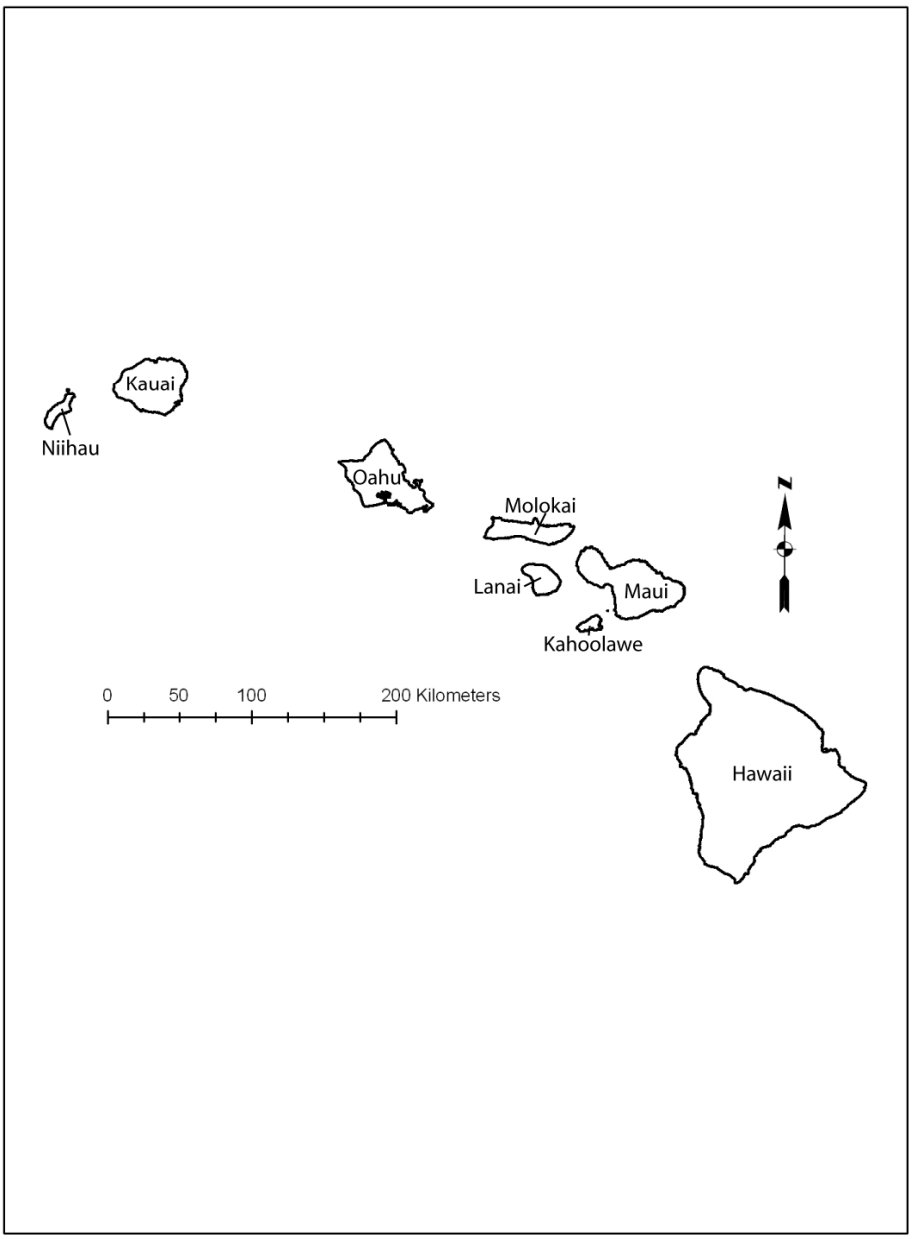


Figure 4.1. Map of the main Hawaiian islands.

challenged by re-dating of archaeological sites using more advanced radiocarbon technologies and calibration that suggest a more recent initial settlement of the Hawaiian Islands (Kirch and McCoy 2007; McCoy 2007). Specifically, the "colonization period" and "developmental period" originally proposed by Kirch in the 1980s, along with an A.D. 300 date for original colonization of Hawaii, can be replaced with a "foundation period" between A.D. 800-1200 (Kirch and McCoy 2007), followed by the expansion and proto-historic periods noted above. After 1795, when the Hawaiian archipelago was unified under Kamehameha I, archaeology in the islands is concerned with "the rise and fall of the Hawaiian Kingdom, and the subsequent development of a modern multi-ethnic society", providing a fourth period (Kirch 1985: 308, 309-318). The foundation period is concerned with the initial settlement of Hawaii, through the development of "certain distinctive patterns of Hawaiian material culture and economic adaptation" (Kirch 1985: 302). The expansion period saw the rapid growth of the Hawaiian population, intensive landesque capital investments in irrigated and dryland agricultural systems, and "new forms of religious belief and ritual", notably the construction of *heiau*, large temple sites (Kirch 1985: 303; Kolb 1992, 2006). Finally, the proto-historic period is associated with named chiefly lineages, and consisted of "elaboration of the existing social order and of further intensification of the means of production along lines firmly established" by Hawaiian socio-political systems (Kirch 1985: 306).

This culture-historical framework has important implications for landscape archaeology in the Hawaiian islands. One of the most important developments in terms of agricultural intensification and the development of chiefly political and religious institutions in Hawaii is the creation of land divisions known as *ahupua‘a* (Fig. 4.2). Barrère describes an *ahupua‘a* as follows:

> Ideally an *ahupua‘a* land section stretched in a wedge from its apex at a mountain top to its base in the sea, thereby including within its boundaries all environments necessary for a self-sustaining community. Again ideally, the inhabitants of an *ahupua‘a* were related by blood and through children, and could claim some degree of relationship to the chiefly family to whom the *ahupua‘a* had originally been assigned (1970: 3).

In actuality, not all *ahupua‘a* were completely self sufficient (Kirch 1985: 2), but the general description of a wedge-shaped division of an island stretching from the mountains to the sea is generally applicable with some exceptions. Recent work by Ladefoged and Graves (2006) has focused on the division of the Hawaiian landscape into smaller and smaller units over time. Specifically, *ahupua‘a* boundaries as documented during the Māhele, a series of land reforms that took place around A.D. 1850, which resulted in a complete change of the landholding system in Hawaii (see Sahlins 1992), often contain bifurcation points and cutouts, hinting at the larger land divisions that may have existed at an earlier time. This observation also works on a smaller scale, as field walls and trails from later periods tend to match documented *ahupua‘a* boundaries quite closely, while earlier walls and trails do not (Ladefoged and Graves 2006: 268-280), connecting traditional Hawaiian land divisions, cultural developments, and landscape archaeology.

Another way that traditional Hawaiian cultural practices have been related to landscape archaeology is in the study of archaeological settlement patterns, which are defined as the arrangement of domestic, ritual, and agricultural surface architecture across a landscape. Some

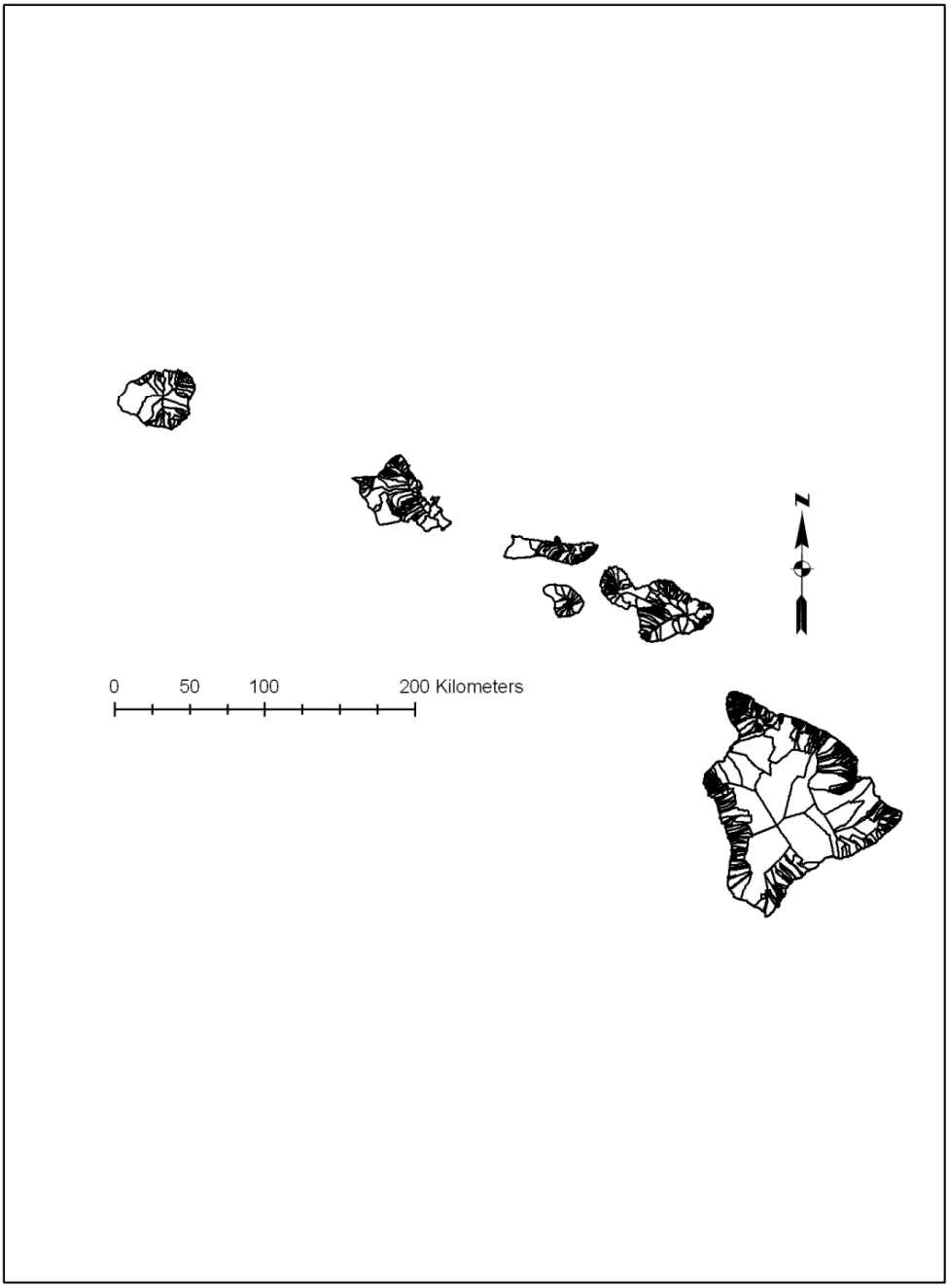


Figure 4.2. *Ahupua‘a* boundaries in Hawaii.

general comments are in order before turning to the specific case studies below. Hawaiian surface architecture has been classed in a hierarchical system, in which a settlement pattern consists of a group of complexes or site complexes, which are "groupings or aggregations of architectural components, features, and compound structures" (Kirch 1985: 39; see also Weisler and Kirch 1985). Most Hawaiian surface architecture consists of dry-stacked cobbles and small boulders of basalt. Architectural components are the most basic units of Hawaiian architecture, including walls, terraces, and platforms. Features are bounded units consisting of multiple components, and compound structures may consist of a combination of features (Kirch 1985: 38). This system was used in the archaeological survey of the landscape at Kalawao, though it was modified slightly for the extensive historical remains in the area, as will be discussed in Chapter 6.

Archaeologists have documented various kinds of historical changes in the settlement patterns of Hawaii, for example among *heiau* sites on the island of Maui (Kolb 1992, 2006), or in the development of different places of refuge and other features related to times of warfare (Kolb and Dixon 2002). Graves et al. (2002) have used seriation to document changes in Hawaiian architecture, for example, a shift from curvilinear to straighter, more rectilinear forms over time. In the household realm, the importance of the *kapu* system has been linked to the development of the Hawaiian residential complex, defined as "a cluster of separate houses and shelters, each structure restricted to certain household members and used for specific functions" (Weisler and Kirch 1985: 141). The *kapu* system involved a variety of beliefs about the sacred, especially revolving around the preparation of food, which was often associated with gender (e.g. certain foods, such as pork and bananas, were forbidden to women) and status (e.g. chiefly control of the procurement of certain marine resources). Ladefoged (1991, 1998) has linked changes in the domestic sphere, which are visible as architectural changes in the traditional Hawaiian residential complex (discussed below), such as compression of more components into a compound structure, to changes in cultural beliefs, notably the breaking of *kapu* by King Liholiho in 1819 (Kuykendall 1965: 65-70). In archaeological studies of traditional Hawaiian architecture, the cultural beliefs of Hawaiians and long-term transformations in Hawaiian history are symbolically written on the landscape. Several case studies will be used to elucidate specific manifestations of landscape history in the Hawaiian islands, material which will be applied in subsequent analyses of the landscape at Kalawao.

Archaeological Settlement Pattern Studies in the Hawaiian Islands

The case studies that follow will outline the utility of landscape archaeology as a tool for understanding island histories. Many settlement pattern studies from around the Hawaiian Islands (Fig. 4.3) follow a similar pattern, building our knowledge of the relationship between landscapes and society in the archipelago. Classic examples not examined in depth here include settlement pattern studies in Lapakahi (Rosendahl 1994), and Pōlolu Valley on Hawai‘i Island (Tuggle and Tomonari-Tuggle 1980), extensive work in Kahikinui, Maui (Holm 2006; Kirch, ed. 1997; Van Gilder 2005), surveys concerned with pre- and post-contact archaeology in Hālawa Valley, Moloka‘i (Anderson 2001; Kirch and Kelly, eds. 1975), and work on wetland taro irrigation in Halelea, Kaua‘i (Earle 1978). Recent work in Kohala, Hawai‘i Island has used settlement archaeology as part of an interdisciplinary study of human ecodynamics (Field et al.

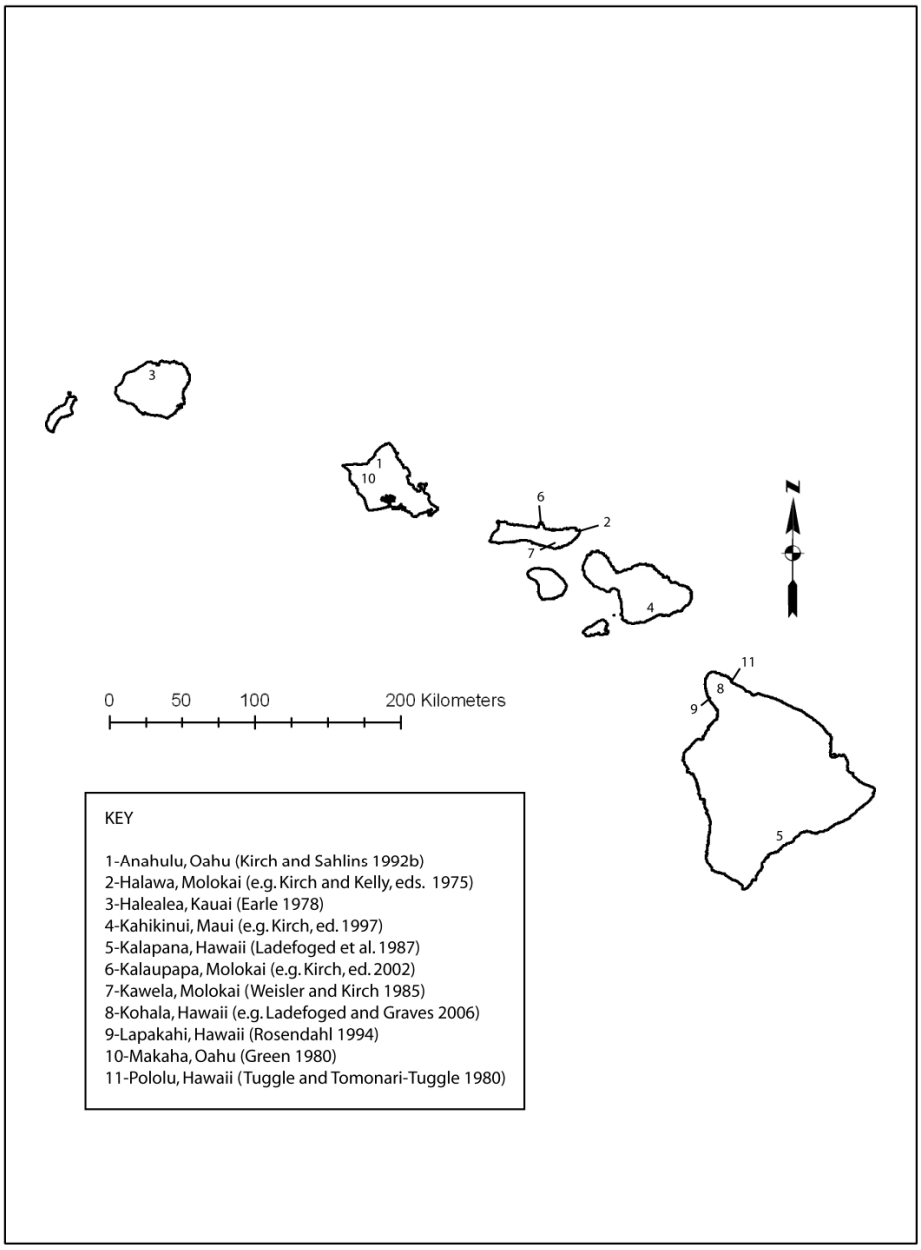


Figure 4.3. Locations of settlement pattern surveys referred to in the text.

2010; Kirch 2007; Ladefoged et al. 2003; Meyer et al. 2007). Kalaupapa itself has been the subject of numerous settlement and landscape archaeology studies (Kirch, ed. 2002; McCoy 2005a, 2006; Somers 1985), which will be discussed in the next chapter. Four classic case studies are used below to provide a sense of the general pattern and tone of settlement pattern and landscape archaeology in Hawaii, a tradition which shaped the archaeological survey carried out in Kalawao. Key themes to archaeological settlement pattern studies in Hawaii include the relationship of constructed agricultural landscapes (especially *lo'i*, or irrigated pondfields, and dryland field systems) to Hawaiian society, transformations and variability in household architecture, the organization of sacred, ritual spaces on the landscape, and changes in the built landscape following European contact in the late 18th century.

The Mākaha Valley, Oʻahu

In many ways, Roger Green can be seen as the father of the settlement pattern approach to archaeology in Oceania (Kirch 2000: 32-34). This is certainly the case in Hawaii, where the first settlement pattern surveys in the islands were directed by Green. One of these surveys was located in the Mākaha Valley, part of the Waiʻanae district on Oʻahu Island. Mākaha is a leeward valley on Oʻahu with seasonal rainfall ranging from less than 500mm per year at the coast to over 2000mm per year in the upper portions, which supported a mix of economic subsistence practices including irrigated pondfield agriculture, primarily for taro, dryland agriculture, and marine resource exploitation (Green 1980: 27-40). The Mākaha Valley Historical Project was undertaken as a contract archaeology project. However, it was connected with settlement pattern studies in which Green was also involved, in the Hālawa Valley, Molokaʻi, and Lapakahi, Hawaiʻi, and was thus tied in to a larger research program focused on Hawaiian settlement patterns. The scope of research in Mākaha extended beyond the area threatened by development, so was not limited by a concern with documenting threatened resources (Green 1980: 1). The larger settlement pattern research program was focused on the relationship between the environment and Hawaiian settlement space. Specifically, the differential distribution of water resources in Mākaha, Hālawa, and Lapakahi provided different environments for studying various kinds of archaeological remains relating to Hawaiian agricultural practices (Green 1980: 2).

Green (1980: 1-2) relied on intensive study of historical documents as well as field research on archaeological remains in interpreting the settlement pattern of the valley. Mapping was carried out for *all* the archaeological remains in the valley, not just those deemed most important because of size or potential to yield artifacts, and excavations targeted a variety of structures, from small field shelters to larger *heiau* (Green 1980: 1). The project was considered a success for the development of Hawaiian archaeological settlement pattern studies in several ways. It was the first project to adequately document the agricultural field shelter, one of the most common residential features in Hawaiian archaeology, it provided a detailed study of irrigated pondfield systems (*lo'i*) used to grow taro, the large *heiau* Kāneʻākī was documented and restored, and the results were published completely (Green 1980: 2).

The coastal portion of the Mākaha Valley was divided into three sections, known historically as Kamaile, Pōkaʻī, and Pāhoa (Green 1980: 7). Kamaile and Pāhoa should be mentioned here as they are somewhat atypical as far as Hawaiian land divisions go. Kamaile is

notable in that it is set exclusively in a coastal environment, with a flowing spring that allowed for agriculture, though the inhabitants would not have had direct access to mountain forest resources. Pāhoa is a land division of the *lele* or "jumping" type, with "two discontinuous plots of land, one on the coast, and another farther inland" (Green 1980: 8). These two land divisions represent the variability in traditional Hawaiian land tenure systems. While Mākaha did conform closely to the "ideal" *ahupua‘a* (Green 1980: 5), the smaller divisions or *‘ili ‘āina* within the larger division took many forms. The most drastic historically documented transformation of the landscape of Mākaha occurred during a period of cash cropping of sugarcane, including "the conversion of coastal and central valley garden plots and irrigation systems to large fields of sugarcane, the construction in 1880 of a plantation railway to haul the cane to the mill, and the building, in the former Hawaiian village, not only of the mill itself, but the creation of a whole town to support the processing of cane" (Green 1980: 12). The Hawaiian landscape did not completely disappear with the planting of sugarcane, though, as in Pāhoa, a historic map documents "an 'ancient *'auwai*' or irrigation ditch [which] follows a wandering course, in contrast to the straight ditch and flume also marked on the map" (Green 1980: 12).

Archaeologically, one of the hallmarks of the Mākaha Valley Historical Project was the successful identification of one of the more common residential site types in Hawaii, the field shelter (Green 1980: 2, 41). Field shelters are generally small features, usually recorded as having a crescent or angular "C", "L", or "U" shape. They were generally used by Hawaiian people as temporary habitations while laboring in agricultural plots or gathering coastal resources. In dividing the valley into an upper and lower section, Green's analysis of the survey results suggested that the initial, arbitrary division had misrepresented the valley's settlement pattern. Reinterpretation of this division, however, led to the useful observation that permanent habitation sites could be found in an area of *kula* (dry land suitable for agriculture) land in close proximity to the extensive pondfield systems of the upper valley (Green 1980: 46). An overall analysis of historic settlement patterns, the placement of temporary and permanent housing, and various other structures including *heiau*, suggests that unlike typical *ahupua‘a*, the focus of settlement in Mākaha was not along the coast. Rather, the settlement was focused along the inland portion of the redefined lower section of the valley. Importantly, Kāne‘ākī *heiau*, "the most important religious structure of the valley", rests at the boundary between upper and lower valley, connecting landscape and settlement pattern observations with the placement of monumental religious architecture (Green 1980: 70).

Kawela, Moloka‘i

An archaeological survey of Kawela, Moloka‘i (Weisler and Kirch 1985) was a source of many key ideas that permeate Hawaiian settlement pattern studies. This study of a proto-historic period landscape allowed for the application of ethnohistoric models of Hawaiian society to archaeological evidence (Weisler and Kirch 1985: 133). In the field methods for this survey of an archaeological settlement pattern in the dry, leeward part of Moloka‘i Island the hierarchical system of classification for Hawaiian surface architecture was developed (Weisler and Kirch 1985: 130-132)[18]. Agricultural features relating to dryland as well as irrigated agriculture were identified and mapped, terrace systems were excavated, the archaeological residential compound

18 This system will be outlined in greater detail as it was applied in my survey of Kalawao in Chapter 6.

(*kauhale*) was defined and several examples were excavated, and several religious structures were identified, including a *pu'uhonua* or place of refuge (Weisler and Kirch 1985: 135-150).

One of the objectives of this project was to examine the relationship of settlement space to socio-political organization. Considering the importance of social stratification to the settlement landscape, Weisler and Kirch provide a set of attributes for determining status differences among households, including:

> (1) the number of structural features in a residential complex; (2) the nature of the ritual feature, whether a formal structure separate from the primary residence, or a simple upright stone within the residence; (3) the presence of burial platforms; (4) high frequencies of pig and dog bone, both status foods according to the ethnographic record; (5) high density and range of formal artifacts (e.g. adzes, gaming stones, stone lamps, gourd stoppers, bone picks, tattoo needles; (6) presence of non-local lithic materials; (7) density of shellfish and other faunal remains; and (8) topographic setting (1985: 148).

The last attribute provided above suggests the importance of a holistic view of landscape archaeology, as it is not simply the settlement architecture, but the way it is spread throughout the environment that can hint at the overall relationship between society and land.

The analysis of the settlement landscape at Kawela led Weisler and Kirch (1985: 151) to define four paradigms for assessing the structure of settlement space, "(1) environmental; (2) social; (3) economic and political; (4)semiotic". It is important to note that these paradigms are not seen as "mutually exclusive or competing" (Weisler and Kirch 1985: 151). Rather, all four paradigms are important in considering landscape dynamics. In Kawela, the arid environment provided certain constraints on agricultural output, while the reef flat provided an opportunity for aquaculture production in large fish ponds (Weisler and Kirch 1985: 151-152). At the same time, household organization was an important factor in the arrangement of domestic components within *kauhale*, as well as their dispersal across the landscape. Both the social organization of Hawaiian households, and the economic and political relationships between *maka'āinana* (commoners) and *ali'i* (chiefs) structured the arrangement of domestic space in Kawela (Weisler and Kirch 1985: 152-153). Finally, several hints at the semiotic level of analysis came out of this work, both in residential complexes, where household shrines were located to the east, and at a temple complex interpreted as a *Hale o Lono*, where the offering pit was to the east as well. This was connected with an association of the direction east with the sacred in Hawaiian cosmology (Weisler and Kirch 1985: 154-155). This theoretical framework provides a powerful way of approaching the landscape and connecting landscape change to specific kinds of historical processes. The semiotic level of analysis can approach very deep meanings in the ways people connect with the land, and Kirch (1996) has applied the concept elsewhere in Oceania in a semiotic analysis of Tikopia social space.

Kalapana, Hawaii Volcanoes National Park, Hawai'i

A settlement pattern survey in a portion of Hawaii Volcanoes National Park followed the patterns established in previous settlement pattern studies, while elaborating upon certain useful

details. The research area was located on the southeastern part of Hawai‘i Island. One of the crucial distinctive aspects of this research area is the presence of continuing active volcanism in the area. A 1985 *a'a* lava flow, for example, is known to have destroyed 315 previously documented components and features in the research area (Ladefoged et al. 1987: 5), suggesting the impacts that such geological events have both for archaeological surveys and for the lives of people living in this landscape. There is relatively little soil development in the area, rainfall ranges from 1270 to 1900 mm per year, and vegetation varies, but is generally characterized as grassland and shrubland (Ladefoged et al. 1987: 13-14).

Surface architecture is described at length for this study (Ladefoged et al. 1987: 34-80). Particularly useful is the description of the residential compound, which follows that developed by Weisler and Kirch (1985) for Kawela:

> A typical complex of features for a household might include a sleeping house (*hale noa*); a men's house (*mua*) used by male family members for eating, praying, and as a place to provide offerings to the gods; an eating house for women and children (*hale ‘āina*); cooking houses (*hale kahumu*) and earth ovens (*imu*); crop storage huts (*hale papa‘a*); huts for making mats (*hale ulana*) or tapa (*hale kuku*); a menstrual hut (*hale pe‘a*) somewhat removed from the main complex; and if it was a coastal complex, perhaps a canoe house (*halau*) (Ladefoged et al. 1987: 45).

Other kinds of architectural features found in this settlement landscape included enclosures, which are defined as both residential features and animal pens, partly depending upon size, alignments and walled shelters, some of which are residential and some agricultural, lava tubes and rockshelters, some modified, religious structures, including four Hale o Lono, *heiau* dedicated to the deity Lono, various features related to historic period ranching activities, including core-filled walls which are suggested to be a development of that era, and finally trails which connected parts of the landscape (Ladefoged et al. 1987: 46-71, 73-79).

An analysis of archaeological features documented in Kalapana suggests three zones: a coastal zone, with an elevation below 30m; an intermediate zone, ranging from 30-61m elevation; and an inland zone from 62-153m elevation (Ladefoged et al. 1987: 83). Statistical analyses of documented archaeological remains suggest that habitation features cluster within the coastal and inland zones, though agricultural practices varied between the two zones (Ladefoged et al. 1987: 88). The intermediate zone had significantly lower density of residential features than the inland zone, and smaller residential components than the coastal zone. Essentially, habitation was concentrated along the coast and along the uplands, with a zone of relatively sparse population density in between, reflecting a "Dual Zone" model of permanent habitation, with exchange occurring between the two zones (Ladefoged et al. 1987: 113-114). Coastal residential features in Kalapana were found to be larger in overall size than features in the other zones, and appear to be more highly standardized in terms of size and organizational layout (Ladefoged et al. 1987: 90). This may represent a temporal, as well as spatial, distinction, as the coastal zone was the focus of historic era settlement, with larger residential features composed of more components (Ladefoged et al. 1987: 92-97).

Using the rich dataset represented in this settlement pattern study, Ladefoged identifies three processes affecting the appearance of the archaeological record in the research area. One is

social stratification, and the reflection of chiefly ranking on household structure. A second issue that has direct bearing on the interpretation of this settlement landscape is seasonal versus permanent occupation of residential features, though it was determined that without adequate excavations, this realm of variability was difficult to interpret clearly. Finally, European contact and transformations to traditional Hawaiian ideology, especially the concepts of *mana* and *kapu*, the latter mentioned above, are seen as important to understanding settlement histories in this portion of Hawaii Volcanoes National Park (Ladefoged et al. 1987: 98-109).

The Anahulu Valley, O‘ahu

Kirch (1992) and Sahlins (1992) provide a classic analysis of cultural change during the historical period in Hawaii, viewed through the lens of ethnohistory and archaeology in the Anahulu Valley, on leeward O‘ahu. This pioneering work specifically focused on structural transformations in Hawaiian society following the conquest and unification of the islands under Kamehameha I in 1795. A thick description of historical events and archaeological evidence reveals that the history of the Anahulu valley is transcribed on the landscape in many layers and at multiple scales. For example, demography, kinship structures, changes in the land tenure system (the Māhele of the mid-19th century), and individual endeavors all contribute to the distribution of land among the 19th century *maka‘āinana*, commoners, of the Anahulu Valley (Sahlins 1992: 182-215). In addition, small details in the written record preface the landscape changes to come in the Hawaiian Islands, as with an 1837 trip by Edwin Locke and Reverend Emerson with two Hawaiians, "so characteristically anonymous" in histories written by white men, up the Anahulu valley with "seeds of peach, plum, quince, and cherry that had been brought out from America together with some orange seedlings locally produced" (Sahlins 1992: 214). Ecological imperialism, the intentional and unintentional introduction of various kinds of biota from Europe to different parts of the colonized world (Crosby 1986), has roots in a simple hike up a leeward O‘ahu valley, connecting global processes to seemingly everyday activities.

Archaeological research in the Anahulu valley provides a rich body of evidence indicating the specific ways that history is written on the landscape, notably in its description of house sites and agricultural features, including those related to irrigated taro production in *lo'i*, pondfields, in various *‘ili ‘āina*, land segments within the *ahupua‘a* of Kawailoa-uka (Kirch 1992: 19-24). Spriggs and Kirch (1992) focus specifically on the relation of irrigated agriculture to social organization and social change in Anahulu. Irrigated pondfields allowed for the production of surplus taro, which was a basis for chiefly power in Hawaii. In Anahulu, estimates of taro production levels based upon archaeological observations "suggest that a large part of production was always beyond subsistence needs and was flowing from the periphery to the coastal centers of power as tribute" (Spriggs and Kirch 1992: 160).

Another important development of the study of irrigated agricultural systems in Anahulu is the demonstration that, "canal structure was directly related to the pattern of field ownership and to social relations between cultivators" (Spriggs and Kirch 1992: 138, see also 154-157). Just as bifurcation points in *ahupua‘a* and *moku‘āina* can be related to historical changes in social organization at one scale (Ladefoged and Graves 2006), bifurcation points in the irrigation systems of the Hawaiian islands can be related to small-scale changes in social organization (e.g. Spriggs and Kirch 1992: 156, fig. 4.29). For example, an intensive study of the Kaloaloa

irrigation system indicated a close correlation between the placement of *lo'i*, pondfields, and ‘*auwai*, canals, and the introduction of new chiefly bureaucratic systems in the 19th century. For example:

> Kainiki, the old *kama‘āina*, received the lion's share of the irrigation system in his [Land Claims Commision] award, but the chief's man Kaneiaulu had been inserted near its head and was given the uppermost pondfields in the swale adjacent to the slope. His secondary canal, with its awkward dogleg course and construction over part of the back edge of some of these uppermost pondfields, seems more an assertion of a newly acquired right to some of the land and water of the old *kama‘āina* than a required technical innovation (Spriggs and Kirch 1002: 139).

Theoretically, one of the most important implications of the study of pondfield systems in Kawailoa-uka is the "discovery that the primary determinant of the hydraulic infrastructure in Hawaiian (and, indeed, evidently most if not all Oceanic) irrigation systems is sociological", rather than hydrological (Spriggs and Kirch 1992: 157). In closing the second volume on Anahulu, Kirch points out the central role that agricultural intensification played in the dynamic political economy of the Hawaiian Islands, as played out locally in the Anahulu Valley (1992b: 170-174). Archaeologists must be wary of overly-deterministic models of intensive agriculture in island ecosystems, taking into account the importance of social life and social systems in structuring the relationship of people to their environment.

Several general observations that grew out of the detailed ethnohistoric and archaeological research of the Anahulu Valley project merit review in developing a landscape archaeology approach formulated as a reading of landscape histories. One is the development of world system economics as a landscape altering force. For example, the history of sandalwood extraction for short-term economic gains in Hawaii is connected in the Anahulu Valley with archaeological evidence for a decline in agricultural productivity as well as abandonment of habitation sites. Intensive agriculture re-emerged in the Anahulu Valley as the chiefs began exploiting the emerging status of the Hawaiian Islands as an important hub for trade in the Pacific whaling industry (Kirch 1992: 87, 167). Another important theme of landscape change and history in the Anahulu valley is environmental change and ecological imperialism, alluded to above. The introduction of foreign species, including crop plants and domesticated animals as well as weeds and microbial diseases, would have major implications for the history of the Anahulu Valley, "an irreversible process of change, one that destroyed the ecological basis of traditional Hawaiian economy" (Kirch 1992: 170). Finally, landscape change in the Anahulu Valley is marked by a series of "architectonic transformations" (Kirch 1992: 174-178). One is the "proliferation of stone walls" beginning in the mid-19th century, as a response to "the immediate and practical need – beginning in the 1840s – to control the marauding cattle herds which descended from the uplands and devastated the *maka‘āinana* taro fields and dryland gardens", as well as to represent "visual symbols of newly acquired allodial property rights" (Kirch 1992: 175). Another notable transformation is the compression of the Hawaiian house cluster, which, when combined with several innovations, developed into "a new tripartite arrangement of *lānai*, house, and cookhouse, all elevated on a massive terrace platform" (Kirch 1992: 177). These general observations about historic architecture, when combined with other

observations, such as Ladefoged et al.'s attribution of core-filled walls to the historic period (see above), should allow archaeologists studying long-term changes in the Hawaiian landscape to tentatively assign different layers in the landscape to one or another general time period (e.g. historic or prehistoric). Finally, in closing their study of the Anahulu Valley, Kirch suggests that, "peripheral areas may reveal the patterns of historical change more clearly than those at the center" (1992b: 182). Thus Honolulu, with all of its modern urban chaos, is probably not the place to study long-term landscape histories (though historical archaeology in that center has great potential in other areas, e.g. Pearson 1995; Garland 1995), while the rural hinterlands of Hawaii provide ideal environments for studying environmental and social change throughout the rich human history of the archipelago.

Conclusion: Island Histories Written on the Landscape

For archaeologists interested in studying culture change from the point of view of the *longue durée*, it is crucial to span the gap between "historic" and "prehistoric" archaeology (e.g. Lightfoot 1995), and studies of long-term landscape change are one way to do just that. Methodologically, an understanding of the biotic (e.g. disruptions caused by introduced species) and abiotic (e.g. ideological transformations manifested in household architecture) factors that affected landscape change before and after European contact in Oceania must be understood in constructing landscape histories. The case studies above are remarkable in that they are concerned with the development of traditional Hawaiian culture through European contact, and transformations of that culture in the ensuing post-contact period. Each study relies on the fact that archaeologists studying landscapes can begin with what is immediately observable in the contemporary world, and gradually tease out the different layers of landscape transformation that have occurred since initial human colonization of the Hawaiian archipelago. The period of European colonial encounters often provides one of the most dramatic instances of landscape transformation, as in the Anahulu Valley (Sahlins 1992, 1992b). Importantly, landscape studies are not limited to broad sketches of a long period of historical time. They can also be used to examine the shorter conjunctures and events (see Braudel 1980; Sahlins 1987) that shape human history on a smaller scale. The study of a portion of Kalawao to follow will feature analyses on both scales to explain the development of that particular landscape.

Historical anthropologists have developed a variety of theoretical tools for dealing with islands as units of analysis (e.g. Dening 1980; Sahlins 1987). Importantly, islands have a propensity for facilitating comparison in historical study (see Kirch 1997, 2000: 323-325). One way that landscape archaeology can contribute to these kinds of historical analyses is in comparison between islandscapes. For example, in Oceania, the wedge-shaped *ahupua‘a* of Hawaii has analogues in the Marquesas (Millerstrom 2006: 291) and on the Micronesian high island of Pohnpei (Kirch 2000: 195; Rainbird 2004). What factors, environmental, social, or otherwise, shaped the development of this kind of land division in different places in the Pacific? How do the situations in which these similar land divisions arose compare and contrast with one another? How were settlement patterns arranged within these larger land divisions and how do they compare to one another? Finally, how did these divisions persist or transform with processes of culture contact and colonialism? These are the kinds of questions that make the concept of islandscapes and the study of archaeology as landscape history useful, in that they

allow scholars to approach and understand general processes that may be relevant not only for understanding the past, but also present and future human societies on islands and continents. For the archaeology of the recent past in Kalawao, Hawaiian settlement pattern studies provide a valuable theoretical and methodological framework for interpreting the landscape of the Hansen's disease settlement, notably as it was shaped by earlier cultural activity (Chapter 6).

Chapter 5.

Histories, Archaeologies, and the Recent Past of Kalaupapa

A Timeline for "History" in Kalaupapa

By the mid-19th century, Hawaiian culture had undergone intense transformations, though the history of the islands is marked by both continuity and change (Kirch 1992; Mills 2002; Sahlins 1992). Among the salient transitions are demographic collapse due to introduced diseases for which Hawaiians had no natural immunity (Cordy 2007; Kirch 2007a, 2007b; Schmitt 1971; Stannard 1989); the effects of land disenfranchisement during the Māhele, when lands were officially transformed into commodities and thus became alienable (Sahlins 1992); and the development of permanent entanglement with the capitalist world system, which placed Hawaii in an economically dependent position (Kent 1993). The broader Hawaiian context (discussed in more detail in Chapter 2) is relevant, because it was in this mid-19th century milieu that Kalaupapa's history was most intensely effected.

The period prior to 1865 on Kalaupapa peninsula saw the rise and fall of a small Hawaiian chiefly polity, and the development of intensive sweet potato farming in the late 1840s (Kirch, ed. 2002; McCoy 2005a, 2005b, 2006). It was after 1865 that Kalaupapa became a place of global interest, and this is the period with which most histories of the peninsula are concerned. In 1865, the Kingdom of Hawaii passed "An Act to Prevent the Spread of Leprosy" (reproduced in full in Mouritz 1916: 33-34), and subsequently began obtaining land on a remote peninsula on the north shore of Molokaʻi Island for use as a quarantine settlement for those diagnosed with Hansen's disease, historically and more commonly known as leprosy. The first pieces of land acquired were the wet valleys of Waiʹaleʹia and Waikolu, and the eastern third of Kalaupapa peninsula, the *ahupuaʻa* (traditional Hawaiian land division) of Kalawao. The other two *ahupuaʻa* on the peninsula, Makanalua and Kalaupapa, were purchased by 1873. As the Kingdom of Hawaii purchased land, the *kamaʻāina*, local people, many of whom were sweet potato farmers, were relocated, primarily elsewhere on Molokaʻi, though some agreed to remain under the state imposed quarantine policy (Greene 1985:49-50).

The first exiles arrived on the peninsula in January of 1866, and over the next 133 years, thousands of individuals were torn from their homes and families and isolated on Kalaupapa peninsula. Many historical accounts characterize the early years of life in the settlement in terms of immense suffering and death (e.g. Tayman 2006). Some exiles were allowed to bring helpers, or *kōkua* during the early days of the settlement, though reported abuses led to the discontinuation of that particular practice (Greene 1985: 51-52, 60). Initial plans for a self-sufficient colony failed completely (Greene 1985: 50-55). As a result, the vast majority of food was brought in to the settlement from outside, notably *paʻi ʻai*, a hard taro paste used to make the staple food *poi*, much of which came from taro grown in the nearby valleys of Wailau, Pelekunu, and Hālawa, contributing to the economic growth of the latter (Anderson 2001: 85-88). Nevertheless, food shortages continued to crop up, especially during the winters when rough seas made it difficult to bring supplies to the settlement. Relationships between the state and the inmates were often stressed, the situation complicated by the interaction between largely white bureaucrats and a population of mostly Native Hawaiian exiles (Moblo 1999). Eventually, two churches were built in the settlement, St. Philomena (Catholic; Carper et al. 1985) and St.

Siloama (Protestant; Greene 1985: 55-56). Some improvement in conditions is typically attributed to the arrival of Father Damien, a Belgian Catholic missionary who arrived in Kalaupapa in 1873, and served for 15 years, dying in 1889 of Hansen's disease (Daws 1973; Stewart 2000). Damien was eventually joined by other missionaries, most famously by the American Catholics Brother Joseph Dutton (Crouch 2000; Crouch and Augustine 1981) and Mother Marianne Cope (Hanley and Bushnell 1980).

By 1900, most of Kalaupapa's population had moved from the *ahupua‘a* of Kalawao, on the eastern third of the peninsula, to Kalaupapa, on the western third of the peninsula. The reasons cited for this move are typically the advantages of Kalaupapa's natural harbor, and a milder, less windy climate. In the 1940s, antibiotic treatments began to be made available for Hansen's disease, notably dapsone, and eventually a multi-drug therapy was developed for resistant strains of *Mycobacterium leprae*. In 1969 Hawaii, by then the fiftieth state of the United States, lifted its quarantine policy for Hansen's disease, though many chose to remain. Kalaupapa National Historical Park (Fig. 5.1) was established in 1980, and the peninsula is currently home to a small community of less than 100 people, including former patients, U.S. National Park Service (NPS) employees, and Hawaii State Board of Health employees (Greene 1985; Inglis 2004; Moblo 1996; Moran 2007; Tayman 2006 all provide versions of Kalaupapa's history, focusing on the period from 1866-1969 especially).

With this basic outline for the history of Kalaupapa in mind, this chapter will provide an overview of archaeological studies of life on the peninsula, and an analysis of historical demography in the settlement, followed by a sketch concerning the historiography of Kalaupapa (see Inglis 2004; Moblo 1996, 1997, 1998, 1999 for more complete analyses). Next, first-hand accounts of the experiences of a few individuals who lived in Kalawao during the time period with which my archaeological research is primarily concerned will be noted. I will focus mostly on the letters of Peter Kaeo, a patient of royal descent whose letters to his cousin Queen Emma provide a valuable account of life in the settlement. I will also use portions of accounts from Fr. Damien, and from Dr. Arthur Mouritz, a resident physician in the settlement. These sections will be useful in suggesting the experiences of a few people living in Kalawao during the early days of Hansen's disease exile, to be compared with what archaeology might suggest in later chapters about the lives of the many.

Finally, the chapter closes with a consideration of the role of historical documents in the recent past time framework outlined in Chapter 2. Archaeology of the Recent Past at Kalawao, a project that I initiated in collaboration with the NPS in 2006, is concerned primarily with the period from 1866-1900, the more documented, more familiar, "recent" past when compared with the ancient past that most previous archaeological research on the peninsula has focused upon. The project deals with material through the early 20th century, when Kalawao was abandoned, and settlement switched to Kalaupapa, which is where an archaeology of the contemporary past might be carried out among the still-living community.

Archaeological Voices: Prehistory and History in Kalaupapa

The earliest human activities on Kalaupapa peninsula, long before the introduction of *Mycobacterium leprae* to Hawaii, can be traced to Kaupikiawa rockshelter on the northern part of the peninsula, where radiocarbon dates provide initial evidence of agricultural activities on the

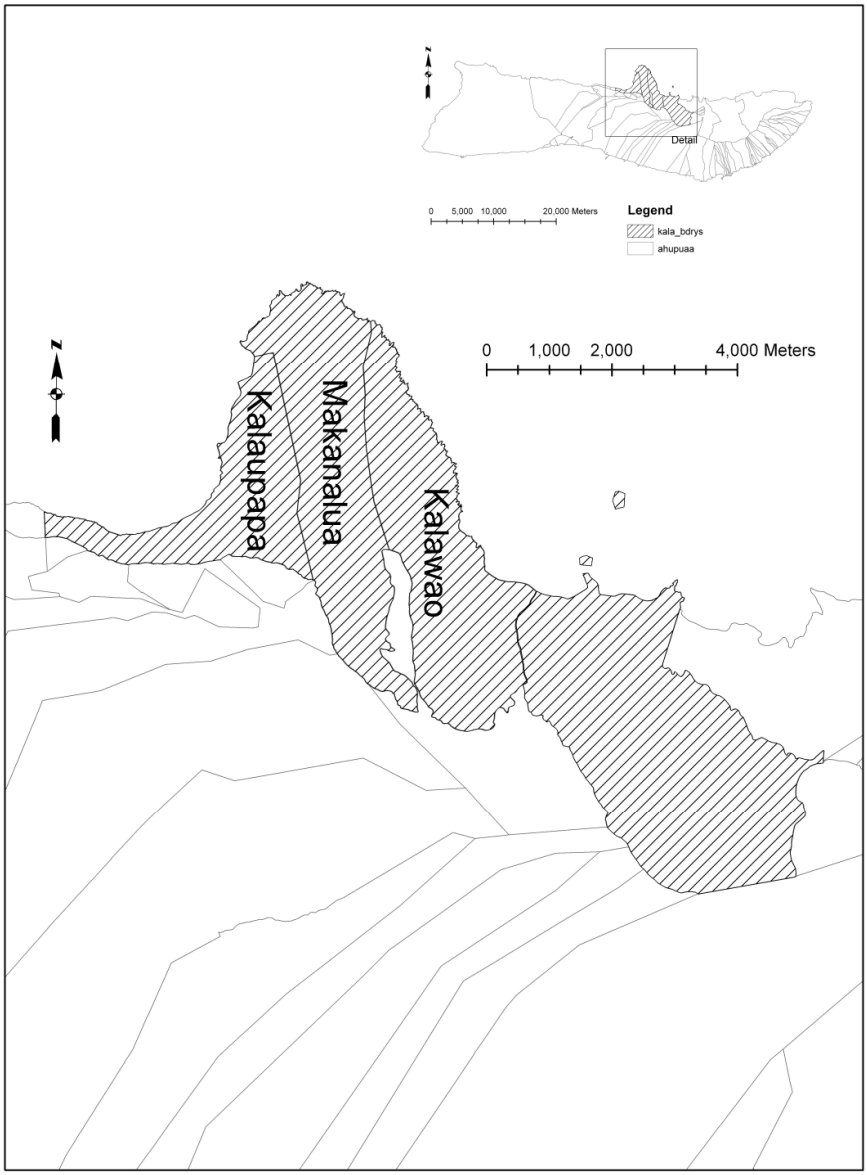


Figure 5.1. Map of Moloka‘i Island. The shaded area is Kalaupapa National Historical Park, and lines represent *ahupua‘a* boundaries, including those of Kalawao, Makanalua, and Kalaupapa.

peninsula from A.D. 1200-1300, and early occupation ca. A.D. 1600-1700 (Kirch et al. 2003). Even earlier evidence for human activity in the area may be found in the nearby wet valleys such as Waikolu, where excavations recovered an "AMS date of 1200-1290 cal A.D. on the *loulu* palm charcoal from Waikolu site 1" (Kirch, ed. 2002: 94). From these early dates, McCoy traces the development of the Kalaupapa field system through an "Expansion Period" from A.D. 1200-1650, a "Proto-Historic Period" from A.D. 1650-1795, and a "Historic Period" from A.D. 1795-1866 (2006: 127-130). The expansion period saw the spread of extensive dryland agriculture across the peninsula, primarily for the cultivation of sweet potato (*Ipomoea batatas*, Hawaiian *'uala*). This system was intensified into a series of "wide linear plots" (McCoy 2006: 129) beginning in the 15th-16th centuries, through the late-18th century, when population collapsed due to introduced diseases, and agricultural features were mostly abandoned and fell into disrepair. By the 1800s, "settlement shifted to small house sites spread along the coast and local roadways" (McCoy 2006: 129).

Kalaupapa's ancient landscape was not simply agricultural, of course. The field system was complemented by a rich assemblage of domestic and ritual sites, including small field shelters, more substantial houses (*hale*), small shrines (*ko'a*), and large temples (*heiau*) (Kirch, ed. 2002: 39-82; McCoy 2006: 264-305). Several petroglyphs are present on the peninsula, evidence of the ritual and artistic practices of Kalaupapa's former residents (Kirch, ed. 2002: 52, 55; McCoy 2006: 283, 284, 289-290). Notable for the recent past is a probable *heiau* site in a place marked on the 1906 Territory of Hawaii Survey Map of Kalaupapa as "Makali‘i". This site was largely robbed of stones, perhaps to build the stone walls around St. Philomena Church, the Catholic church in Kalawao, leaving only the largest facing stones to hint at the shape of the ancient temple (see Kirch, ed. 2002: 82-86). The largest ritual site on the peninsula is the burial complex at Makapulapai. This site, covering 3600m^2, is a monumental "rarity in the Hawaiian Islands" (McCoy 2006: 290). McCoy (2006: 290), drawing from Hawaiian oral history, has connected Makapulapai to "the 'battle of the sandbar at Kalaupapa' during Moloka‘i's bloody period of civil war", noting that a petroglyph on the site may represent "the O‘ahu chief Kuali‘i and his *ko'i pohaku* (stone adze) named Haulanuiakea; or alternatively his warrior who also took up the special adze in the story of the skirmish".

Following the abandonment of much of the peninsula in the early 1800s, the Kalaupapa field system was momentarily reintensified in response to "the boom in Hawaiian agriculture following the 1849 discovery of gold in California" (McCoy 2005a: 351; see also Kirch, ed. 2002: 13). A major excavation project, associated with the expansion of Kalaupapa's airport, was carried out on a 19th century farmstead belonging to a group of the peninsula's historic sweet potato farmers (Goodwin 1994). The household living on this farmstead practiced traditional Hawaiian lifeways, while also possessing a number of objects brought to Hawaii through the developing capitalist world system, including European ceramics, imported pharmaceuticals in glass bottles, and an 18th century Spanish coin (Goodwin 1994: 110-131). These artifacts represent the wealth produced by Kalaupapa's sweet potato farms. During this time, the remote peninsula was connected to places that its residents would probably never imagine traveling to through objects, representing larger transitions in Hawaii as peripheral areas became involved in the capitalist world system. A landscape of world commerce would not last in Kalawao, however, with the Hansen's disease period beginning in 1866.

After 1866, Kalawao was a Hansen's disease settlement. Archaeologists have not concerned themselves greatly with this period, despite its great potential for archaeological

research. For example, Kirch (ed. 2002: 110) observed that:

> With the exception of the two churches, the Kalawao settlement was abandoned and thus its ruins today encapsulate a sort of "time capsule" of the leprosy settlement between its founding in 1865-66 and the movement to the new Kalaupapa settlement after 1900. The potentials for historical archaeology here are, needless to say, outstanding.

McCoy (2005b: 76) suggests in his archaeological overview and assessment for Kalaupapa that the "Archaeology of History" in Kalaupapa could provide "A clearer picture of the relationship between the patients, about whom so much has been written, and their neighbors", the residents of Kalaupapa displaced by the expansion of the Hansen's disease settlement, who lived alongside the exiles from 1866-1895. Archaeology has not often focused on the more recent past in Kalaupapa prior to this point, though the potential is well noted. One survey carried out in association with the movie *Moloka'i: The Story of Father Damien* (Durst and Nakamura 2005) did focus on remains along the coastal plain in Kalawao, which are a likely site of occupation during the Hansen's disease period, but this survey was focused completely on the condition and long-term management of the archaeological sites in the research area. The survey provided valuable information, which will be mentioned in Chapter 6, on Kalawao's cultural resources, but little in the way of interpretation. To say that archaeologists in Kalaupapa to this point have not focused on the recent past is not meant to be a critique, but it is a statement of where the practice of archaeology versus history lies in this place. Interestingly, what has been focused upon as "history" in Kalaupapa begins not with the earliest written documents, but with the arrival of the first Hansen's disease exiles in 1866, and for the purposes of this study, the beginning of the recent past.

The Documentary Population of Kalawao

In this historical background, the approximate number of people living in Kalawao during the period *ca.* 1866-1900, and the population dynamics of the settlement during that period will be discussed to give a sense of overall settlement size and historical demographic trends. Documentary populations are human populations (Johnson-Hanks 2008; Ryder 1964; Sauvy 1969) represented by a bounded period of historical time, and for which some kind of written demographic record exists. A documentary population does not necessarily represent the exact population for a period of time in absolute terms, as documentary populations are subject to all of the problems inherent in written documents, including unintentional misrepresentation of populations, recording methods altered by existing power structures, or incompleteness of the historical record. This problem has become especially apparent in attempts to estimate the population of Hawaii at the time of European contact (Cordy 2007; Kirch 2007; Schmitt 1971; Stannard 1989). Nonetheless, documentary population statistics can provide a sense of population dynamics in historical communities (e.g. Morgan 1998).

Less than a century after initial European contact, which occurred in Hawaii with Captain Cook's visits to the islands in 1778 and 1779 (Beaglehole 1966: 296), the percentage of population decline in the archipelago was in the range of 70.6% to 92.6%, depending on the

estimate of population at contact (Table 5.1). The estimated figure of 400,000, based on the observations of Lt. King, one of the early British explorers in Hawaii, has been considered both too conservative and too generous, and both 800,000 (Stannard 1989) and 200,000 to 250,000 (Shmitt 1971) have been offered as alternatives. Archaeological evidence and models can be interpreted to support both the high and low estimates for Hawaii's population at contact, depending on the data used (Kirch 2007a: 66, 2007b: 106). These patterns aren't clear at this point, and Lt. King's estimate may actually be close to the truth (Kirch, *pers. comm.* 2010). Cordy (2007: 126) suggests, "Perhaps the 300,000 figure is not that far off". Without engaging in this debate too deeply, as more research is required to improve the estimates, note that the death of at least seven out of ten Native Hawaiians in less than one hundred years represents a striking decline in population. With this history in mind, it is understandable that King Kamehameha V, concerned with the disappearance of his subjects (and he had many European and American advisors to remind him that the Native Hawaiians were indeed disappearing; Moblo 1998) would resort to such extreme actions in quarantining as much as 3% of the remaining population (Table 5.2). Overall trends in the population of the Hawaiian Islands as a whole should be included in the consideration of Kalawao's population specifically. For example, it appears that the population of Hawaii was beginning to end its sharp decline around the time of Kalawao's abandonment (Fig. 5.2), but this may reflect immigration to the islands, especially from East Asia, rather than increase in the Native Hawaiian population (see Daws 1968: 211-213).

The documentary population of Kalawao is represented in the records and reports of the Hawaiian Board of Health from 1866-1897, during which time 5395 people were diagnosed and exiled to Kalaupapa, of whom 4028 died, and 266 were discharged or unaccounted for (Table 5.3). Birth rate for the settlement was miniscule, and children born to sick parents were removed from the settlement by the Board of Health as rapidly as possible (Tayman 2006: 210). Kalawao's population is interesting from a demographic perspective in that its characteristics were determined primarily by immigration of new exiles and by death, while emigration and birth were relatively insignificant. The population tended towards growth, with two plateaus, one spanning the years 1873-1886, when it oscillated around 800 people, and another from 1889 until 1897, when it oscillated around 1100 people (Fig. 5.3). There was a small emigration rate for people who were legally discharged, and those who escaped or attempted escape. The "unaccounted for" category also doubtless includes some deaths, perhaps people who were swept away in the dangerous currents of the Pacific Ocean, which washes against Kalawao's rocky shore.

The numbers cited above reflect a probability of death for a newly admitted patient over a thirty year period of around 74.7%, while the annual death rate, calculated as the number of deaths divided by the total population never exceeded 30%, nor was it ever lower than 10% (Fig. 5.4). There are close connections between archipelago-wide trends in population, historical changes, and the specific population dynamics of Kalawao. Pennie Moblo (1997) has connected peaks and troughs in the annual number of admissions to Kalawao (Fig. 5.5) with specific historical events. For example, the spike in admissions in 1873 is associated with King Kamehameha V's "concern with preserving the Hawaiian 'race' as he ascended to the throne, dying of tuberculosis" (Moblo 1997: 700). A spike in admissions in 1888 may be linked to increasing Western control of the government following the 1887 "Bayonet Constitution" (Osorio 2002). In addition, renewed awareness of the danger of Hansen's disease for people of

Census Year	Hawaiian Population	Percentage of Depopulation A	Percentage of Depopulation B	Percentage of Depopulation C
1866	58765	70.6	85.3	92.6
1872	51331	74.3	87.1	93.5
1878	47508	76.2	88.1	94
1884	44228	77.9	88.9	94.4
1890	40622	79.7	89.8	94.9
1896	39504	80.2	90.1	95
1900	37635	81.2	90.5	95.3
1910	38547	80.7	90.3	95.1

Table 5.1. Population statistics for the Hawaiian Islands, 1866-1910. Percentages of Depopulation based on (A) Schmitt's estimate of 200,000, (B) Lt. King's estimate of 400,000, and (C) Stannard's estimate of 800,000 (Adapted from Inglis 2004: 69).

Census Year	Hawaiian Population	Hawaiians with Leprosy Segregated	Percentage of Population Segregated
1866	58765	105	0.18%
1872	51331	439	0.86%
1878	47508	802	1.69%
1884	44228	717	1.62%
1890	40622	1213	2.99%
1896	39504	1115	2.82%
1900	37635	957	2.54%
1910	38547	658	1.71%

Table 5.2. Percentage of Hawaiian population segregated under Hansen's disease quarantine policy (Adapted from Inglis 2004: 69).

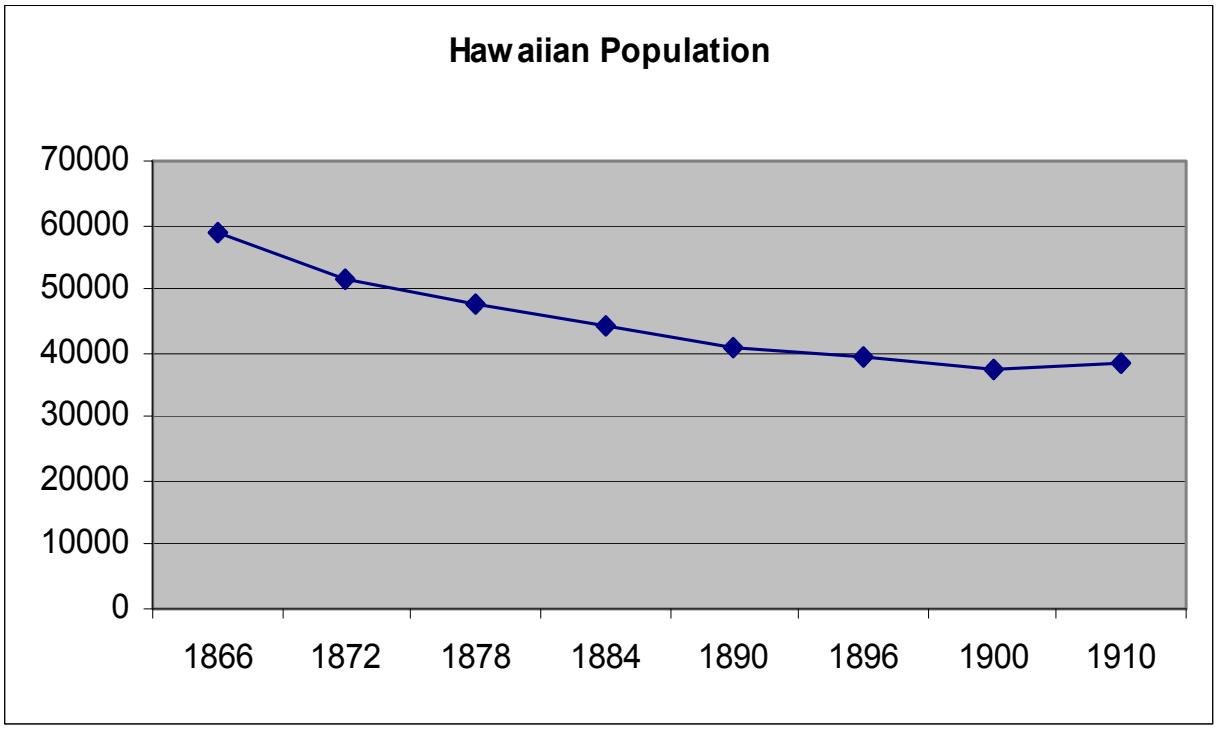


Figure 5.2. Total Hawaiian population, 1866-1910.

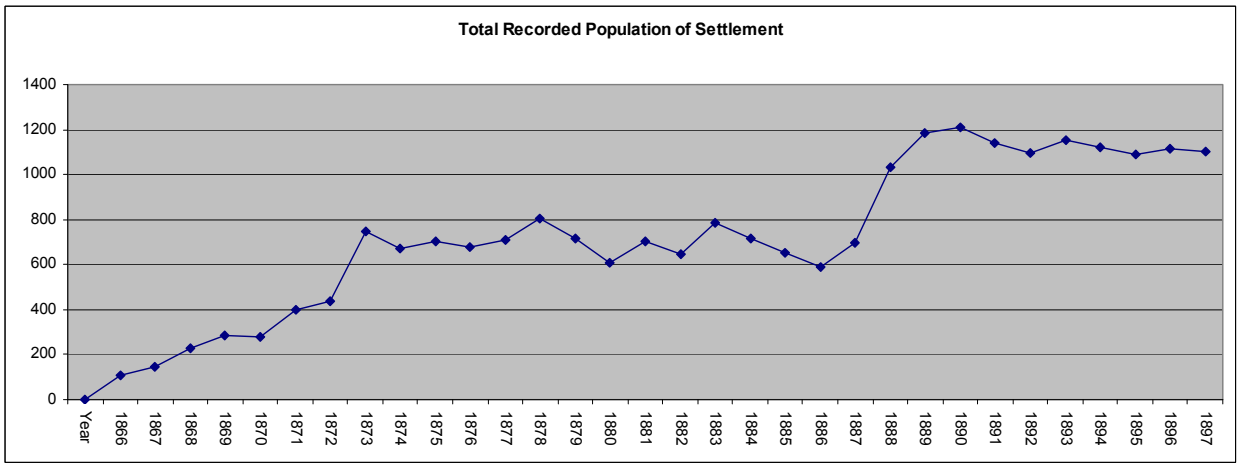


Figure 5.3. Total recorded population in Kalawao, 1866-1897.

Year	Admissions to Leprosy Settlement	Deaths	Discharged/Unaccounted For	# in settlement as of Dec. 31	% of Deaths
1866	141	26	10	105	24.762%
1867	70	25	7	143	17.483%
1868	115	28	2	228	12.281%
1869	126	59	11	284	20.775%
1870	57	58	4	279	20.789%
1871	183	51	9	402	12.687%
1872	105	64	4	439	14.579%
1873	487	156	21	749	20.828%
1874	91	161	8	671	23.994%
1875	212	163	14	706	23.088%
1876	96	122	3	677	18.021%
1877	163	129	1	710	18.169%
1878	239	147	-	802	18.329%
1879	125	209	1	717	29.149%
1880	51	152	10	606	25.083%
1881	232	132	-	706	18.697%
1882	71	121	6	649	18.644%
1883	301	150	15	785	19.108%
1884	108	168	8	717	23.431%
1885	103	142	26	655	21.679%
1886	43	100	8	590	16.949%
1887	220	108	4	698	15.473%
1888	579	212	28	1035	20.483%
1889	308	149	7	1187	12.553%
1890	202	158	18	1213	13.026%
1891	143	212	2	1142	18.564%
1892	109	137	19	1095	12.511%
1893	211	151	-	1155	13.074%
1894	128	155	3	1124	13.790%
1895	106	128	15	1087	11.776%
1896	146	116	2	1115	10.404%
1897	124	139	-	1100	12.636%
Totals	5395	4028	266		

Table 5.3. Annual statistics for admissions, deaths, etc. for the leprosarium at Kalaupapa, 1866-1897 (Adapted from Inglis 2004: 233).

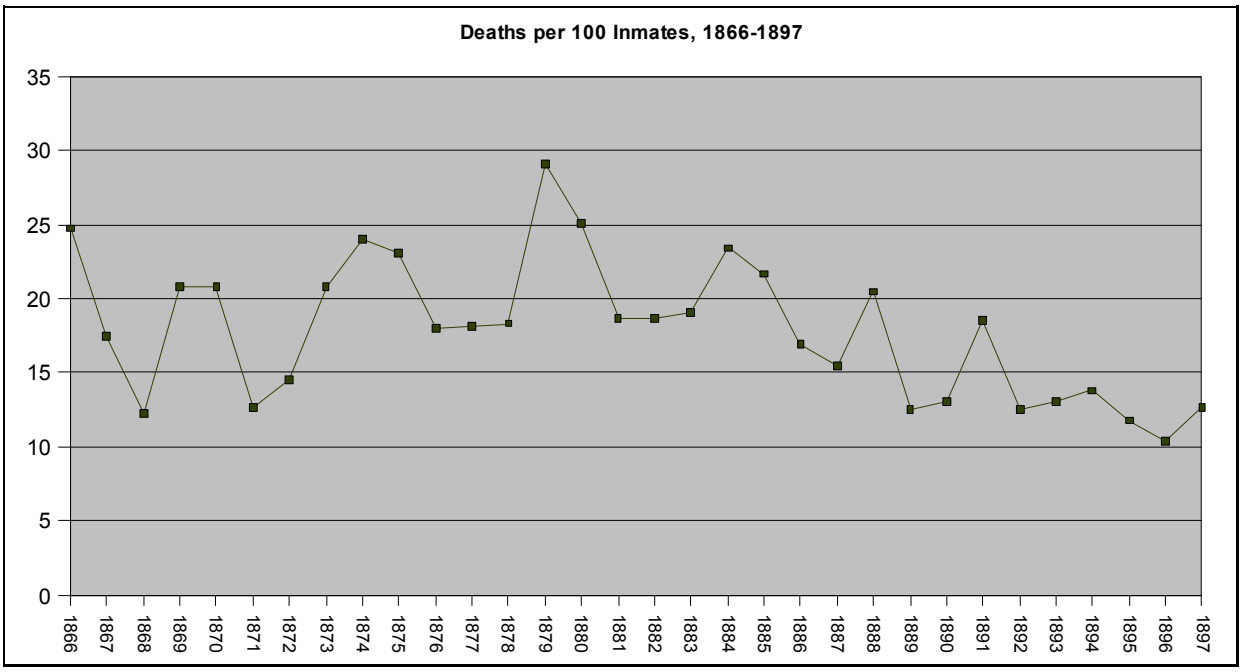


Figure 5.4. Death rate for Kalawao, 1866-1897.

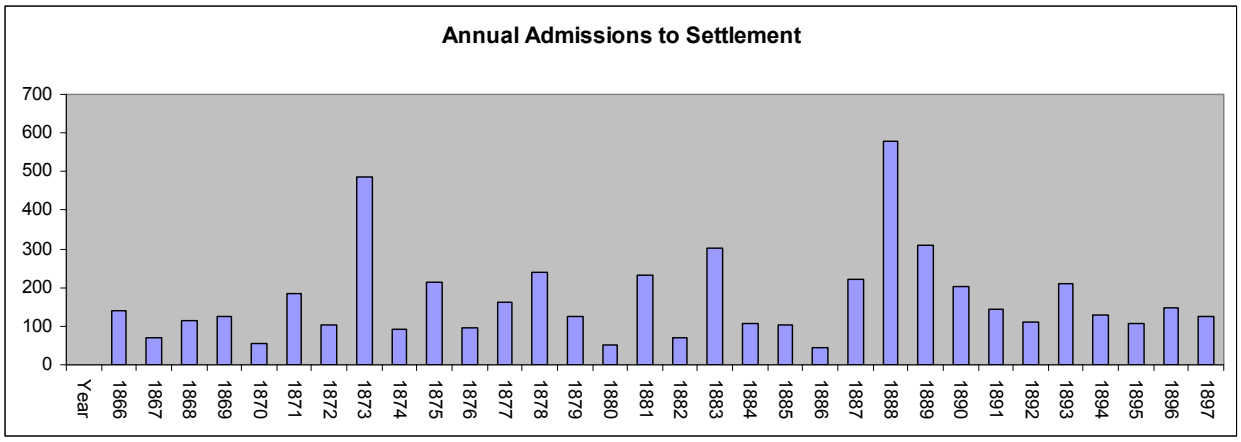


Figure 5.5. Number of annual admissions, 1866-1897.

European descent, with the well-publicized declining health of Fr. Damien, may have informed this increase in admissions during a period of growing Western influence in the Hawaiian government.

The relationship between number of admissions, death rates, and total population in Kalawao is complicated, but often systematically related in simple ways. The average number of annual admissions (approximately 169) exceeded the average number of annual deaths (approximately 126), so population growth would be expected in general. In addition, years with particularly high death rates and low admissions, such as in 1879 (29.14% and 129, respectively) are reflected by drops in population (from 717 in 1879 to 606 in 1880). The two years with the highest numbers of admissions, 1873 and 1888, apparently resulted in population growth for the settlement, which then stabilized around the new figure (about 800 after 1873 and 1100 after 1888). However, the fact that there were long periods where the population remained relatively stable, or when there were smaller oscillations in population size, probably reflect other, more subtle phenomena. Improvements in health care, sanitation, and the variation in admissions because of outside historical factors, as suggested above, all had an impact on Kalawao's population. The Kingdom of Hawaii assumed that Kalawao would become a self-sufficient colony within a few years of the arrival of the first exiles (Greene 1985: 50). Illness combined with low morale because of separation from family, loved ones, and familiar places, to thwart this expectation rapidly. Eventually, conditions at the settlement would improve, especially in terms of the availability of food, clothing, shelter, and fresh water, which were major problems for the earliest inhabitants of Kalawao.

Many of the positive developments in Kalawao have been attributed to the work of Fr. Damien. Based on the population defined above for Kalawao from 1866-1897, and accounts emphasizing Damien's heroic contributions to improving conditions in the settlement (Moblo 1997; see below), it might be expected that Damien's arrival would be associated with decreased death rate, and as a result, a growing population. The data above show some of the highest death rates for the population of Kalawao, and a relatively stable population during Damien's tenure in the settlement. As suggested above, population growth in the period from 1873-1889 is related to two particularly large groups of exiles who arrived in the settlement. The fact that populations stabilized after the introduction of these two large groups of people reflects relatively stable death rates throughout the documented period of Kalawao's population. In fact, there appears to be a subtle reduction in death rate after Damien's death.

The conclusion above appears to support, from a demographic perspective, what Moblo's (1997) work on historiography has already suggested, that Damien's impact on Kalawao was not so great as history might suggest. Yet populations are "microdynamic as well as macrodynamic...[in that] the passage of time is identified for the individual constituent elements as well as for the population as a whole" (Ryder 1964: 449). One of the major goals for this study is to approach the microscale of daily life in the settlement. Microscale research, which applies to archaeology and history as well as demography, is important in examining things like human agency, which have definite impacts on the way that people view social life in the contemporary world (Moore 2000).

In 1886, Rudolph W. Meyer, superintendent of the Hansen's disease settlement at Kalawao, made a report to the Board of Health in which he estimated there to be 652 patients and 327 buildings, including 213 private houses, in the settlement (Greene 1985: 156).[19] In

19 It is important to note that Meyer's estimate of 652 individuals in the population for 1886 contradicts Inglis'

1888, a similar report listed 374 structures, including 216 "owned by the sick or their friends" (Greene 1985: 184). Using Meyer's estimates, in 1886, there was approximately one building for every two people in Kalawao. Subtracting shared buildings such as churches, hospital buildings, and storage structures, taking into account the statistics for private houses, and accounting for the discrepancy between different estimates, it would still be reasonable to posit an average of three people per household for the settlement in the late 1880s. This raises the question of who would live with whom in a settlement where people were torn from their homes and families (one Hawaiian name for leprosy was " *mai hoʻoka ʻawale ʻohana,*" translated as "the disease that tears families apart" [Stewart 2000: 5]). While further research is necessary to gain a precise sense of household demography in the settlement at Kalawao, the initial results of household archaeology, provided in Chapter 7, will provide some insights into social aspects of the microscale for the settlement's population.

Contemporary Historiography and Controversy in Kalaupapa

In 2006, a new book, claiming to be "The Harrowing True Story of the Exiles of Molokaʻi" appeared. *The Colony*, written by journalist John Tayman, is an overview of Kalaupapa's history, beginning with the arrival of the first patients in 1866, and continuing through the present life of the settlement. The book received stellar reviews, and sparked conversations, especially on the mainland United States, where Kalaupapa was largely forgotten. Mary Roach, writing in the Sunday, January 22, 2006 *New York Times Book Review* followed a glowing review of the book by stating that, "Tayman never makes an appearance in his text or even directly states an opinion. He lets the facts condemn and the details amaze and appall; and his work is by far the stronger." People in Hawaii had a different take on things. A *Maui Times* article from the same day by Valerie Monson stated flatly that John Tayman "betrayed" Kalaupapa's residents, some of whom did not give permission for accounts of their lives to be published without looking over a manuscript, and others who did not even know they were being interviewed for Tayman's book. Some residents and activists even called for the book to be banned in Hawaii.

The controversy raised by Tayman's book is worth considering briefly in providing a historical background about Kalaupapa. It is clear from this case that the representation of Kalaupapa's residents carries a massive political weight with it. Writing Kalaupapa's history is not to be taken lightly, and, perhaps more importantly, can not take place without consultation with the living residents in Kalaupapa.[20] It is not my intention here to add another argument about the merits or demerits of this book based on one or another side of the argument that is already contained in newspapers and the internet (though I found it interesting that Tayman's own blog, which can be found at http://www.johntayman.com/blog/ was conspicuously silent about any negative press for *The Colony*). Rather, I take issue with the representation of the

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figure of 590, reflecting the problems with documentary populations. Where people use different sources, the population figures may not be equivalent. Meyer's higher estimate may include *kōkua*, helpers, or *kamaʻāina*, local sweet potato farmers, which may not be included in Inglis' number.

20 One aspect of this project has been ongoing public outreach and community archaeology (*sensu* Marshall 2002) in Kalaupapa, which I commenced as the controversy surrounding *The Colony* was still settling down among members of the community.

book as a work of "fact", in which the author "never makes an appearance in his text or even directly states an opinion". Anthropologist Pennie Moblo (2007) has pointed out in a recent review that Tayman clearly manipulated sources in order to provide a more shocking story, especially when representing the early years of quarantine in Kalawao. In attempting to portray an image of chaos and social degeneracy in the early years of the settlement, Tayman ignores or obscures the reality of more orderly garden plots, houses, and trails that are known historically (Moblo 2007), and that are further highlighted by the archaeological evidence of community life in Kalawao (the material of Chapters 6 through 9). Historians, archaeologists, and other scholars have long taken into account the fact that it is actually impossible to somehow write a history in which the author's voice is absent. Greg Dening's work on history's anthropology (1988, 1992, 2004) provides incredibly powerful historiography precisely because the author's voice is explicitly placed within the narrative.

Tayman does provide a compelling, if sensationalistic, account of Kalaupapa's history, but that history is not composed entirely of fact, nor is it an objective presentation by any means. When writing the history of a place like Kalaupapa, and especially its dispossessed, exiled residents, it is tempting to grasp that which is emotionally provoking, shocking even. But, if the goal is to create a representation of reality, rather than to sell books, one must also take into account the possibility that things were actually quite boring from time to time in Kalaupapa, boredom being a topic that anthropologists are only beginning to grapple with (Musharbash 2007). It is part of the nature of the recent past that we have more access to events, specific dramatic happenings that appear in journals, newspapers, and other written documents, but, we must remember that these were a few moments among many in which little of note for the outside world happened, and that tales of the everyday, which archaeology is especially equipped to tell, are just as much worth telling, as they provide the bulk of human experience.

With this in mind, I will turn to brief sketches of three characters from Kalaupapa's recent past, which provide relevant material for the overview of Kalawao's Hansen's disease period. One provides a voice that has dominated histories of the settlement, and the sketch will be based both on his correspondence, and on ways that others have written about this character's life. The second is the voice of a patient, although a somewhat extraordinary one. The third voice is that of a doctor, providing a somewhat limited point of view, though one which has its own account of daily life in Kalaupapa.

Father Damien: Man and Myth

On April 15, 1889, Fr. Damien de Veuster died a martyr's death of Hansen's disease (Greene 1985: 187; Stewart 2000: 362-364). This event was so powerful that it impacted British imperial policy on Hansen's disease in places as far away as South India (Buckingham 2002: 27-28). In 1936, Fr. Damien's remains were removed and placed in a national shrine in his native Belgium. In the 1980s, Linda Greene (1985: 193) noted that:

> Though Damien's physical presence has been removed from the peninsula, he remains a strong presence in the minds of residents and visitors alike. The most obvious reminders of him are St. Philomena Church and his tombstone in the adjoining cemetery, the pū hala tree [which supposedly served as Damien's roof

> when he first arrived in Kalawao] long since decayed and cleared away. Also at the settlement is the English monument designed by Clifford and elsewhere on the island are churches he built for Catholics "topside" on Molokaʻi. The greatest monument of all is the modern leprosarium that developed from the crowded, unhealthy, and lawless little settlement he first found at Kalawao.

In 1994, Fr. Damien was beatified, after being attributed with one of the two requisite miracles for sainthood. At the beatification mass on June 4, 1995, "Pope John Paul II presented a small casket containing Father Damien's right hand for reburial at St. Philomena, Kalawao, to Bishop Francis X. DiLorenzo, Father Bukoski, and to Edward Kato, a resident leper from Kalaupapa" (Stewart 2000: 394). The casket was interred on July 22 of that year in Fr. Damien's formerly empty grave next to St. Philomena Church (Stewart 2000: 395). The sojourn of Fr. Damien's remains speaks to the materiality of sacred bodies, importantly, not just for Catholics, but also for Hawaiians, who celebrated the return home of his right hand.[21]

On October 11, 2009, Fr. Damien was given the recognition that many believed he deserved, being Canonized in a mass at St. Peter's Basilica, Vatican City, presided over by Pope Benedict XVI. Another piece of Saint Damien was returned to Kalaupapa as part of this ceremony, in the form of a small box containing the priest's heel bone (Vorsino 2009a). As with the beatifaction, a number of former patients of Kalaupapa joined in the celebration, both in the Vatican (Vorsino 2009b) and at home on Molokaʻi (Nakaso 2009). The importance of Saint Damien in the historical memory of the living community in Kalaupapa can not be understated, though as will be seen below, many facets of the life and times of the "Hero of Molokaʻi" have an impact on current historical interpretations of life in the settlement at Kalawao.

The son of a Belgian family of farmers, with brothers and sisters who also found a place in religious vocations,[22] Fr. Damien is credited with bringing medical treatment, law, and order to the chaotic settlement in Kalawao when he arrived in 1873. "To halt the drunkenness that was responsible for much of the social misbehavior [in the settlement], Father Damien appointed himself the confiscator of home-brewed alcohol and the destroyer of alcohol stills" (Stewart 2000: 103). He built many churches, both in Kalaupapa, and on "topside" Molokaʻi (Fig. 5.6, 5.7, 5.8), built the hospital, built houses. "Damien kept a store at his house where provisions were supplied free to those who needed them" (Greene 1985: 97). He was doctor, carpenter, quartermaster, and priest of the settlement. In 1881, Fr. Damien was proclaimed "a knight commander of the Royal Order of Kalākaua", one of the highest honors bestowed in Hawaii at the time (Stewart 2000: 207). In short, accounts of Damien's life, and official recognitions of the priest by church and state alike serve to figure the missionary in heroic style in histories of Kalaupapa. Anthropologist Pennie Moblo (1997) provides a more critical analysis, in which Father Damien figures as the hero in a "frontier myth", related symbolically in contemporary historiography to the mostly Native Hawaiian populace of Kalawao as an active father to passive, dependent children, reflecting the biases of colonialist narratives more than anything

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21 In 2007, the remains of Mother Marianne Cope were also exhumed, returned to the headquarters of her order in Syracuse, New York. That both Fr. Damien and Mother Marianne, who called Kalaupapa "home" were returned to their homelands in Europe and North America speaks to the continuing place of colonialism in religion, controlling the location of individuals dear to Kalaupapa's contemporary residents.

22 Damien's brother Pamphile, related genetically and through brotherhood in the Congregation of the Sacred Hearts of Jesus and Mary, or Picpus Brothers, would publish their correspondence shortly after the former's death in 1889.



Figure 5.6. St. Joseph Church, Moloka'i. Credited to Father Damien, 1876.



Figure 5.7. Our Lady of Seven Sorrows Church, Moloka'i. Credited to Father Damien, 1874.



Figure 5.8. St. Philomena Church, Kalaupapa. Completed in 1889. Father Damien's grave is visible to the right of the church.

else.[23] It appears in his own correspondence that Damien indeed saw his flock in a patronizing manner, well ensconced in 19th century notions of *mission civalisatrice*. As he wrote in a letter to his sister Pauline from his mission in Kohala, Hawai'i Island, where he worked before leaving for Moloka'i:

> Take pity then upon your poor brother, who [...] will become a regular savage among savages. Well, I certainly love my savages, who will soon be more civilized than Europeans. They all here know how to read and write, and are quite well dressed on Sundays (De Veuster 1889: 76).

In reality, Fr. Damien's heroism was probably something in between reality and myth. There is no doubt, in the biographies that exist (e.g. Daws 1973; Stewart 2000) that Damien brought massive amounts of attention, and as a result, resources, notably building materials and medicine, to the settlement at Kalawao. Fr. Damien was quite sensitive to the living conditions in the settlement, notably domestic architecture, noting:

> They had cut down the old pandanus or punhala groves to build their houses, though a great many had nothing but branches of castor-oil trees with which to construct their small shelters. These frail frames were covered with ki leaves or with sugar-cane leaves, the best ones with pili grass (De Veuster, ed. 1889: 87).

Later, as Damien's brother notes:

> Through his [Damien's] representations, a supply of material was shipped to the island and dealt out to the inhabitants by the Government, by means of which healthy wooden cottages, built on trestles to raise them above the ground, took the place of the former miserable hovels, with their grass-thatched roofs (De Veuster, ed. 1889: 101).

However, Fr. Damien did not do all of the settlement's carpentry alone. Rather, he "did all the carpentering with the aid of a few lepers", as is shown in a letter from Fr. Albert Montiton, who came to aid Damien in 1882 (De Veuster, ed. 1889: 127).

Beyond material impacts, the symbolism of a Catholic priest ministering to people with Hansen's disease is compelling for obvious reasons (Daws 1973: 59), and the image of Fr. Damien beginning his sermons with the phrase "We lepers" (Stewart 2000: 150) resonates through the stories of his life, as it would have resonated among his contemporaries. Yet Fr. Damien's human side also shows. He could be stubborn, and often found himself in conflict with his superiors in the Church, as well as his fellow residents in the settlement and the Kingdom of Hawaii's Board of Health (e.g. Daws 1973: 94-95; Stewart 2000: 155-156).

In this analysis, I am not seeking to deconstruct Fr. Damien, nor am I seeking to dramatically valorize his actions. Rather, the goal is to understand Fr. Damien as one part of the community in Kalawao, which is the focus of this study. Particularly important is the

23 It is interesting to note the persistent and controversial nature of such myths, as evidenced in the online commentary to news of Damien's canonization, specifically assertions that Native Hawaiians don't "appreciate" the good done by 19th-century missionaries in the islands.

consideration of the role that Catholicism played in the priest's life, and how it would have structured his interaction with the community around him. Roberta Gilchrist (1994) has pointed to the importance of certain kinds of daily practices, a Catholic *habitus* (following Bourdieu 1977), in structuring the material and social lives of medieval religious women. Fr. Damien's life as a Catholic Priest would have placed him as one in a global institution (the Catholic Church) within a local institution (the leprosarium at Kalawao). Many of the conflicts within Fr. Damien's letters reflect the hierarchical, highly ritualized structures of communication and social relations within the Catholic Church (e.g. Stewart 2000: 211, 215). Fr. Damien lived alone in a rectory near St. Philomena Church for much of his life in Kalaupapa. This would have been based both in a need for propriety in terms of Catholic vows, the suspicion of close observers of Fr. Damien's life (especially regarding the vow of chastity), and because of a disposition towards the spatial practices that Fr. Damien had been initiated into in retreats and priestly residences as a young Catholic Brother (Stewart 2000: 21-38). As a member of a religious order, Fr. Damien was forced to strike a balance between mundane activities, such as administering medicine, and sacred duties (Stewart 2000: 109). Like Kalawao's other residents, he would have had friends, enemies, and acquaintances throughout the settlement. Fr. Damien would have had much in common with the residents of Kalaupapa during his time there, but his status as a Priest allowed him some liberties, such as the opportunity, at various times, to leave the settlement (e.g. Stewart 2000: 125). Fr. Damien's life story has been told and retold, and is inextricably linked to the history of Kalaupapa. Yet his story is not the only one, nor is it even the most important one. Rather, Fr. Damien was one exile among many, a loud voice encouraging the memory of Kalaupapa as a place, but not the only one who created that place.

A Patient's Voice: Letters from Moloka‘i

Peter Kaeo, a favorite cousin of Hawaii's "Dowager Queen" Emma, the consort of Kamehameha IV, was exiled to Kalaupapa between 1873 and 1876. In 1876, Kaeo was allowed to return to Honolulu, even reoccupying his seat in the Hawaiian house of nobles, and he continued to live the life of an *ali‘i* at the Hawaiian court, though he had returned after being exiled with Hansen's disease (and was possibly still stigmatized as a result), until his death in 1880. On one side of his family, Kaeo was a descendant of an ancient line of *ali‘i*, Hawaiian chiefs, kings of Kaua‘i who included in their lineage the rebel Kekuaokalani, whose name Kaeo would adopt during his adult life. On the other side was the beachcomber John Young, British sailor, military advisor to Kamehameha I, and one of the first *haole* (foreigners) to reside permanently in Hawaii (Korn, ed. 1976: xi-xiv). Kaeo's letters while in exile represent an excellent historical source: "All of them describe in circumstantial detail, often with oddly vivid effect, though in irregular but expressive English interlaced with shreds and patches of his native Hawaiian, Peter's day-to-day experiences among his fellow lepers of Kalaupapa" (Korn, ed. 1976: xiii).

Alfons Korn, who edited Kaeo's correspondence with Queen Emma, including letters from both parties, focuses in his introduction to the collection on the deep personal relationship between the two, their context in the turbulent Hawaiian political world of the 1860s and 1870s during the reign of King David Kalākaua, and Kaeo's increasing interest in the supernatural, especially as framed by traditional Hawaiian cosmology (Korn, ed. 1976: xi-xliii). These themes

are repeated throughout Kaeo's letters. For example, Kaeo writes of supernatural influences on several occasions, signs that his favorite cousin Emma was indeed destined for the Hawaiian throne, and that the detested King Kalākaua was due for a great fall (e.g. Korn, ed. 1976: 19, 146, 194-195). Korn notes, "For Peter it was as if these portentous acts and objects and others like them – the gaunt cliffs, the brackish pool amid the breadfruit trees of Kauhako hill, Kahōāliʻi's cave, indeed the whole ecological setting – provided the bracing solace he needed to endure his own wretched existence and to envision, in spectral imagination, the enigmatic future confronting the Hawaiian people and their islands" (Korn, ed. 1976: xxxiii).

Kaeo's letters also provide valuable glimpses into material life in the settlement. The well-documented *poi*[24] shortages of the 1870s (e.g. Greene 1985: 76-77; Tayman 2006: 108), in which residents were forced to subsist largely on salmon and rice, appear vividly in Kaeo's letters. For example, on December 9, 1873, Kaeo writes:

> On the 15th of last Month, two men died from Hunger. One Kealohi had been liveing on Rice and Salmon for two Weeks until he could not eat any more of it, as it bound him. However, he had an injection which releaved him. On the 15 of the Same Mounth the little Sloop which takes up pai [*paʻi ʻai*, hard taro paste that could be processed into *poi*] arrived late in the afternoon Satuarday. Being quite dark she could not discharge her cargo of Pai. On the following day the Natives asked Ragsdale [*luna*, or resident superintendent of Kalaupapa at the time] to have the Pai landed. Being Sunday, Ragsdale refused to do so, although the natives beged [*sic.*] and prayed that they were "terribly hungry and in want of food," but of no avail (Korn, ed. 1976: 153).

Kaeo, of course, did not want because of the constant stream of provisions that flowed to him via the relatively regular steamships that came from Oʻahu, and his thanks to his beloved Queen Emma, for the food, materials, and the news of Hawaiian high society, form a refrain that echoes throughout his letters (e.g. Korn, ed. 1976: 32, 186, 216, etc.). Another hardship experienced by Kalaupapa's residents appears in a letter dated November 22, 1874:

> In the afternoon I rode in to Kalawao to see for myself the distruction [*sic.*] which the wind had made. Twenty-two Houses were blown down flat to the ground, and 50 more were so damaged that nothing was left but the frame. Tall Papaia [papaya?] trees were without leaves and some were broken in two, and the Stumps left. Whole groves of newly planted Bananas were blown down, Acres of "Koli" [probably *koli'i*, *Trematolobelia macrostachys*] which the Natives had allowed to grow to break the force of the Wind, and also for *Aho* [a horizontal rafter for lashing thatch] for Houses, were all destroyed. Puhala [Pū Hala, *Pandanus tectorius*] trees were pulled up and thrown to some distance. In fact, everything that the Natives had planted were more or less damaged and bore a Grave aspect. Homes which once held a Family of 5 or 6 Tenants were now chackes [*sic.*]. A large House in the Hospital Premises is given to those who are in need of House, but that is full and if this Wether [*sic.*] does not let up they will

24 Poi is a greyish-purple paste made from the taro root (*Colocasia esculenta*, Hawaiian *kalo*), which was a staple of the Hawaiian diet, and a beloved comfort food for Molokaʻi's mostly Native Hawaiian residents.

have to go into the Church (Korn, ed. 1976: 262).

Kaeo's letters also provide useful descriptions of the landscape, as well as a fascinating glimpse into the household life of Kalaupapa's residents. His initial description of his house lot from a letter dating to July 9, 1873:

> My House stands on a rise at the foot of Kauhako Hill. I am about half way from Kalawao to Kalaupapa, a distance of about Two miles. On my Left is a long line of Mountain quite perpendicular running westward into the Sea. To my right, the ground is rough, Hilly, and volcanic in character. To my front the land is flat and rocky, studed [*sic.*] with Potatoe patches of old. To my rear is a little incline plain till you get to the settlement, the Kalawao Valley. The Hospital stands right on the road, which we have to pass going to bathe at Waikolu, a distance of about two miles more. That is the only river (Korn, ed. 1976: 17-18).

Kaeo speaks at length about his yard. For example, in a July 4, 1873 letter, Kaeo requests "a couple of Wheel Borrows to cart the stones away", after being discouraged from building a stone wall, which was liable to attract rats and mice (Korn, ed. 1976: 11). We get several glimpses of the plant life cultivated in his yard, largely gifts from Queen Emma, including "monkey pod" (*Pithecellobium saman*), "Tamarind" (*Tamarindus indica*), "Algeroba" (algarroba or carob, *Prosopis pallida*), and "Bourgonvillea" (*Bougainvillea* sp.) (Korn, ed. 1976: 69, 126), all species that can still be found growing in Kalawao.

In addition to the surrounding landscape, Kaeo describes the inside of his house in detail in a letter dated July 23, 1873:

> My little cottage is very neat, the neatest and most airy (although I have to say it myself) here. My house stands on a rise faceing the Sea on a flat between the Pali [Moloka‘i's massive sea cliffs to the south of Kalaupapa peninsula] and Kauhako Hill. On the right side of my house in the corner is my Beurow [bureau?]. Back of that on the sides hangs my Hats, near the windows hang my Coats, under the window is my old Koa trunk, in the mauka [inland] north corner is my bed, between the front and back door hangs the curtain seperating my dressing and bedroom from the seting [*sic.*] room and Palour [parlor?]. On the left or East corner is my Sofa, by the window my Rocker, makai [seaward] or South corner my little table. Nearest the corner on the Table is my Atlas, Journal, Dairy [diary?] and Prayer Books. Next to that are my American Papers I got from Crabbe through Wilder, and Portfolio. Next to that is my English and American Papers I got from you, and also the Honolulu papers. Above the table hangs the clock. A little in front of the Atlas is my writing materials. Takeing it all through, it looks quite respectable.
>
> On the right side and little to the rear of the House is my Cook house with two rooms, one to cook and another for to pound Poi and Kepp [*sic.*] my Potatoes, etc. My two back rooms, one is a store room kept lock, the other a dining room (Korn, ed. 1976: 32-33).

While Kaeo's status as an *ali‘i* allowed him access to materials that were extraordinary among

the individuals of Kalaupapa, this passage provides a rich description of an elite household in Kalawao. Interestingly, Kaeo has described many things that would not be preserved archaeologically, while omitting many things that would. This account of household spatial organization provides a valuable complementary source (Beck and Somerville 2005: 476-477) for household archaeology in Kalawao.

Other letters speak to Kaeo's conception of home. Kaeo eventually named his house in Kalaupapa "Honolulu" (Korn, ed. 1976: 149), but did not consider it "home", as is evident in a passage dated September 2, 1873, where he refers to, "[M]y Place – it will forever be remembered by me and buried in the deepest recesses of my Heart, knowing it [Kaeo's cottage Honolulu, a name the passage suggests was Queen Emma's idea] is from the only friend which I have, as I linger on far from relations and home" (Korn, ed. 1976: 83). This distinction between place and home by Kaeo speaks strongly to Porteus and Smith's (2001: 3) concept of domicide, the "deliberate destruction of home against the will of the home dweller". For Kaeo, O‘ahu was clearly "home", his house on the exterior slopes of Kauhako crater simply a place where he was living during his exile.

Finally, it needs to be said that Kaeo's letters, though mostly about his day-to-day life, contain the voices of many individuals. Beaudry (1998) has exemplified the rich narratives that archaeologists can create when examining written documents from the past, which provide more than simply the perspective of the writer, though a little conceptual excavation must be done to extract the many voices in these documents. Father Damien appears in several letters, such as a luncheon served at his house in August of 1873 (Korn, ed. 1976: 63). Kaeo's conflicts with William Ragsdale, the corrupt *luna*[25] of the settlement appear in several instances (Korn, ed. 1976: 153, 204-205). In addition, Kaeo's human contacts to the supernatural world appear, such as the priestess Hua (e.g. Korn, ed. 1976: 78, 182), or the prophet, Kukeliaiau (Korn, ed. 1976: 194). Finally, people whose names have left a small mark indeed in the historical record appear, such as Kaeo's "man" Keleau (presumably a household servant; Korn, ed. 1976: 195). Napela, a friend of Kaeo's and the *luna* before Ragsdale, appears on many occasions, including once in a letter of September 18, 1873 which provides an interesting medical insight:

> Napela and Kaawa has got a native Medicine for this disease, pronounced [a] Cure, and the experiment is being tried on Hila. The roots and Barks of diferent shrubs are pounded with Noni [*Morinda citrifolia*], then put in a cloth and applied like a Poultice to the place or places effected, till a Blister is raised. Then a cloth wet with Water is next applied, which draws the water from the place effected, the process to be followed up dayly, until five days have expired. Then the Patient shall take a opening medicine, such as *Kowali* [possibly *Ipomoea congesta*], etc., the result being – Cured (Korn, ed. 1976: 107).

This cure ultimately turned out to be a failure, but characters such as Napela, Kaeo's close friend, Kaawa, who often had intense political quarrels with Kaeo (e.g. Korn, ed. 1976, 115), and Hila, the patient who only appears as such in the passages concerning the native medical treatment, populate Kaeo's letters, and give a sense of the variety of people living in Kalaupapa, much like the variety of people to be found in any small community in 19th century Hawaii, though they are

25 Resident superintendents of Kalaupapa were referred to by the title *luna*, a Hawaiian term that can be roughly translated as "manager".

remarkable for living in exile.

A Doctor's Voice: The Path of the Destroyer

Where Peter Kaeo's voice speaks to the lives of the many, typically un-named exiles living in Kalaupapa, Arthur Mouritz's *The Path of the Destroyer* provides the voices of the most powerful, prominent men and women from 19th century Kalaupapa. Mouritz, who was resident doctor in the settlement from 1884-1887 (Mouritz 1916: 198), writes of many of the settlement's elite residents as his personal friends. His "Personal Reminiscences" contain accounts of the lives of Ambrose Hutchison, *luna* from 1884-1897, the "popular hero" Fr. Damien, discussed above, Catholic Missionaries Fr. Albert Montiton, Fr. Gregoire Archambaux, Fr. Charles Pouzot, Fr. Andre Burgermann, and Fr. Wendelin Moellers, Rudolph Meyer, the superintendent of the settlement who lived with his Hawaiian chiefly wife and family at the top of the cliffs above Kalaupapa peninsula, Catholic Brother Joseph Dutton, Fr. Damien's right-hand man during his later years in the settlement, "Franciscan Sisters at Bishop Home", and Protestant Rev. C.M. Hyde, D.D. (Mouritz 1916: 203-292), often including the first-hand accounts of the people about whom he was reminiscing. It is worth noting the prevalence of the missionaries, and especially male missionaries (the Franciscan Sisters, including the famous Mother Marianne, apparently only need be discussed as a group) among these individuals. This is a fairly clear representation of the historical weight carried by certain figures in Kalaupapa's history.

In addition, Mouritz (1916: 403-419) provides valuable and detailed information about the rules and regulations in Kalawao, as prescribed by the Board of Health. In contrast to some accounts of the early settlement, Mouritz (1916: 69) suggests, "The general care and welfare of the leper is better carried out in Hawaii than any other country in the world", though this might be a slight exaggeration aimed at "designing and scheming politicians" seeking to critique Hawaii's leprosy policy. In defending the rationale of the quarantine policy, Mouritz (1916: 70) notes the necessity of such action, and "The good intent of the rules, laws, and regulations of the Board of Health". It is worth examining some of the rules set out by the Board of Health, to understand the regimes of order envisioned by the state, to be compared with what archaeological evidence suggests about the day-to-day reality of life in Kalawao. Section 1 of the Rules and Regulations states:

> All persons and kokuas are required to live in an orderly and peaceable manner, and to respect the laws of the Territory of Hawaii, as well as the rules and regulations of the board of health, and lawful orders of the superintendent (Mouritz 1916: 410).

The guidelines for living in such a way are further laid out in detail. Essentially, those living in the institution were not to leave the settlement, were required to keep their houses clean, could not make noise at night, were allowed to build houses, but not to own more than one, were allowed to raise crops as well as pigs, were not allowed to brew or drink alcoholic beverages, and were not allowed to own or use firearms. *Kōkua* living in the settlement were required to have a permit, were compelled to help the patients, were not entitled to rations, and were to behave upon penalty of expulsion (Mouritz 1916: 410-414). These details are useful in

providing a point of view for the kind of settlement the state wished to see in Kalawao, a place of orderly, neat houses with sober, orderly inmates that represented the power of the government to control the institutionalized. Archaeological evidence in later chapters provides evidence for the extent to which these ideas truly reflected the practices of the Board of Health, and for the ways that inmates of the institution accommodated or resisted the state's rules.

Yet narratives of power and control are not the only aspects of Mouritz's account. For most of *The Path of the Destroyer*, the patients of Kalaupapa are a faceless mass of individuals with a tragic disease. But occasionally, we are presented with a more human side of the story, as in the cases of "Little Mary" and "Naomi" (Mouritz 1916: 208-209 and 209-210 respectively). Little Mary appeared to Dr. Mouritz, asking for Fr. Damien, as she feared having no home and no one to take care of her in the settlement, apparently the typical viewpoint of social life in Kalaupapa among the newly exiled. She was of course sent immediately, "[T]o Fr. Damien and some kokua women, who fed and warmed the child and gave her dry clothing" (Mouritz 1916: 208). Naomi, in contrast, appears as an older woman, hiding in the forest between the valleys of Wailau and Halawa on the north shore of Molokaʻi. When discovered, Naomi was arrested, to be sent to Honolulu for diagnosis (Mouritz 1916: 209). Because of her advanced state, Dr. Mouritz determined that Naomi was too weak to make the voyage, and she was allowed to stay at her home, "the husband devotedly caring for her until her death, and living faithfully up to his promise to allow no visitors on the premises" (1916: 210). Naomi was remarkable in the lenience she was shown by the Hawaiian Board of Health, though that organization was notoriously inconsistent in its enforcement of Hansen's disease policy. Little Mary's story is perhaps more typical, that of the poor orphan torn from her family and left to the care of the missionaries, who set up orphanages for boys (the Baldwin Home) and girls (the Bishop Home) in both Kalawao and Kalaupapa (see Greene 1985: 216-238, 300-310).

Why do Archaeology of the Recent Past in Kalawao?

The narratives above show the multitude of voices that exist in Kalaupapa's written past, from the powerful hero Father Damien, to the poor orphan Little Mary. These written documents alone have provided ample material for historians and anthropologists to summarize, synthesize, deconstruct, and debate about social life in Hawaii's earliest leprosarium. The archaeological remains in Kalaupapa likewise provide a rich record, though on a different scale and arguably of a different kind. Archaeology in Kalaupapa has tended to focus on material remains from before 1866, prior to the arrival of the first exiles with Hansen's disease on the peninsula. Yet the "history-prehistory" divide here is as blurry as anywhere else, even considering the available materials.

In the Hawaii before Captain Cook, Molokaʻi was periodically the site of bloody warfare, and a great battle fought at the Kalaupapa Sandbar resulted in the preservation of a few names in Hawaiian oral history, those of the Oʻahu chief Kualiʻi, and his magic adze, Haulanuiakea. Yet of these two, we only get a glimpse, a moment. Two names from Kalaupapa's ancient past. For the recent past, we have a multitude of names, books, stories, histories, even movies. The period from 1866-1900 is not the contemporary past, as it is not such a leap to see Kalawao's ruins as archaeological (no "absencing presence", *sensu* Buchli and Lucas 2001a, necessary), nor is the past so ancient that it takes a different kind of leap to explain much of the material. We

recognize the refined earthenware plates, glass bottles, doorknobs of Kalawao's residents, historically named or not, but we can also see that these are not things of our own world. What, then, is so compelling about the archaeology of the recent past in the settlement at Kalawao?

It is now a cliché to talk about the fact that historical archaeology is more than "an expensive way of learning what we already know" (Deetz 1996: 32). Rather, archaeologists concerned with the recent and documented pasts have embraced the richness of archaeological narratives for time periods where written documents, oral histories, and material culture, discovered through traditional archaeological methods or otherwise, are available (e.g. Beaudry 1988; Wilkie 2006). Historical archaeologists concerned with the modern world have also pointed out the strength of archaeology for uncovering the materials of "subaltern" people (e.g. Hall 2000; van Dommelen 2006), among whom Hansen's disease exiles should surely be counted. This approach is complicated, as it is not only archaeology's emphasis on material culture that reveals things other than what are typically seen in the documentary record, but archaeology's populist approach, partly resulting from the nature of the archaeological record, which necessitates a different approach to written documents (e.g. Beaudry 1998). While an overview of some available documentary material was provided here, additional details gleaned from archival sources will be mentioned in subsequent chapters when such material is relevant for archaeological interpretations.

Archaeologists with access to documentary sources are faced with complex, complementary, sometimes contradictory materials (e.g. Beaudry 1988; Beck and Somerville 2005; Wilkie 2006). As the past becomes more recent, the evidence becomes richer, though archaeologists confronted with contemporary material culture may be overwhelmed in some contexts, or worse, ignored by a society that apparently has no need to know of its own archaeology (Rathje 2001). Familiar yet distant, archaeologies of the recent past provide a powerful opportunity to provide accounts of places that reflect upon our own time, and possibly, to better understand and even influence the decisions that are being made today.

It is not my goal to suggest that historical archaeologists, or indeed any archaeologists, must choose what kind of past they are dealing with; contemporary, recent, or ancient. Rather, the goal was to provide a historical overview of events and people in Kalawao based on written documents that fits within the time framework for this study of the archaeology of the recent past at Kalawao, as introduced in the Chapter 2. Without archaeology, it is possible to study the rich accounts of the lives of certain people exiled to Kalawao during the early years of Hansen's disease quarantine in Hawaii. The voices of people like Father Damien or Peter Kaeo contribute to narratives of the life of this settlement, and the volume of available documents, such as government reports or correspondence, reflects Kalawao's relative recentness when compared with the days of Kualiʻi. Kalawao was, however, abandoned prior to the recording of extensive oral histories among Kalaupapa's patient community, and its rapid abandonment led to the "time capsule" scenario for archaeology mentioned above. In addition, familiar artifacts on the surface of Kalawao, such as fragments of a sewing machine, a door knob, or the ubiquitous glass and ceramics of which so much historical archaeology is made (Chapter 8), can provide some relatively accessible avenues for interpretation of daily life during the recent past in Kalawao, though the interpretations of these objects are by no means simple or straightforward.

With this background in mind, subsequent chapters will focus on the archaeological record of the settlement at Kalawao in order to create a detailed model of the community through examination of the landscape, houses, and objects of the people living in Kalawao. The

remaining chapters will focus on space and material culture as structuring elements in the daily life of the settlement, aspects of social life that are rarely mentioned in extant written accounts. These materials will provide a new account of the already well-recounted history of Kalawao, with a different perspective provided through archaeological research.

Chapter 6.

Landscape Archaeology in Kalawao: Site Inventory, Mapping, and Spatial Analysis

Introduction

The landscape can be thought of as a palimpsest, a document written on repeatedly by past peoples in stone, plants, and soils, among other media, transformed by both intentional and unintentional human impacts (Chapter 4). New Zealand sheep farmer and historian Herbert Guthrie-Smith, having witnessed the great impacts of introduced flora and fauna on the landscape of his sheep station Tutira, characterized processes of landscape formation as "the cumulative effects of trivialities" (Guthrie-Smith 1999 [1921]: 320). Small actions by human beings and natural agents in the past accumulated across the Kalaupapa Peninsula to form the archaeological landscape as it appears today. Archaeology provides a means of pulling apart different layers in the palimpsest, which can be used to interpret the landscape at different points in the past. The landscape should not be viewed simply in terms of static material remains, but rather as a place or nested set of places in the sense used in humanistic geography (Cresswell 2004; Pauls 2006; Tuan 1978), spread across time and alive with the echoes of past social relations and symbolic meanings. Archaeological maps, artifacts, and field notes are like the recordings of these echoes, providing a sense of the places inhabited by inmates of Kalawao's leprosarium.

This chapter on the institutional landscape of Kalawao will commence with an examination of the physical geography and geology of Kalaupapa peninsula itself, considering why this particular place was chosen as the location of Hawaii's first Hansen's disease quarantine settlement. Next, a brief explanation of the methods used to map a portion of the Kalawao landscape, and the modified settlement pattern approach used to divide architectural remains into features and sites, will be provided. Following from this, a site-by-site overview of archaeological surface remains in the research area will provide a rich description of the landscape from an archaeological perspective. Finally, the integration of survey data into a geographic information system (GIS) will provide an initial glimpse into the spatial analysis of power in the leprosarium, specifically with an eye toward the distribution of sacred sites on the landscape.

The long-term history of Kalaupapa peninsula, along with the specific events related to the establishment and development of the leprosarium (see Chapter 5), contributed to the formation of an institution with an underlying structure of a traditional Hawaiian village. From an archaeological perspective, the landscape at Kalawao doesn't look terribly different from the landscape of other rural Hawaiian settlements of the 19th century. Without written documents, it is possible that Kalawao would hardly be recognized as unique at all from an exclusively archaeological perspective. Given what we do know about Kalawao's history, though, landscape archaeology in Kalawao has an immense interpretive potential. The results of the archaeological survey summarized here represent a beginning point for understanding the past places of the leprosarium, and the lives of the exiles who inhabited Kalawao from 1866 through the early 20th century.

Kalaupapa: A "Natural" Choice for a Leprosarium?

The sea cliffs of Kalaupapa, the "Cliffs of Keolewa" (Kirch, ed. 2002), are the most striking, imposing element of the landscape of the peninsula, defining the north shore of Molokaʻi Island, and fading into the wet, amphitheatre headed valleys of Waikolu, Wailau, Pelekunu, and Hālawa to the east (Fig. 6.1). Kalaupapa Peninsula was formed by volcanic activity between ca. 570,000-350,000 years ago, and subsequently fused with high sea cliffs to the south, part of the older Molokaʻi volcanic series. The cliffs were formed by a major tectonic event that resulted in a massive landslide which permanently altered the topography of North Molokaʻi approximately 1.5 million years ago (Kirch, ed. 2002: 2-3; MacDonald et al. 1983: 343-352). These sea cliffs rise as much as 1000m above sea level (Kirch, ed. 2002: 1; McCoy 2005b: 2), making Kalaupapa an ideal place of isolation, surrounded by rough ocean waters on three sides, and a massive wall of volcanic rock, known as the *pali* (cliffs), on the south. The presence of a sizable working field systems in both wet and dry environments, along with domestic structures made Kalaupapa an appealing setting, in terms of the government's hopes for a self-sustaining leprosarium.

Goffman (1962: 4) includes various defining features that characterize total institutions:

> Their encompassing or total character is symbolized by the barrier to social intercourse with the outside and to departure that is often built right into the physical plant, such as locked doors, high walls, barbed wire, cliffs, water, forests, or moors.

North Molokaʻi is notable in that it features all of the "natural" aspects of an institutional landscape, with high sea cliffs to the south, rough seas to the east, north, and west, and forests and swamps in the wet valleys to the southeast. Many leprosaria were located on natural landscapes of isolation, especially islands, such as Robben Island, South Africa (Deacon 2003) or Quail Island, New Zealand (Trotter and McCullough 2003), and islands are frequently used as settings for institutions of isolation, perhaps most famously at Alcatraz in San Francisco Bay (Fig. 6.2). Literary critic Ron Edmond (2006: 144) writes, "The island leper colony...is almost the caricature of a total institution." The "almost-island" quality of peninsulae has been noted by geographers since the 19th century (Abbe 1898: 62), and such geographical features, especially when divided from the main body of land by another geographic feature, such as mountains or cliffs, would also make environments conducive to isolation.

Kalaupapa's history was marked by its geography, as the perception of the peninsula as an isolated place was instrumental to its use as the settlement for the Kingdom of Hawaii's Hansen's disease quarantine program. Yet just how isolated was the little peninsula? Archaeologists have noted the problematic issues that arise in defining a landscape as "natural" (e.g. Ingold 1993, 2000; McCoy 2006: 95-96 provides a discussion of this in terms of Kalaupapa specifically). Calling Kalaupapa a natural place of isolation ignores the social nature of the state-imposed isolation policy, especially considering what we know about the pre-Hansen's disease history of the peninsula. An analysis of pre-contact lithic materials from Kalaupapa using ED-XRF indicated that all stone tools were made using local material (McCoy 2006: 221), suggesting a relatively insular community in Kalaupapa. However, ethnohistorically and archaeologically



Figure 6.1. Aerial view of Kalaupapa peninsula, with the cliffs of north Moloka′i in the background, and Wai′ale′i′a and Waikolu valleys visible on the left (Image Courtesy G. Schwaller).



Figure 6.2. Alcatraz Island, San Francisco, California. Arguably the most famous of island prisons (Image Courtesy J. Sumner).

documented conflict between the Koʻolau polity and neighboring polities provides some evidence of interaction, though Kalaupapa has been characterized as peripheral in the overall scheme of Hawaiian political history (McCoy 2006: 264). Post-contact archaeology for the period immediately prior to the creation of the leprosarium on Kalaupapa suggests an involvement with global trade networks for the peninsula's residents. The trade in sweet potatoes, especially in response to the San Francisco gold rush (McCoy 2005a: 351) led to an economic boom, and gave local people access to an unprecedented wealth of material from Europe, North America, and Asia, which can be seen in the presence of imported goods in Kalaupapa farmsteads (Goodwin 1994).

Kalaupapa's sea cliffs may have formed as much of a symbolic as a physical barrier, as there were at least two separate trails leading to "topside" Molokaʻi; one leading along the cliffs from the western part of the peninsula, the main land access to Kalaupapa, and one running along the interior slope of Waihanau valley, the main land access for Kalawao (Curtis 1991), while a possible third route out of the settlement may have followed the boulder beach to the east of Kalaupapa peninsula to a trail leading out of Waikolu Valley. For exiles with more advanced cases of Hansen's disease, the cliffs must have formed an imposing obstacle to movement outside of Kalaupapa. For the young and relatively healthy, however, the trails up the cliffs may have represented a tempting call to escape. This could have included local *kamaʻāina* who stayed behind to live in isolation after the majority of land was bought by the state, and *kokua*, the helpers exiles were allowed to bring with them in the early years of quarantine. Peter Kaeo mentions a "mail man" who would regularly carry correspondence and materials over the *pali* for residents of Kalawao, evidence that the trails continued to be used as important arteries of communication and interaction in the Hansen's disease period (Korn, ed. 1976: 172-173).

The appeal of Kalaupapa as a setting for a leprosarium must be understood not strictly in terms of physical isolation, but in terms of *boundedness*. It would have been as impossible to completely sever the almost-island from the rest of the world as it would have been to do so for any other place in Hawaii. The seas and the *pali* did provide physical boundaries, but these were permeable, not absolute. One possible line of documentary evidence for this lies in the category of "Discharged/Unaccounted For" in Kalawao's population statistics (see Chapter 5), which would include people legally removed from the settlement, unwary exiles swept away by rough seas, and presumably escapees. From an administrative standpoint, however, Kalaupapa's geographic features provided convenient, easily defined boundaries. These could be marked, watched, and controlled by a young nation attempting to control its "leprosy problem" in order to prove it was the equal of Western powers while falling under increasing Western influences (Moblo 1998) in a world that was being rapidly institutionalized.

Kalaupapa may be a natural place of separation, but it took human action in the form of laws, institutional staff, and official policies to make the place isolated, and thus the peninsula must be understood simultaneously as a symbolic cultural landscape. Even then, this isolation was at best an incomplete, clandestine sort of quarantine, with all of the holes and opportunities for resistance in the form of escape or illicit exchange with the outside world afforded by most total institutions. Nevertheless, there is the historical reality of a majority of Kalawao's population being dropped on the remote peninsula, adapting to the imposed conditions of isolation, coping with life in a new place, often separated from family and loved ones, and dealing with what was often a physically debilitating illness. They were the ones who lived in, transformed, and ultimately left the ruins documented over the course of three seasons of

archaeological research in the *ahupua‘a* of Kalawao.

Method and Theory

In order to understand the spatial organization of the leprosarium at Kalawao, I conducted a settlement pattern survey to provide data to link theories of the institution to archaeological remains. Two components of this survey should be explained before examining the actual survey data: the mapping techniques used to record the remains in Kalawao, and the conceptual division of architectural remains into "features" and "sites" in what is largely a continuous archaeological landscape. Mapping involves the visual interpretation of the landscape using different kinds of surveying technology to record spatial data (Howard 2007; McCoy and Ladefoged 2009; White and King 2007), which can be used to tease apart the different historical processes that resulted in landscape transformation over time. At the same time, when dealing with large areas of continuous archaeological remains, specific articulation of conceptual categories of remain, such as "site", "feature", or scatter are necessary to divide and interpret the survey results.

Mapping

Mapping techniques used for this project involved a combination of telescopic alidade and plane table, Global Positioning System (GPS), and tape and compass. The alidade and plane table (Fig. 6.3) were used to map the majority of surface remains, especially stone architecture, in what is interpreted as the core of the settlement at Kalawao during the late-19th century. GPS was used to provide large-scale spatial control of instrument stations or datum points, while tape and compass were used to map some smaller features and surface scatters of artifacts. Plane table maps have been a hallmark of surface survey in Hawaiian archaeology for decades, and this tradition continues to be important in the archipelago. Despite recent advances in surveying technology, specifically with laser-based tools such as total station or electronic distance measuring (EDM) instruments, plane table maps still provide an ideal avenue for visualising Hawaiian archaeological sites. The strength of plane table maps lies in their creation in the field, while the archaeologist is still among the physical remains being mapped (Flexner 2009). This allows for a more detailed construction of site maps with a focus on "representative visualization", defined by McCoy and Ladefoged (2009: 265) as "the production of either a direct representation of archaeological evidence—such as maps of sites—or the reconstructions of past places or objects."

Plane table mapping is important as a mode of representative visualization because it is part of the tradition of Hawaiian archaeology, thus a recognizable way of representing sites within the discipline. Furthermore, as a way of representing surface architecture "stone by stone", these maps provide a more realistic way of visualizing archaeological sites than abstract conventions (such as those used in Somers 1985). The richness of visual information on plane table maps is linked to the technique itself, which is based upon the illustration of archaeological remains in the field, with the alidade providing the spatial data, an outline of a given feature recorded on paper on the plane table, and the details interpreted and filled in by the archaeologist



Figure 6.3. Plane table mapping of ARPK_0004.

within the measured framework (Flexner 2009: 16). The amount of time and effort spent on these maps involved a more intensive experience which enhanced the representation of the archaeological remains in Kalawao:

> The experience of walking around and viewing the archaeological site will change each time it is visited. An archaeologist will trace a different path, notice different details and focus on different points. During my time in Kalawao, walking around various archaeological sites with the plane table, drawing, observing and envisioning, I was able to grasp a sense of place that I might not have had I used a technique that did not necessitate such an intensive encounter with the sites I was mapping. The sites were drawn stone by stone, tree by tree, artefact by artefact (Flexner 2009: 17).

The maps included in this chapter should provide the reader with a visual sense of the ruins of Kalawao from a vertical perspective. Later sections of this analysis will then begin to extract the time component of this landscape, defining different layers in the palimpsest that would have been inhabited or remembered at different points in the history of the *ahupua ʻa* of Kalawao. An additional benefit of the intensive plane table survey carried out within about 35 hectares of Kalawao, and smaller sections of Makanalua, is the rich description that can be drawn from these remains in order to extract a sense of place for the settlement as it exists today, and as it may have been in the past.

Sites, Features, Space Cells: Dividing up the Landscape

The question, "What is a site?", has been a concern of archaeologists working in Hawaii since the settlement pattern approach became a centerpiece of archaeological research design in the islands (Green, ed. 1969; R. Hommon *pers. comm.* 2009). The problem has been, and continues to be just how to divide up archaeological landscapes that sometimes stretch continuously for many hectares, as with the Kalaupapa field system (McCoy 2005a). A valuable approach, which was highly influential for the conceptual approach developed here, is the division of Hawaiian surface architecture into a hierarchical system, initially developed by Kirch for use at Kawela, Moloka ʻi (Weisler and Kirch 1985). In this system, the smallest individual unit is the architectural component, an individual wall, terrace, platform, or shelter. Features are built up of multiple architectural components. Multiple features can be grouped together into site complexes, or can form compound structures, such as complex *heiau*, which may in turn be part of a site complex. Multiple site complexes make up a settlement pattern (Kirch 1985: 38-39; Weisler and Kirch 1985).

I used this system to structure the survey data in this project. Feature recording took place using standardized forms developed by the Kirch for the purposes of settlement pattern surveys carried out by the Oceanic Archaeology Laboratory. However, because of the extensive post-contact remains in Kalawao, these forms were modified slightly (Appendix 1), as was the conceptual division of the landscape. The term "feature" was retained, and refers to one or multiple architectural components grouped together in the field because of a spatial, formal, or heuristic distinction. Spatial distinctions between features were easiest to make, where a group of components was recorded as a feature, separated from other features in the area by a space

with no architectural remains on the surface. In the case of formal distinctions, where continuous areas of archaeological remains showed evidence of groups of pre-contact and post-contact components, the components were separated tentatively because of the presence or absence of mortar masonry, extensive use of core-filled construction, or evidence of non-traditional architectural forms, such as post-on-pier construction. Finally, in areas with extensive remains that could not be distinguished by form or spatial separation, heuristic divisions were made based on interpretations of the major space cells in the area. The term "space cell" refers to the spaces created by architectural components within the survey area.

The question of what constitutes a site was also based upon spatial and formal distinctions, though this is a more complicated procedure. For management purposes and entry into the National Park Service Archaeological Sites Management Information System (ASMIS), sites were distinguished by contiguous features that were separated from other sites by areas without surface architecture, and by groups of features with similar kinds of remains that could be distinguished from nearby features with different kinds of remains. The factors taken into consideration when dividing recorded features into sites included the density of surface architecture in a given area, presence or absence of historical material culture on the surface, and interpretation of an area's function based on historical documents. Ultimately, site definition was based upon a compromise between the need for realistic management strategies within existing bureaucratic regimes, and research goals. The definition of site used in this survey is based upon the idea that "a site is an archaeological place" (Flexner 2009: 14), its uniqueness as a location on the landscape is marked by the presence of archaeological remains and by its historic character when interpreted by contemporary society. The term place here is used in the sense proposed by humanistic geography (Cresswell 2004; Pauls 2006; Pred 1984; Tuan 1978), and takes into account the symbolic, experiential, meaning-laden aspects of the landscape as well as its physical characteristics. This definition is used because one of the research goals for this project is to develop a place-based community model of the early leprosarium at Kalawao, but the division of archaeological sites simultaneously needs to fit within the long-term management and preservation mandates of Kalaupapa National Historical Park.

To complicate the matter, the archaeological landscape of Kalawao can be analyzed as a fractal set of nested places. Historically, the Hansen's disease settlement at Kalawao can be understood as one large community, one place, but within that community were a variety of structures that spatially segmented the landscape, and which were themselves places nested in the larger place, and within those structures were smaller places, and so on. The smallest-scale nested places used for this study will be referred to as space cells. Space cells can be divided into major and minor categories based upon the dividing elements between one space cell and another, with major space cells defined by substantial high walls, especially core-filled walls, walls with stacked faces of four or more courses, or walls interpreted to be substantial where significant disturbance is evident, and higher terraces, while minor space cells are defined by single-course alignments, low terraces, or low, mounded walls of three or fewer courses within the major space cells (Fig. 6.4). This division of the landscape into space cells is a complementary approach to the settlement pattern-site complex-feature-architectural component system used in much of Hawaiian archaeology, and was developed for application in GIS.

The intensive mapping program carried out in Kalawao served to record space cells represented in surface architecture, and the GIS-based analysis below will use these space cells to develop models of certain historical and social dynamics in the landscape. To understand

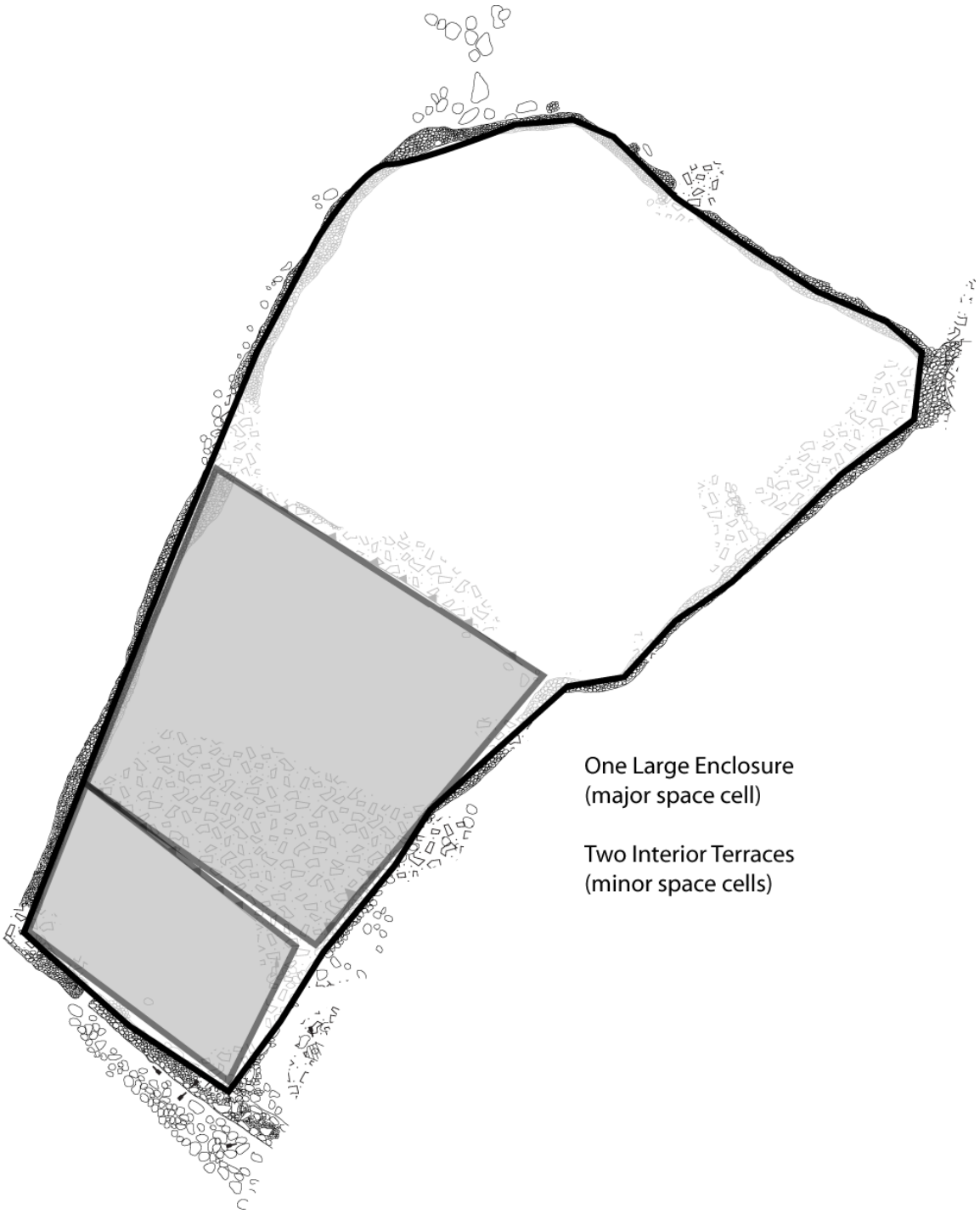


Figure 6.4. Schematic representation of the process for defining space cells, using ARPK_0003 as an example.

these dynamics, though, it is first necessary to provide an intensive description of the archaeological landscape in Kalawao as it stands today. Surface architecture, as well as ethnobotanical and topographic details will be used to provide a detailed overview of the archaeological places that remain in a portion of Kalawao that was inhabited during the Hansen's disease period. These remains will then be interpreted in terms of the living community of exiles present in Kalawao from 1866 through the early 20th century, and the theoretical framework for interpreting leprosaria from a social perspective developed in Chapter 3.

Archaeological Sites of Kalawao

During systematic survey carried out intermittently over three years, archaeological sites were recorded in an area of about 35 hectares in the southeastern portion of Kalawao *ahupua‘a* (Fig. 6.5), as well as small portions of the *ahupua‘a* of Makanalua, and in the wet valley of Waikolu, where archaeological remains relevant to the life of the 19th-century leprosarium were found. A total of 64 archaeological features were recorded[26], and these features were grouped into 16 archaeological sites (Fig. 6.6), each of which will be described in detail below. In some cases, a single feature was defined as an individual site, in other cases a number of features were combined into a larger site, depending upon the spatial segregation and formal differences among the archaeological remains. A number of these features were the focus of intensive surface collections and archaeological excavations (see Chapter 7). The Kalawao archaeological landscape is remarkable for the high level of preservation and rich variety of architectural features present.

Site 1: The "Bakery" Area (Hawaii State Site Number 50-60-03-2420)

The first site visible when entering the core area of the settlement at Kalawao from the west, which was recorded as a single site complex (ARPK_0001), consists of a rectangular enclosure, several free-standing walls, an earth and rubble mound, and a historic-period chimney with stone and mortar construction (Fig. 6.7). The official NPS interpretation of this site, which is the source of the site name, is as the location of a bakery, although there is no clear historical or, at this point, archaeological evidence to suggest that such was the case other than the current interpretive sign posted by KALA. The site is covered by dense unmodified basalt pebble and cobble rubble and a scatter of historic period artifacts including glass bottles, ceramic vessels, and metal pipes. Several False Kamani (*Terminalia catappa*) trees grow around the site. It is possible that some of these large trees were growing while the site was inhabited, or began growing shortly after it was abandoned. The low mound in the western area of the site includes two possible stone-lined terraces in the north which appear to be archaeological, while the southern part of the mound may have been formed by bulldozer push from nearby road maintenance activities. Evidence for modern disturbance occurs in the southwestern area of the site, where gravel used for paving the modern road was deposited, and in the southern area of the site where a small mound heavily overgrown by brush now occurs, though a wall foundation is

26 Features were numbered in the order in which they were recorded in the field, thus ARPK_0001 was the first recorded, ARPK_0002 the second, and so on.

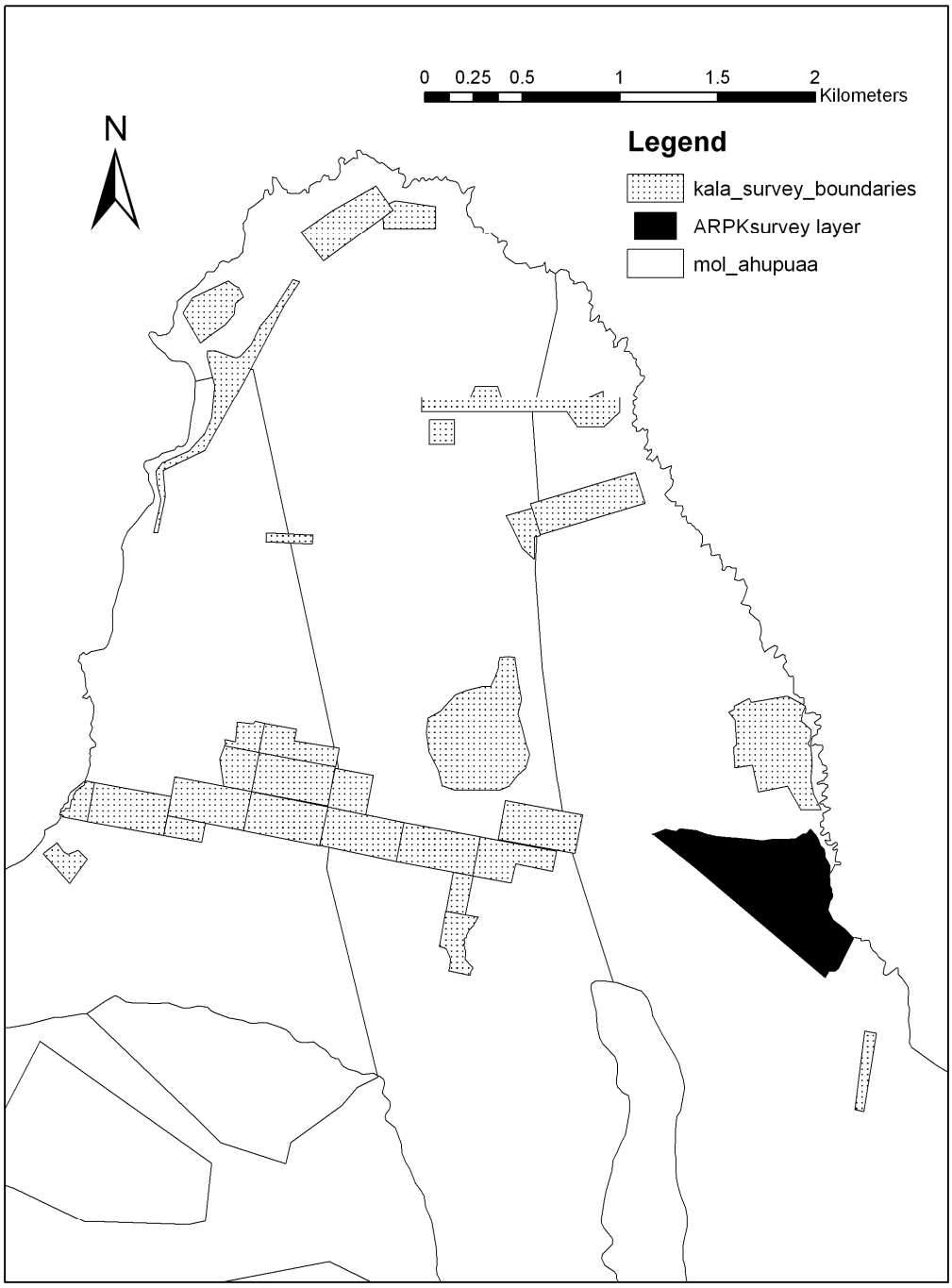
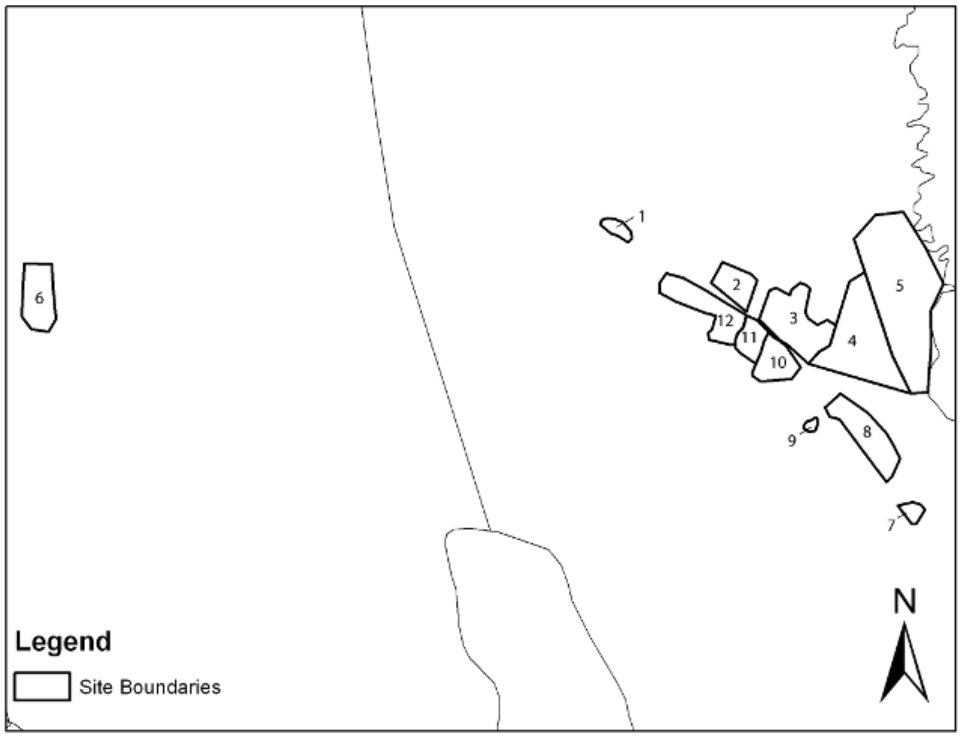


Figure 6.5. Map of previous surveys in KALA (stippled) and the survey area for the ARPK project (black).



Kalawao Sites

1-Bakery Area 50-60-03-2420
2-Hospital 50-60-03-2421
3-Cistern Area North 50-60-03-2422
4-North of Road 50-60-03-2423
5-Coastal Plain 50-60-03-2424
6-Hutchison Site 50-60-03-2426
7-Baldwin Home 50-60-03-2427
8-South of Road 50-60-03-2429
9-Unnamed Heiau (Site No. Pending)
10-Cistern Area South 50-60-032430
11-"Downtown" Kalawao 50-60-03-2431
12-Store Area 50-60-03-2432

*Not Pictured: NW of Philomena Church 50-60-03-2425, Damien Rd. 50-60-03-2428, Old Mormon House, Waikolu Bathhouse.
Coastal Plain boundaries as indicated here may overlap with 50-60-03-2100, 2101, 2102 2468, 2469.

Figure 6.6. Site boundaries within the ARPK survey area.

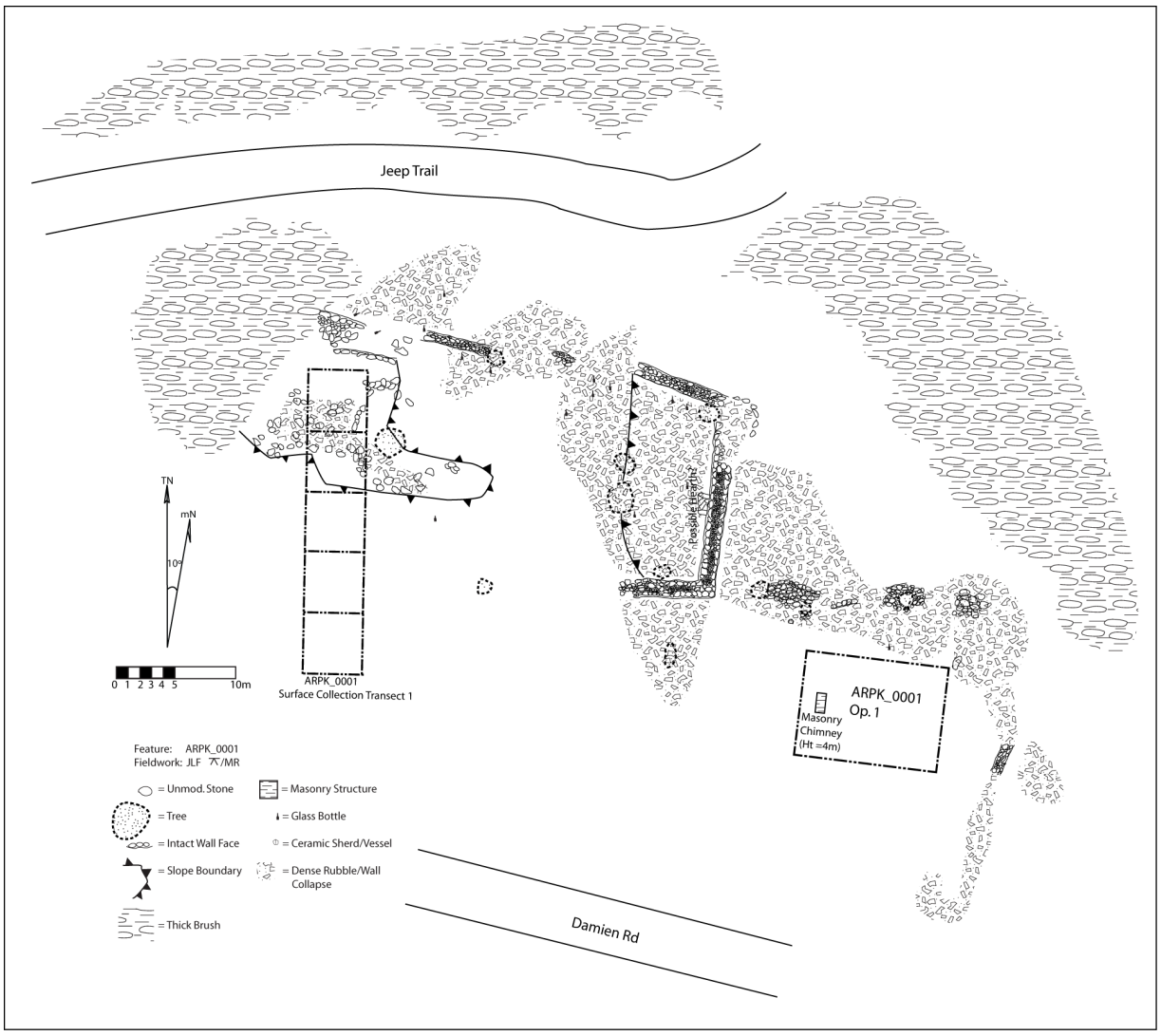


Figure 6.7. Map of the site complex ARPK_0001.

visible, suggesting a remnant of a border wall running parallel to the road.

The center of the site is dominated by a large rectangular enclosure and segments of free-standing wall. These ruins are oriented just off of the cardinal directions, with the free-standing walls running roughly east-west along the northern part of the site. There is a slight dip in elevation within the rectangular enclosure, which has three standing walls. The southwestern-most point in these three walls features a small niche of unclear function. The possible footprint of a stone-lined hearth emerges from the middle of the eastern wall of this enclosure. A series of walls partly collapsed into rubble heaps, runs east from the central enclosure. These walls turn to the south after a short distance, and the southernmost terminus of the walls curves around into a "C" shape. Located within these remains is a standing stone masonry chimney (Fig. 6.8). This chimney, constructed of uncut stones joined by lime mortar, stands at approximately 4m high, with the hearth facing east. Richard Miller (*pers. comm. 2008*), the head mason at KALA, indicated that the chimney is of a heat-reflecting type designed for domestic use for both warmth and cooking.

Surface collection and excavation results (Chapter 7) suggest intensive use of this area during the Hansen's disease period in Kalawao. The presence of the stone masonry chimney, which is unique among house structures in Kalawao, is notable, and led to the test excavation of these remains in order to determine the nature of this building, to be discussed in the next chapter. The function of the surrounding stone walls was not fully tested, though possible interpretations include garden walls, especially given that there would have been a need to protect crops from the small herd of cattle and horses in the leprosarium. Regardless, this site was probably one of the most important, and prominent households within the leprosarium at Kalawao, given the investment of labor in a masonry chimney, which is unique for the settlement, the site's location close to the hospital at a crossroads coming down a rise towards Kalawao's harbor and the core of the settlement, and the dense household midden associated with the site.

Site 2: The Hospital (Hawaii State Site Number 50-60-03-2421)

The archaeological remains in this area (Fig. 6.9) were identified as the area of Kalawao's hospital by combining a 1906 historic map of Kalaupapa[27] with GPS and GIS technology (see below). The site consists of the remains of what was once a substantial stone wall that has since been badly damaged, largely because of disturbance by thick brush, mostly Christmas berry (*Schinus terebinthifolius*). The remains of a large tree which had fallen onto the wall are also partially responsible for its deterioration. This wall, now a rubble mound with some small sections still intact, is oriented roughly east-west, and is approximately 45m in length. At the western end of the site, the wall turns north, and continues into heavy brush, which rapidly becomes impassible. Some midden scatter is located on the site, primarily ceramics, including fragments of a "fake shell edge blue" whiteware vessel, and glass bottles, including a clear soda water bottle and a large brown glass bottle that may be from a humidifier like those in KALA's permanent collections. These may be the remains of rubbish thrown out behind the hospital,

27 See Hawaii Territory Survey Map entitled "United States Leprosy Station Sites in Waikolu, Kalawao, and Makanalua, Molokai, H.T." by Walter E. Wall, surveyor. Also relevant is the 1895 Monsarrat map entitled "Kalawao, Molokai".



Figure 6.8. Photo of the standing chimney at ARPK_0001, facing west. Stadia rod is 4m high.

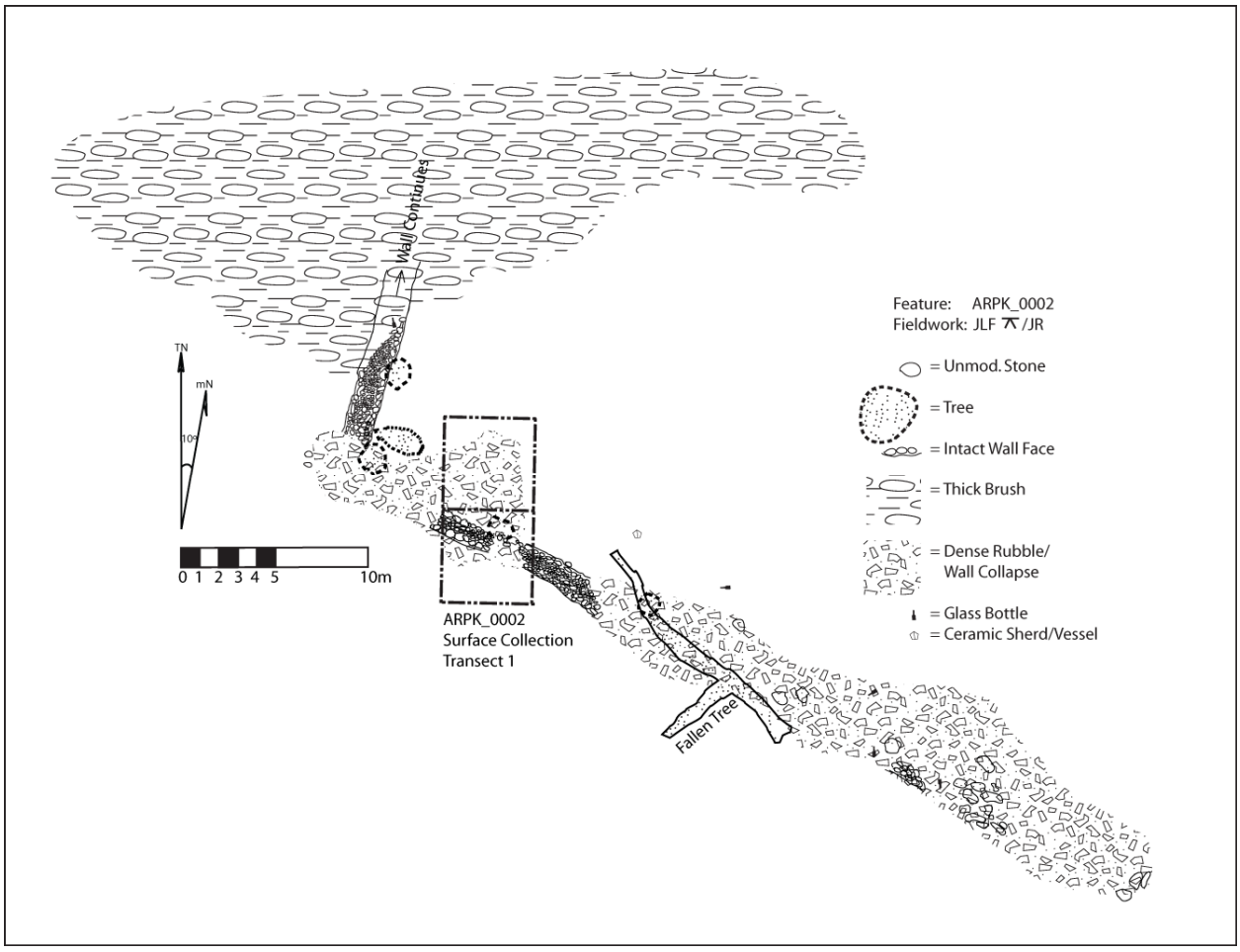


Figure 6.9. Map of ARPK_0002, a boundary wall on the northern border of the Kalawao hospital compound.

which fronted Damien Road.

The hospital complex itself is located to the south of these archaeological remains, based on the reading of historic maps and photographs. This area is covered by thick brush, but there do not appear to be any architectural remains on the surface, though some shallow depressions and mounds may hint at structural remains. The area does have some potential for future subsurface testing for comparison with household remains in the settlement, especially if geophysical survey were a possibility. Luckily, several historical photographs of the hospital compound are available, and give a sense of the spatial organization of the area. Various descriptions are given in the archival sources about the settlement (e.g. Greene 1985: Illustration 9, 129-130, 147, 150, 156-157), and while there were subtle changes in specific buildings, the overall layout remained consistent throughout the Hansen's disease period. The hospital compound was arranged around a central plaza, with the buildings including a barracks for sick patients, a dispensary for medicines, and a kitchen to provide food. The entire quadrangle was enclosed by a picket fence, and as the archaeological remains show, a stone wall on the north side. Despite early pleas to the Board of Health about the need for medical facilities in Kalawao, the hospital itself was apparently never full, while other parts of the settlement remained crowded. For example, an 1886 report from Rudolph Meyer, the settlement's superintendent notes that, "Despite the hospital's cleanliness and the nursing and medical care given patients, in addition to food, washing, and lodging, few cared to enter it because they did not feel comfortable there. The buildings were usually only partially filled" (Greene 1985: 157). This area was the one part of the leprosarium in Kalawao that approached an architectural space reminiscent of other total institutions with its quadrangular layout and open central plaza. Perhaps it was never full because it was the one place where inmates felt as if they were living in a place that did not have a proper Hawaiian spatial order, and thus felt foreign.

Site 3: Cistern Area North (Hawaii State Site Number 50-60-03-2422)

This site (Fig. 6.10) contains one of the largest zones of uninterrupted archaeological remains on the surface encountered in the research area. Along with Damien Road itself, which was recorded as an archaeological site, the Cistern Area South site, and the Store area, this site makes up a portion of several hectares of archaeological remains interpreted as a central core area of habitation and activity during the Hansen's disease period. The cistern area draws its name from a stone water reservoir "built near the hospital to provide a supply of water in case of accident or during repairs to the water pipes", completed before 1886 (Greene 1985: 158). The site consists of a series of interconnected and associated stone walls, terraces, platforms, enclosures, and various concentrations of historic artifacts. Particularly notable among the latter was ARPK_0026 (Fig. 6.11), a bottle scatter, consisting of 76 glass bottles and bottle fragments, three wrought-iron handles, presumably for iron kettles, one piece of ceramic, and two pieces of sawed bone.

The westernmost feature of this site is ARPK_0003, a large, roughly rectangular enclosure with three partially stone-faced internal terraces, over 70m long from north to south, and between 20 and 40m wide. The ground slopes down naturally to the north within this enclosure, with the terraces built across the slope. The enclosure wall is well over 1m high in places, a substantial construction. A large rubble scatter in the western portion of the feature,



Figure 6.10. Map of the Cistern Area North site.



Figure 6.11. Photograph of ARPK_0026, a surface midden consisting primarily of intact glass bottles.

overlapping the upper and middle terraces, contained a high density of artifacts (indeed the highest density of artifacts from any of the surface collection transects carried out for this project, see next chapter), clear evidence for domestic activities in this area during the Hansen's disease period, though no specific domestic structures were found in the area. One interesting find in the area was a glass opium vial (Fig. 6.12). While no references were found for Kalaupapa specifically, opium use is noted in a contemporary leprosarium in New South Wales, Australia, "largely consumed by the Chinese lepers, but only as a stimulant and narcotic medical comfort" (New South Wales Legislative Assembly 1893: 36).

Features ARPK_0004 and ARPK_0019 are built against a steep rise to the north and east of ARPK_0003. ARPK_0004 (Fig. 6.13) consists of a large enclosure in the south and a series of terraces in the north. Notable for this feature are the massive facing stones in a core-filled wall in the southern part of the feature, some of which appear to have been set upright during construction, built into the wall that parallels Damien Road. This wall also contains several wooden fence posts, suggesting modification in a more recent period. Within the enclosure, in addition to some boulders, rubble scatter, and glass bottles, there is a large basalt slab with a round depression in the middle, a possible adze grinding stone (Fig. 6.14). The facing wall of the terrace where the feature has an interface with ARPK_0003 is quite massive, standing well over 2m high. The upper terrace of this feature is constructed with an a'a and rubble fill, and is marked by a standing stone in the south (Fig. 6.15). This terrace may have had a ritual function of some sort, possibly as a household or local shrine, the standing stone most likely a *pōhaku a Kāne*, a stone "dedicated to the deity Kāne", one of the main Hawaiian gods (Kirch 1985: 260). The presence of this shrine in close proximity to the stone cistern (ARPK_0005) may indicate the importance of the pre-existing ritual landscape of Kalawao for the life of the settlement during the Hansen's disease period.

Terracing continues to the north from ARPK_0004, following the slight rise in the landscape, into ARPK_0019, which is covered by large boulders, but which also includes a series of walls and terraces. These terraces are most likely agricultural in nature, and an L-shaped shelter, probably a temporary field shelter, is present in the northeastern part of the feature, incorporating a massive boulder. There is a possible intact hearth deposit, represented by what appears to be an ashy sediment, preserved beneath a small overhang provided by this boulder, though this was not tested through excavation. A high platform incorporating rectilinear stone cobbles is located just north of this shelter, though it is partly obscured by thick brush. An additional L-shape (ARPK_0018) was recorded to the north of ARPK_0004, just downslope from these terraces.

Feature ARPK_0005 consists of the 1886 water reservoir (Fig. 6.16), an associated standing wall, and a depression on the eastern face that may have functioned as a water collection basin or drainage of some sort. To the north and east of the cistern, the enclosures and walls continue. The cistern itself stands between 2 and 2.5m above the ground, and is stone-faced on the outside, with lime mortar on the interior. The mortar is only partially preserved, and it is unclear whether it was painted in the past. The cistern is located on a rise in the natural topography, which takes the form of a steep slope in the west, gently declining to the west towards the flat coastal plain of Kalawao.

Continuing to the east, the landscape is marked by a series of attached stone enclosures, most of which are roughly rectangular in form. Several notable features contain evidence for remains of habitation sites. ARPK_0007 contains a scatter of unmodified basalt cobbles which



Figure 6.12. Glass opium vial found on the surface at ARPK_0003. Nickel in background used for scale.

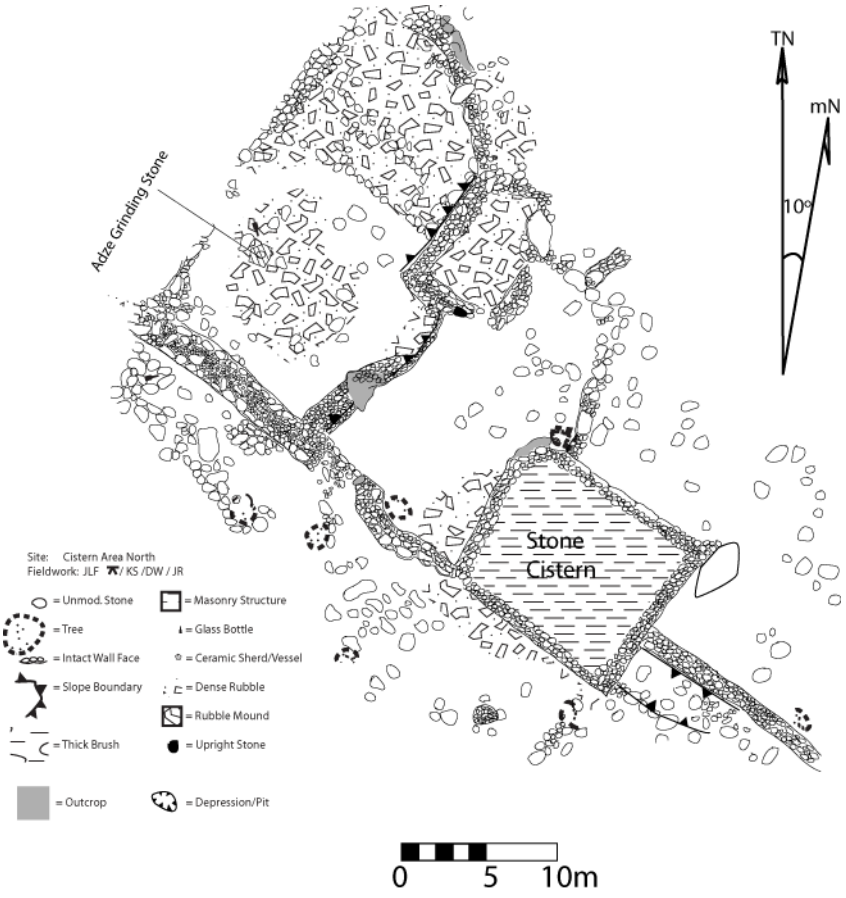


Figure 6.13. Detail of the area around the cistern. Note the upright stone just to the north of this feature, and the adze grinding stone in the terrace below.



Figure 6.14. Probable adze grinding stone at ARPK_0004.



Figure 6.15. Terrace with upright stone, probably a *pohaku a Kane* that may have part of a pre-contact domestic shrine for an elite household.



Figure 6.16. Photo of the cistern as it appears today, facing east.

may be the footprint for a household structure located within a stone enclosure. This structure is covered by a well preserved, rich midden scatter which will be discussed in the next chapter. There is very little midden scatter in the enclosures to the north and east of ARPK_0007. The other enclosures and archaeological features in these areas are probably mostly agricultural. ARPK_0021 is a large enclosure incorporating several massive boulders. One of these boulders, in the northwest, provides a large overhang, which would have made a convenient cupboard, though no artifacts were present at the time the feature was recorded. The enclosure also contains a scatter of a'a cobbles in the northeast, which have been associated with household remains elsewhere in the survey area.

ARPK_0022 (Fig. 6.17) is a fairly well preserved enclosure which also incorporates some very massive boulders (the largest, in the north, stands approximately 3m high). This enclosure is not directly connected to the associated features, though it is close enough to be included in the site. It is roughly square in shape, and relatively small, at roughly 8 x 8m, and may be the remains of a domestic structure. ARPK_0025 (Fig. 6.18) is a similar enclosure, though much more irregular in shape, and almost certainly not a habitation feature. ARPK_0023 is a high terrace when approached from the northeast. Like ARPK_0019, it is heavily covered with unmodified basalt boulders, though the terrain is not as steep. Along the north of the site, walls lead from ARPK_0019 (northwestern-most), ARPK_0027, and ARPK_0023 (northeastern-most), into heavy brush. While the time and resources available prevented the crew from pursuing these archaeological features further, it is possible that this type of arrangement continues for a considerable distance north, eventually blending in to the field system of Kalaupapa peninsula.

Site 4: Northwest of St. Philomena Church (Hawaii State Site Number 50-60-03-2425)

This site consists of a set of archaeological remains located to the northwest of the corner of St. Philomena Church, the historic Catholic Church in Kalawao, with the last major building alterations completed in 1889 (Greene 1985: 179). A large mound and a series of depressions are situated in the area described in historic documents as the location of Father Damien's first house, and may include his later, more substantial dwelling as well (Greene 1985: 101). There are two roughly square-shaped depressions and a possible outline for a third, with a large mound in the south. The space between the mound and one of the depressions is covered by a scatter of stone, mortar, and brick rubble. A row of Ironwood (*Casuarina equisetifolia*) trees grows along the church boundary wall, possibly the original trees or descendants of trees planted as a windbreak in the late-nineteenth century. In addition, the area contains several patches of feral tobacco plants (*Nicotiana* sp.), possibly the descendants of those planted by Father Damien or one of his associates to fill his famous smoking pipe.

Site 5: Coastal Plain (Hawaii State Site Number 50-60-03-2424)

This survey area included five sites (Hawaii State Site Number 50-60-03-2100, 2101, 2102, 2468, and 2469) documented during previous archaeological survey work in 1998 and 2001, with many of the features already mapped in detail (Durst and Nakamura 2005).

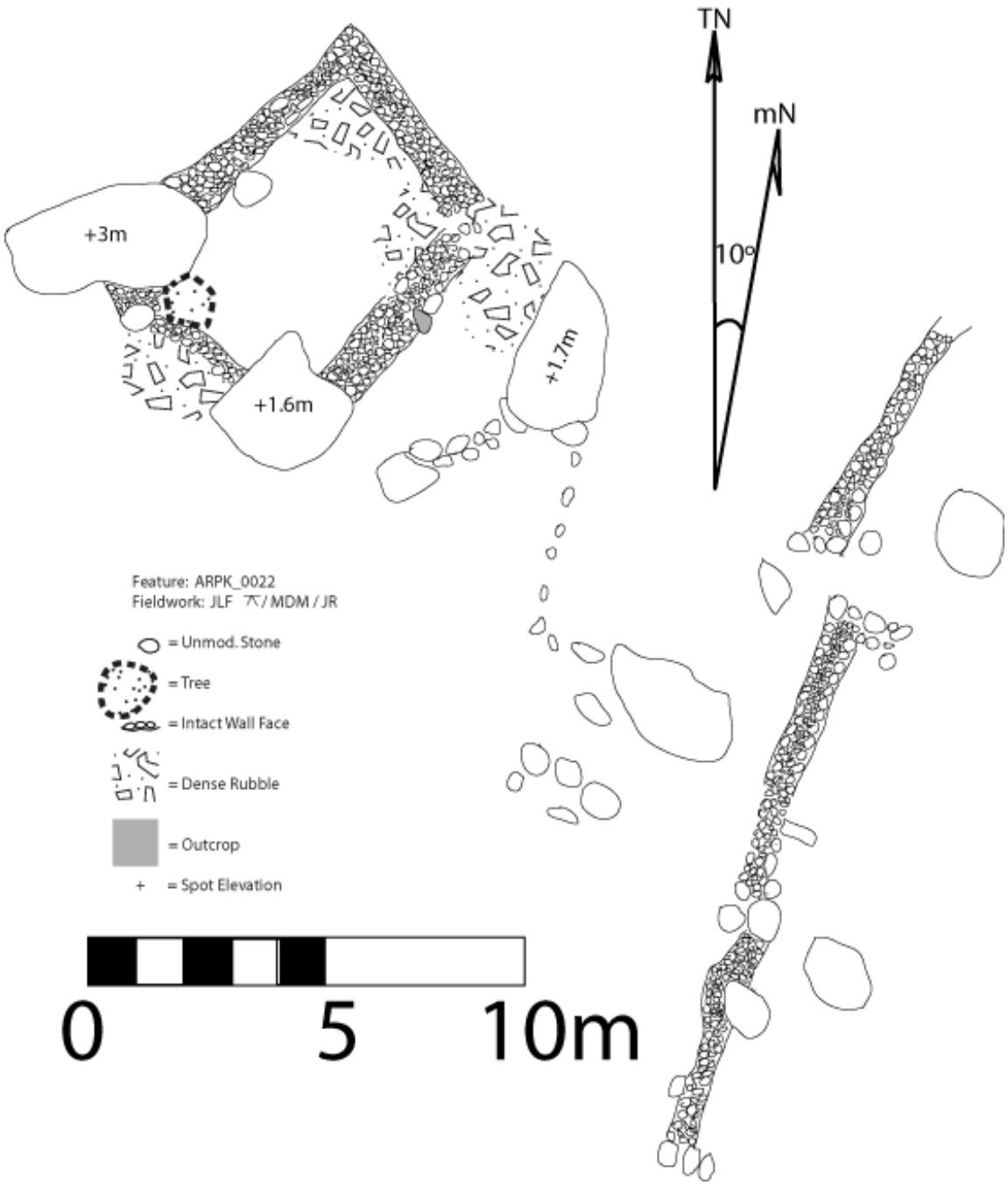


Figure 6.17. Detail of ARPK_0022, an enclosure incorporating massive boulders in the northeastern part of the Cistern Area North site.

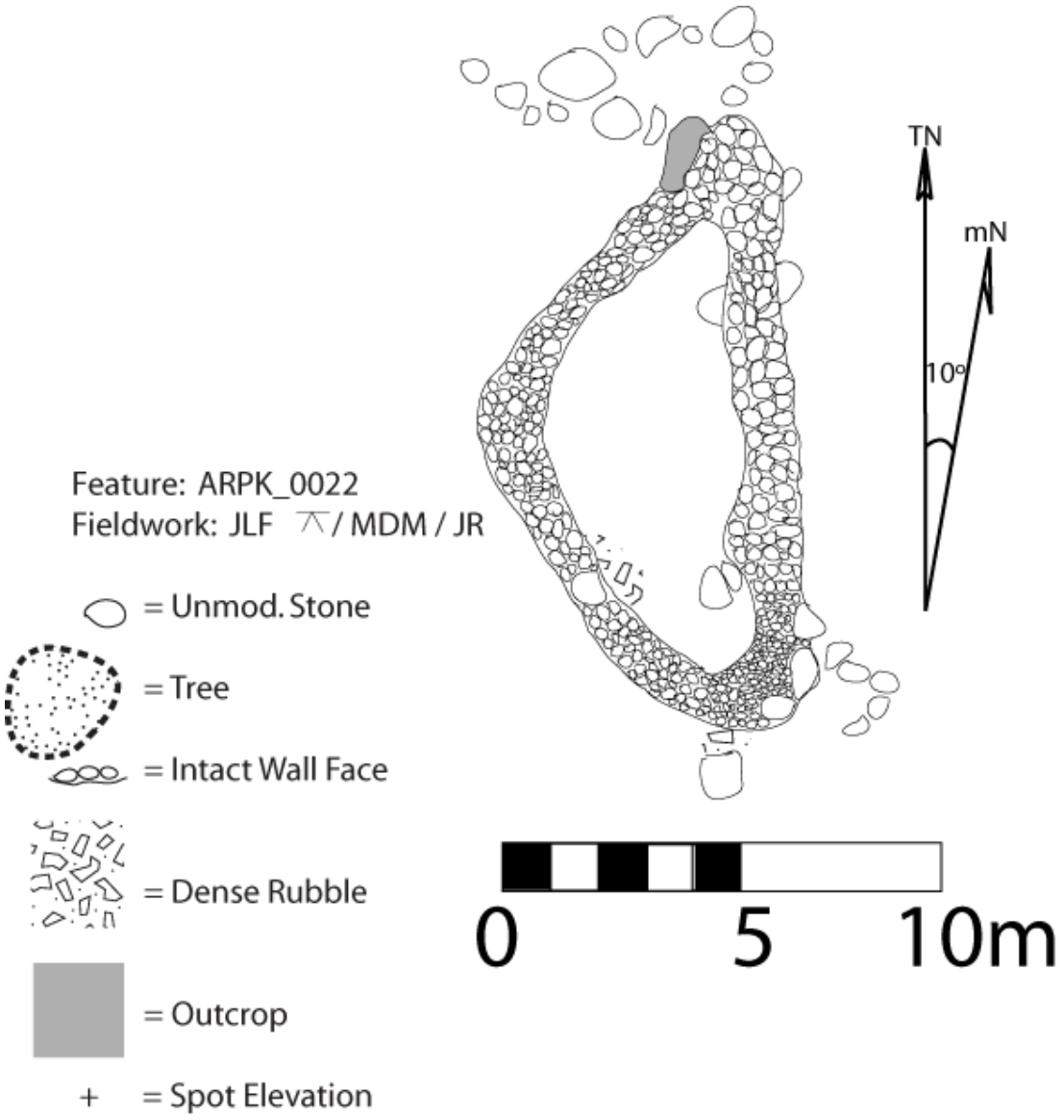


Figure 6.18. ARPK_0025, a "D" shaped enclosure in the northern part of the Cistern Area North site.

Previously unrecorded features were included within the site recorded for this survey, and given a separate site number. The remains from these sites will be discussed together here, using the coastal plain as an analytical unit within the archaeological landscape of Kalawao. Newly recorded features in the area include a modern wooden platform, which is probably associated with the filming of the movie *Moloka'i: The Story of Father Damien*, a free standing wall and enclosure north of this platform, both of which were under heavy brush, hence outside of the 1998 and 2001 survey areas, and a large enclosure overlooking the water. The rectangular enclosure to the north of the area covered by the 1998 and 2001 surface survey (ARPK_0034, Fig. 6.19) is punctuated by three entrances, two in the northern wall close to the corners, and one in the southeastern corner. Presumably these entrances would have had some kind of gate or door, though no evidence was found during investigation of the structure. A number of glass bottles are present, both on the ground within the structure, and placed within the walls of the structure. The structure may have served as a livestock enclosure for cattle being delivered into the settlement. The feature is located approximately 76m west-southwest of several large concrete slabs, associated with a historic crane site that may have been used for bringing goods into the settlement.

The coastal plain area is characterized by a series of walls running parallel to the coastline, which have dense stands of Christmas berry growing on their leeward sides. From these walls to the coast, there is a scattering of low features and artifacts, a mixture of domestic and possibly agricultural structures. One remarkable structure, feature 3T3-3, recorded during the 2001 NPS survey of the area, is a domestic structure, probably the remains of a thatched house defined by a stone outline with a stone pavement on the western, leeward side, where a midden scatter including, "*Cypraea* shell fragments, Kukui fragments, coral, and bone fragments" as well as "a Winchester shell casing, a basalt flake, a waterworn cobble with abraded facet, and a thin brass fragment" were noted (Durst and Nakamura 2005: 99). While this house can't be assigned definitively to a time period, it does show that there was habitation along the Kalawao coastal plain, despite the high winds that people living in the area would have experienced. There probably was some domestic activity in the Hansen's disease period within this coastal area, though more intensive surface collection and subsurface testing is necessary to determine more precisely the nature of habitation.

Site 6: Ambrose Hutchison House Area (Hawaii State Site Number 50-60-03-2426)

This area, located in Makanalua *ahupua'a*, is known locally as the home of Ambrose Hutchison, resident of Kalaupapa from 1879-1932, who served as a *luna*, or resident superintendent of the settlement from 1884-1897 (Mouritz 1916: 203-208). Two archaeological features were recorded in the area. Feature AH-1[28] (Fig. 6.20) consists of a small enclosure covered partially by heavy brush, with a badly deteriorated free-standing wall, and a scatter of unmodified stone cobbles which might be the footprint of a historic structure in the southeast. This feature is uphill from the area which is most likely the enclosure from Hutchison's house site, and may represent a secondary household feature, perhaps a garden plot with a small domestic structure or storehouse, related to the functioning of the settlement or Hutchison

28 Since these features fell outside of the normal survey area, and were not recorded using the standard survey forms, they were numbered differently from the other features recorded for this project.

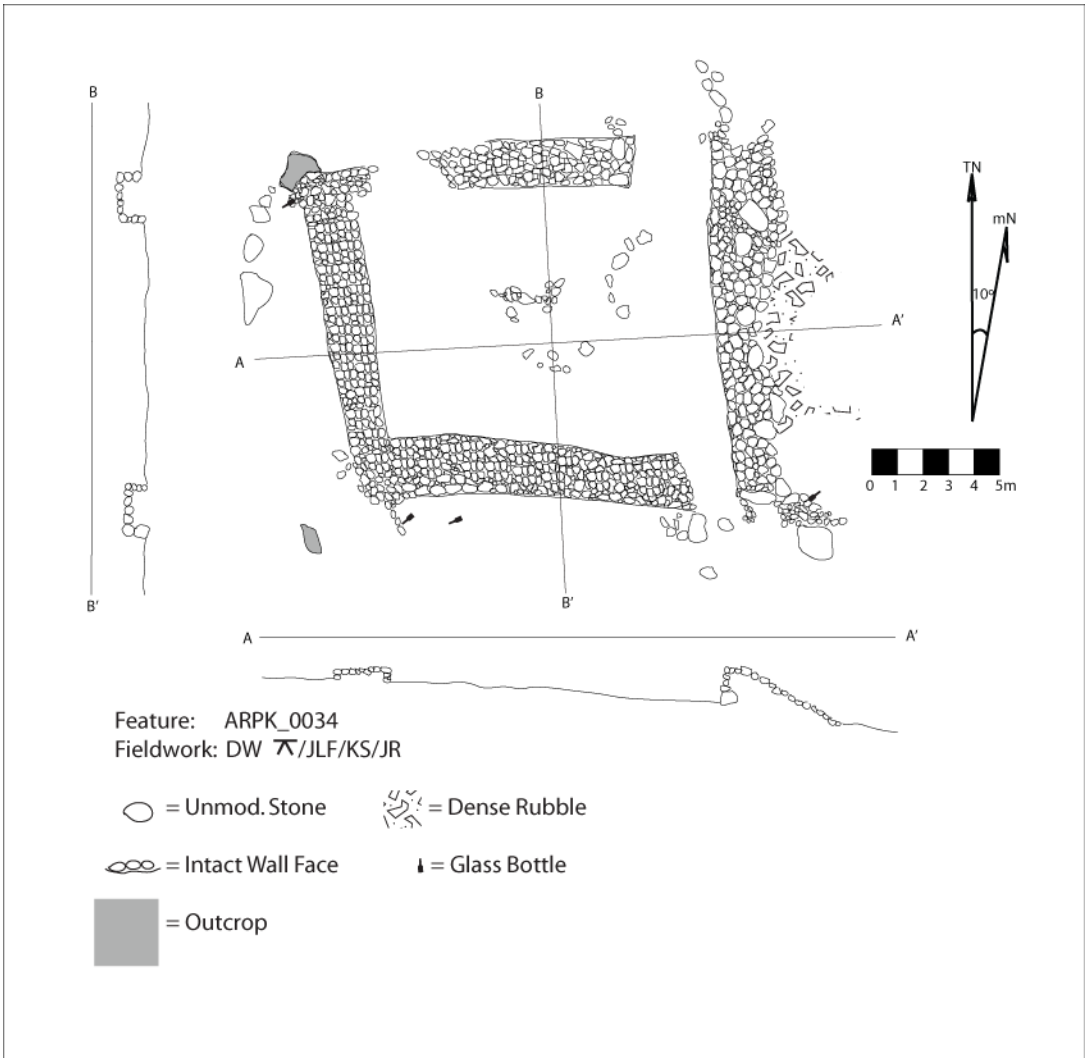


Figure 6.19. ARPK_0034, a rectangular enclosure close to the coast.

household. A midden scatter with a concentration of ceramics is located to the north, downhill from this feature.

Feature AH-2 (Fig. 6.21) is a large, roughly rectangular enclosure with a rounded northeast corner. There is a light scatter of historic artifacts across the site, including some remarkable metal finds. Specifically, two large, riveted boxes of roughly 1.5 cubic meters, a metal bed frame, the back of a chair, and a chair leg, all of iron, were discovered during surface survey of this feature (Fig. 6.22). Within the midden scatter are also a variety of medicine, alcohol, soda water, and condiment bottles, as well as ceramics, including a "Geisha Girl" pattern Japanese porcelain, which was popular in the late-19th and early-20th centuries (Fig. 6.23; Litts 1988; D. Ross *pers. comm.* 2009). There is a possible entrance to the enclosure in the west, associated with a scatter of waterworn pebbles. A possible paving exists in the south, along with a small depression and mound in the southeast. Along the eastern wall of the enclosure, a stone mound connects to a large, broken concrete slab. Between the slab and the enclosure wall is a north-south oriented depression. Several large metal pipes, and a scatter of broken porcelain plumbing fixtures lie to the south and west. It is possible that this is the location of a bathhouse, or at least a bathing area within Ambrose Hutchison's house compound. Greene (1985: 164-165) mentions the enthusiasm for bathing in Kalawao in the 1880s as a possible treatment for Hansen's disease, based on the research of a Japanese doctor.

Growing within the feature are several large banyan (*Ficus* sp.) trees, which may have been planted during the habitation of this site or shortly after abandonment, and a number of orange trees (*Citrus sinensis*), probably the descendants of plants cultivated as fruit trees while the site was inhabited. Massive java plum (*Syzygium cuminii*) and mango (*Mangifera indica*) trees line the remains of the western wall of the enclosure, possibly planted as a decorative border for the property, as well as for their fruit. These plants suggest fairly intensive cultivation of fruit trees in the area, probably for household subsistence, and possibly for exchange within the settlement. The size of the enclosure, and the remarkable richness of the artifacts on the surface speaks to the importance of the site, and the prestige which Hutchison would have enjoyed as *luna* of the settlement. The site's central location in Makanalua, fairly close to the road though set back enough to require a deliberate detour to gain entrance, is notable, given Hutchison's role during a transitional period, when settlement in the leprosarium was shifting from Kalawao to Kalaupapa.

Site 7: North of Road Site (Hawaii State Site Number 50-60-03-2423)

This site consists of remaining archaeological features located in the area between the Cistern Area North site to the west, the Coastal Plain to the east, and the two churches, St. Siloama and St. Philomena to the southeast along the road. A number of scattered archaeological features were recorded at a density that is notably lower than the density of the features elsewhere in the research area. The features consist mostly of stone enclosures and free-standing walls, many of which have been disturbed by the thick Christmas berry and other brush growing throughout the area. Very little artifact scatter was recorded in this area. An isolated C-shape shelter was recorded in the area, most likely dating to before the Hansen's disease period. Also included within this site's boundaries is ARPK_0015, a historic period tomb outside of the walls to the west of Siloama Church. The 1906 Territory of Hawaii Survey map indicates a Mormon

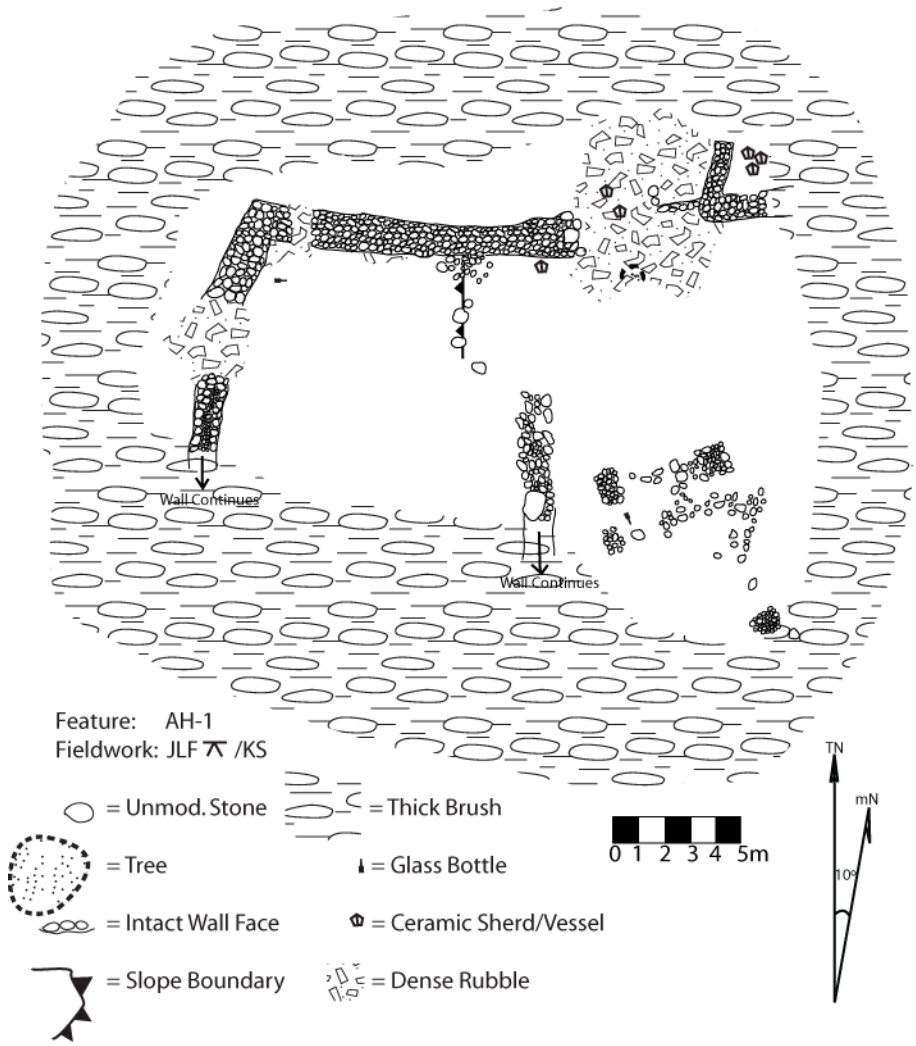


Figure 6.20. Feature AH-1, a small enclosure associated with Ambrose Hutchison's house compound.

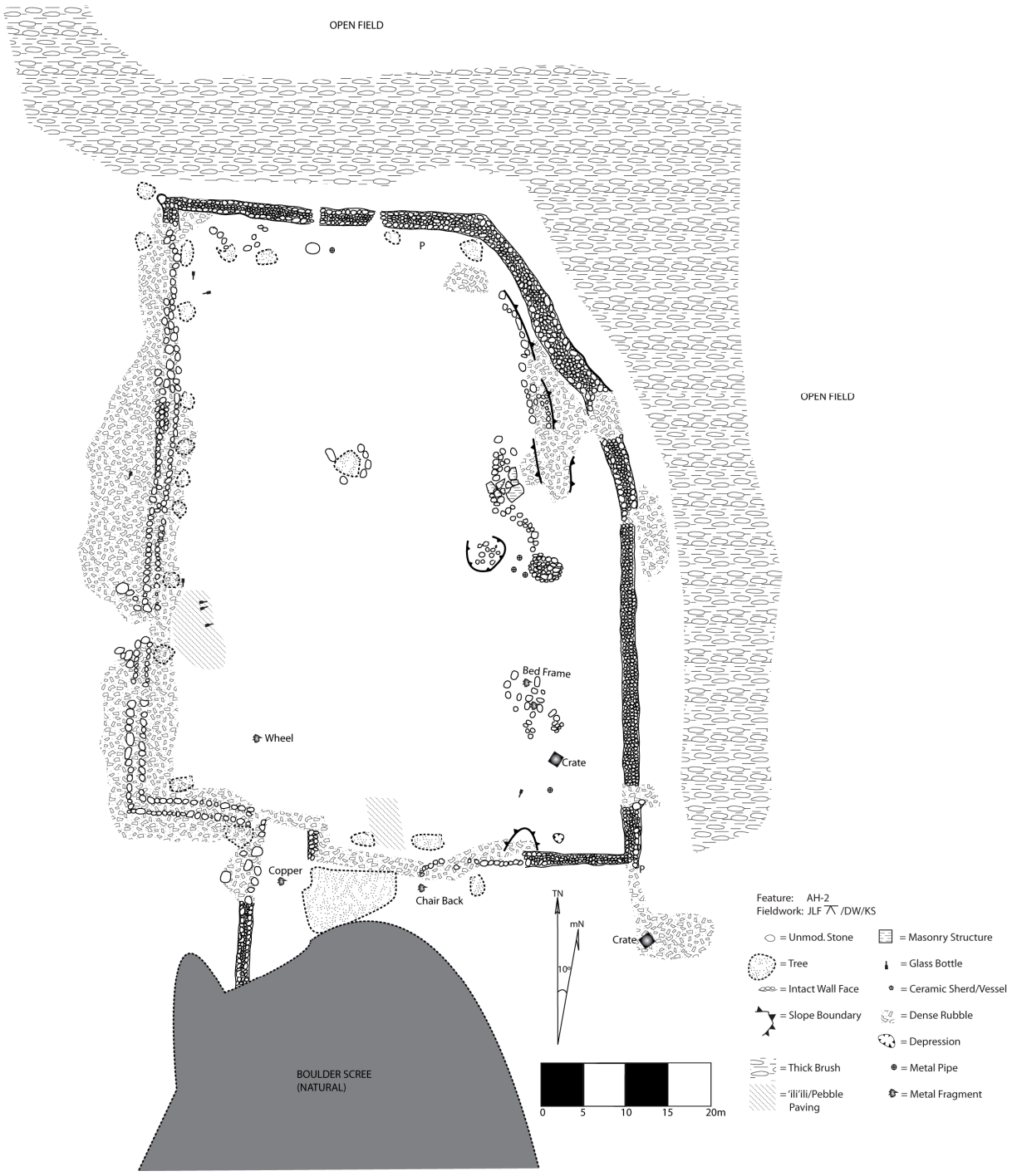


Figure 6.21. Map of the main enclosure of Ambrose Hutchison's house compound.



Figure 6.22. Metal artifacts from Ambrose Hutchison's house site (Clockwise from upper left: the back to a metal chair, a large metal crate, and a part of a metal bed frame).



Figure 6.23. "Geisha Girl" pattern ceramic found on the surface at Ambrose Hutchison's house site.

church within the site area, though no remains suggesting such a structure were encountered. This site indicates less intensive activity when compared with other parts of the research area, which is reminiscent of a tendency in Hawaiian settlement patterns to include a gap in feature density between a coastal area and inland area (e.g. Kirch, ed. 1997: 18; Ladefoged et al. 1987). If this is the case, it is another example of the pre-existing settlement pattern influencing the institutional landscape of the leprosarium.

Site 8: Baldwin Home for Boys (Hawaii State Site Number 50-60-03-2427)

This site consists of architectural features in the area which contained the Baldwin Home for Boys, a late-19th to early-20th century orphanage for boys in Kalawao. According to Greene (1985: 608), "All structures remaining at the time of abandonment were burned around 1935-36. The site should be left to benign neglect...". There are several interesting ruins in the area, so preservation of these features from an archaeological perspective would perhaps be a more beneficial policy.[29] One complex of concrete, stone, brick, and masonry structures (ARPK_0035, Fig. 6.24) probably represents the remains of the Boys' Home kitchen. Included among these remains are a large hearth, chimney remains, and a few round brick features which contain the remains of large, metal cauldrons. One particularly intriguing chimney fragment has "ALBERT GALASPO. AUG. 1910" scratched into the mortar surface (Fig. 6.25). Greene (1985: 605) mentions a reference to "the granting of an application by A. Galaspo of Kalaupapa to erect a bakery at Kalawao in 1904". Thus this is interpreted as the most likely site of a Kalawao bakery. Surface survey also revealed the exposed corner of a concrete building foundation that would have been a part of the Boys' Home compound (ARPK_0036). The entire area has a scatter of historical artifacts, notably ceramics and metal fragments. Included among the ceramics is a porcelain plumbing fixture bearing the mark "PACIFIC", which may be associated with the Pacific Porcelain Ware Company, which was operating in Richmond, California *circa* 1914.

Site 9: Damien Road (Hawaii State Site Number 50-60-03-2428)

For the purposes of this study, Damien Road, the main road leading from Kalaupapa to Kalawao, was included as an archaeological site. The modern road follows the course of the 19th century road that would have been in use during the early period of Hansen's disease settlement in Kalawao, and may have been the primary thoroughfare between the *ahupua‘a* of Kalaupapa, Makanalua, and Kalawao in earlier periods. A group of archaeological features constructed along Damien Road are included as part of this site. Included among these features are a number of free-standing walls, which parallel the road in various places without being attached to other archaeological features, thus they are interpreted as walls constructed to match the form of the road. The two other notable features included in the road site are a concrete masonry trough with an intact metal spigot (ARPK_0039,), and a small ramp which may have

29 Given that this area is the most likely site for the proposed Kalaupapa Memorial, it is especially important that cultural resource management strategy take into account the potential value of archaeological remains in and around the former Baldwin Home.

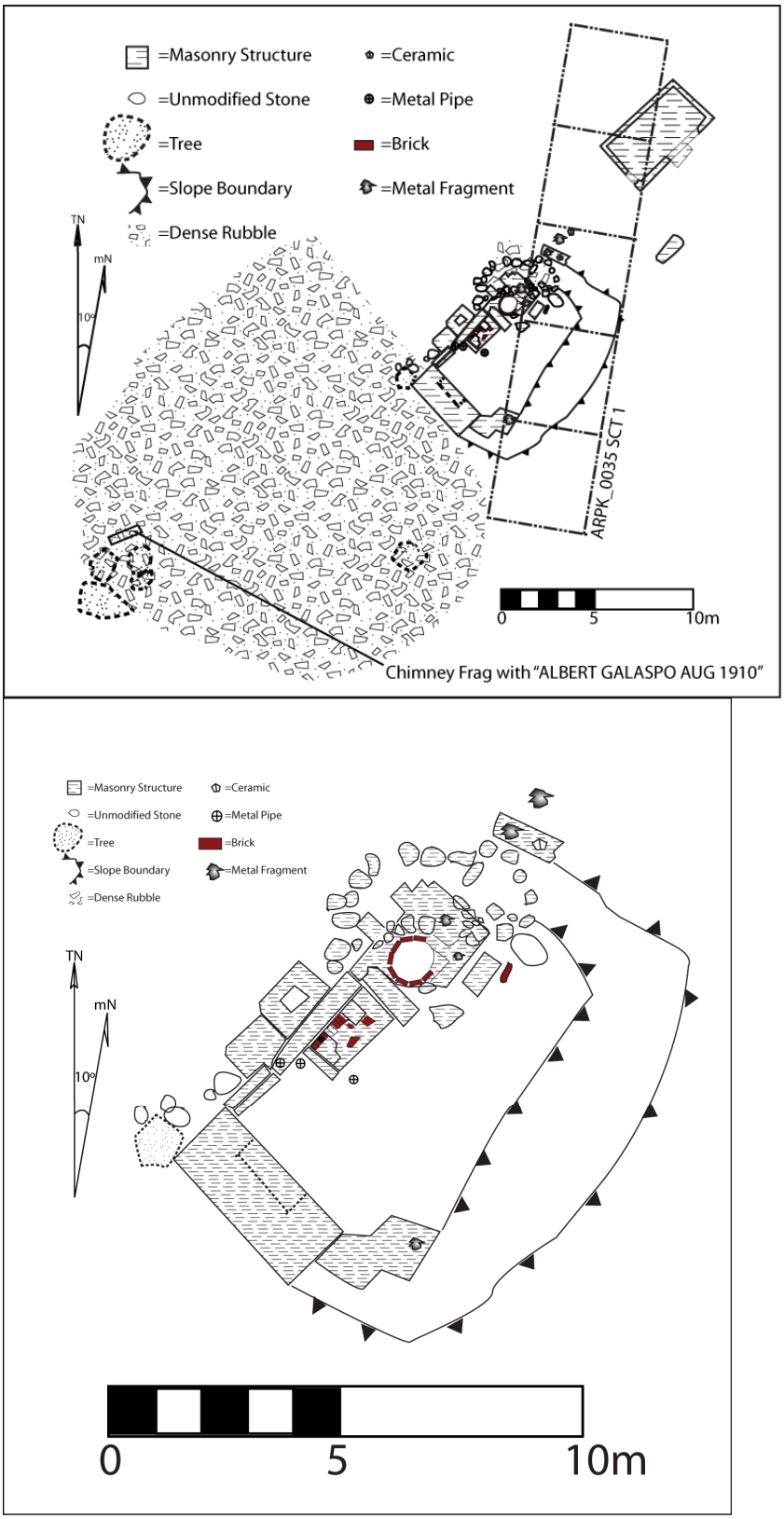


Figure 6.24. Map of ARPK_0035, and a detail view of the cookhouse.



Figure 6.25. Photo of inscribed chimney fragment from ARPK_0035.

been built to aid patients in mounting horses for transportation (ARPK_0041). These features (Fig. 6.26) point to the importance of transportation, and specifically horses in the settlement as a means of conveyance for exiles with limited mobility. This area features a mix of historical and modern artifacts, the latter largely associated with contemporary visitors and hunters using the area.

Site 10: South of Road Site (Hawaii State Site Number 50-60-03-2429)

This site consists of a relatively dispersed set of features between the Baldwin Home for Boys and the Cistern Area South site. The easternmost area of the site consists of a complex (ARPK_0040) of three clearly-defined partially stone-faced terraces and one possible terrace which is badly eroded, with a small scatter of rubble that may be a partially destroyed field shelter (Fig. 6.27). Continuing to the west, the next feature, ARPK_0042 (Fig. 6.28), includes a historic-period habitation site, based on the presence of mortar in one of the walls, and a dense, rich historic-period artifact scatter, including ceramics, bottle glass, and metal finds, notably the remains of a cast iron, foot-pedal powered sewing machine. This feature is defined by a group of contiguous enclosures with high boundary walls, with the eastern enclosure divided into upper and lower halves by a stone-faced terrace retaining wall. In the middle of the southern part of the feature, the two main enclosures defining the feature are separated by several smaller enclosures, one of which includes the mortared wall on its western side. The lower terrace in the northeastern part of the site contains a modified outcrop of unclear function, as well as another area of relatively dense midden scatter, including many glass bottles, and a ground stone pounder.

Other features included within this site appear to have been constructed as part of the prehistoric and protohistoric field system along the taluvial slopes of Kalawao, though there is also evidence for continued use in the Hansen's disease period. A small rectangular enclosure (ARPK_0044, Fig. 6.29) was probably a small domestic structure, which is compelling both because of the large boulders built into the northern part of the structure, reflecting the pattern set in ARPK_0022, and because of the fact that the feature is somewhat isolated from surrounding features, located higher on the talus slope of North Molokaʻi's cliffs. Downslope from this feature is a large rectangular enclosure (ARPK_0043) covered by heavy brush, adjacent to ARPK_0042. Continuing to the west, another group of rectangular enclosures (ARPK_0045, Fig. 6.30) is encountered, with a smaller upper enclosure to the south and a larger enclosure to the north, which is divided into two sections by a partially stone-faced terrace wall. The western wall of the northern enclosure continues to the north, leading to one of the walls bordering Damien Road. To the south, the enclosure system continues as part of the pre-Hansen's disease period agricultural system in Kalawao. Within the enclosure, though, is evidence for Hansen's disease period occupation in the form of a bamboo-type Chinese porcelain rice bowl, a patent medicine bottle embossed with "BRO. BENJAMIN WONDER OIL", and the spout of a metal watering can. These artifacts suggest the continuing use of some of Kalawao's agricultural plots in the Hansen's disease period, possibly in this case by one of the settlement's Chinese residents, given the presence of bamboo ware, which is typically associated with overseas Chinese populations (Greenwood 1996: 70; B. Williams, *pers. comm.* 2009). Further to the west, but included within the site boundaries are the remains of a post-on-pier house (ARPK_0060), an

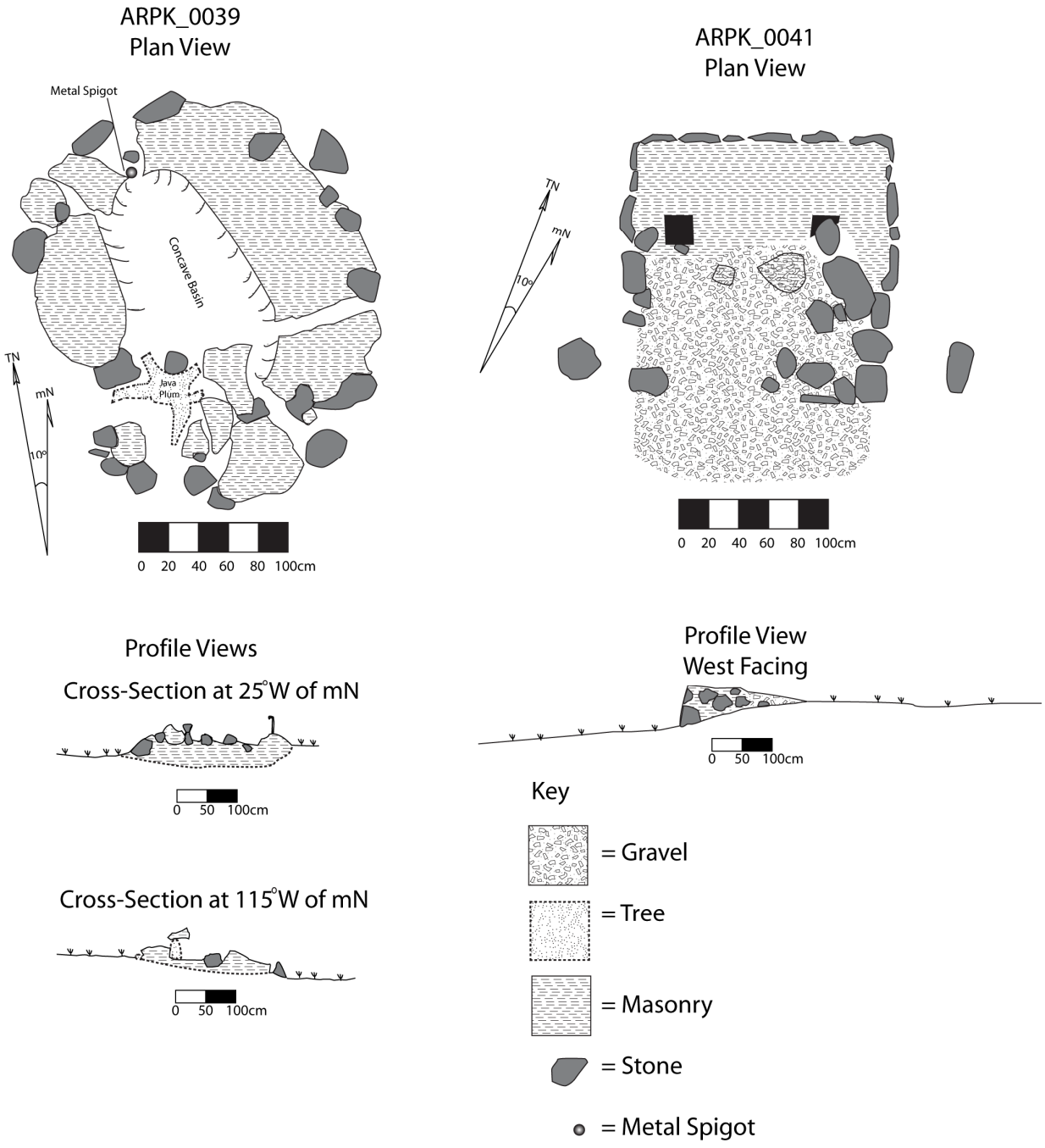


Figure 6.26. Horse-related features found along Damien Road.

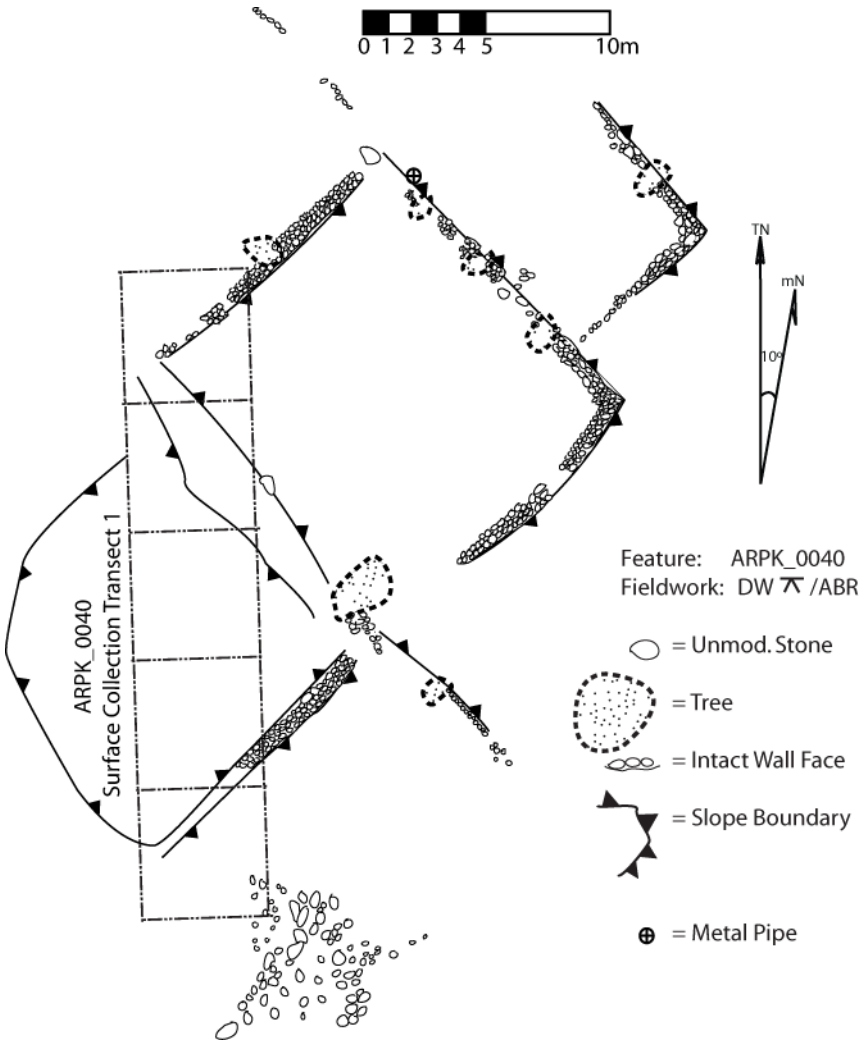


Figure 6.27. Map of ARPK_0040.

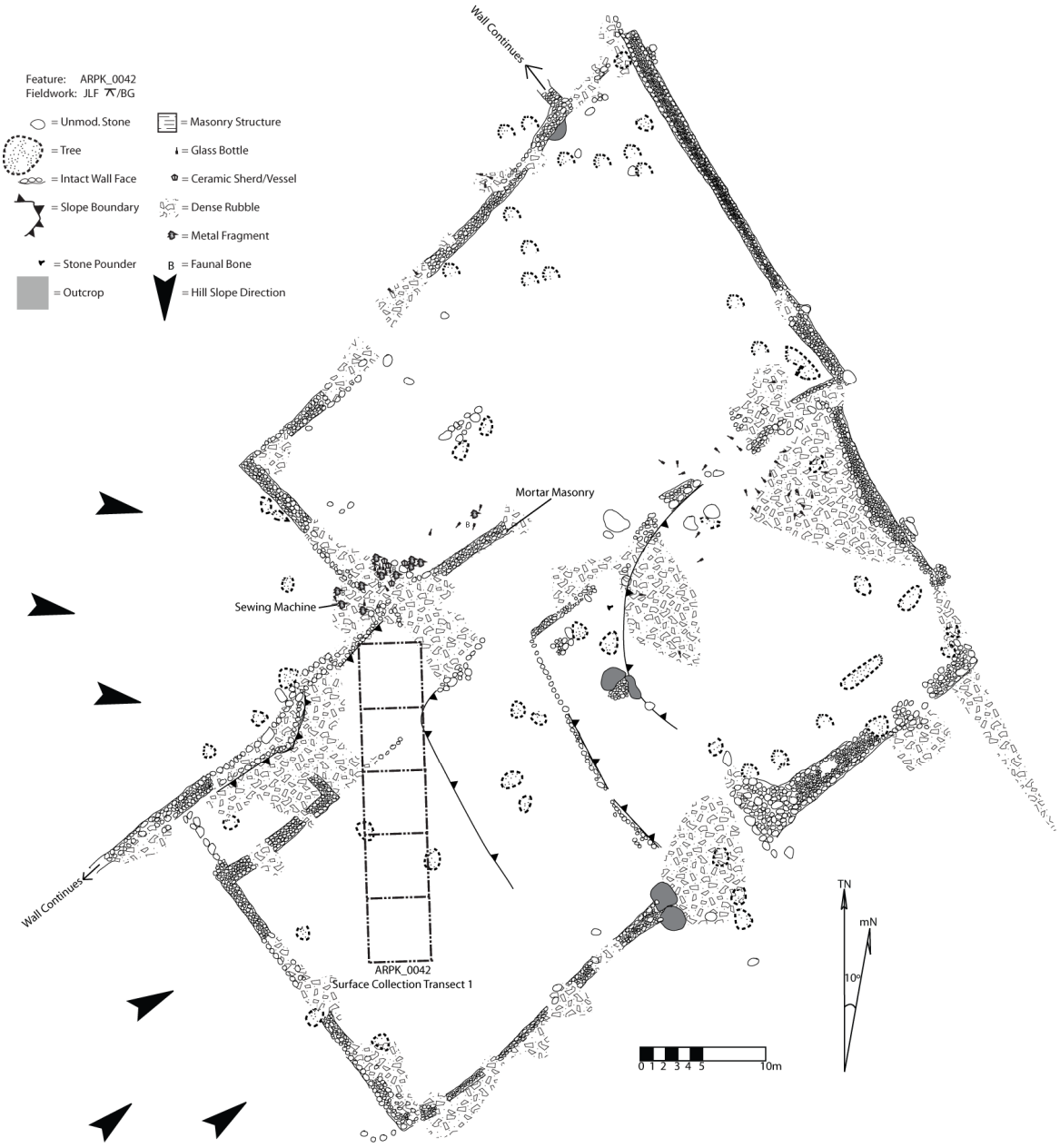


Figure 6.28. Map of ARPK_0042.

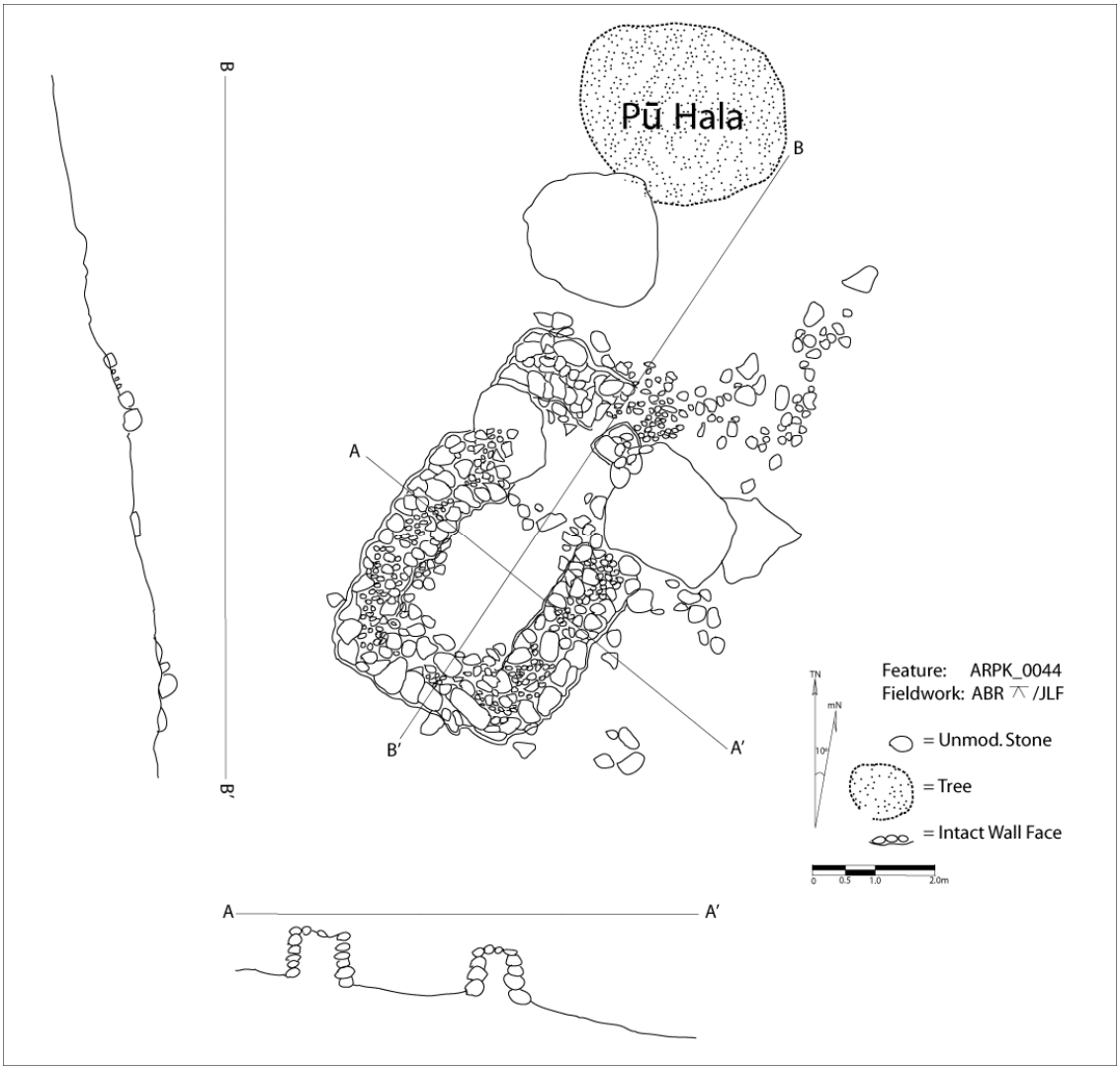


Figure 6.29. Map of ARPK_0044.

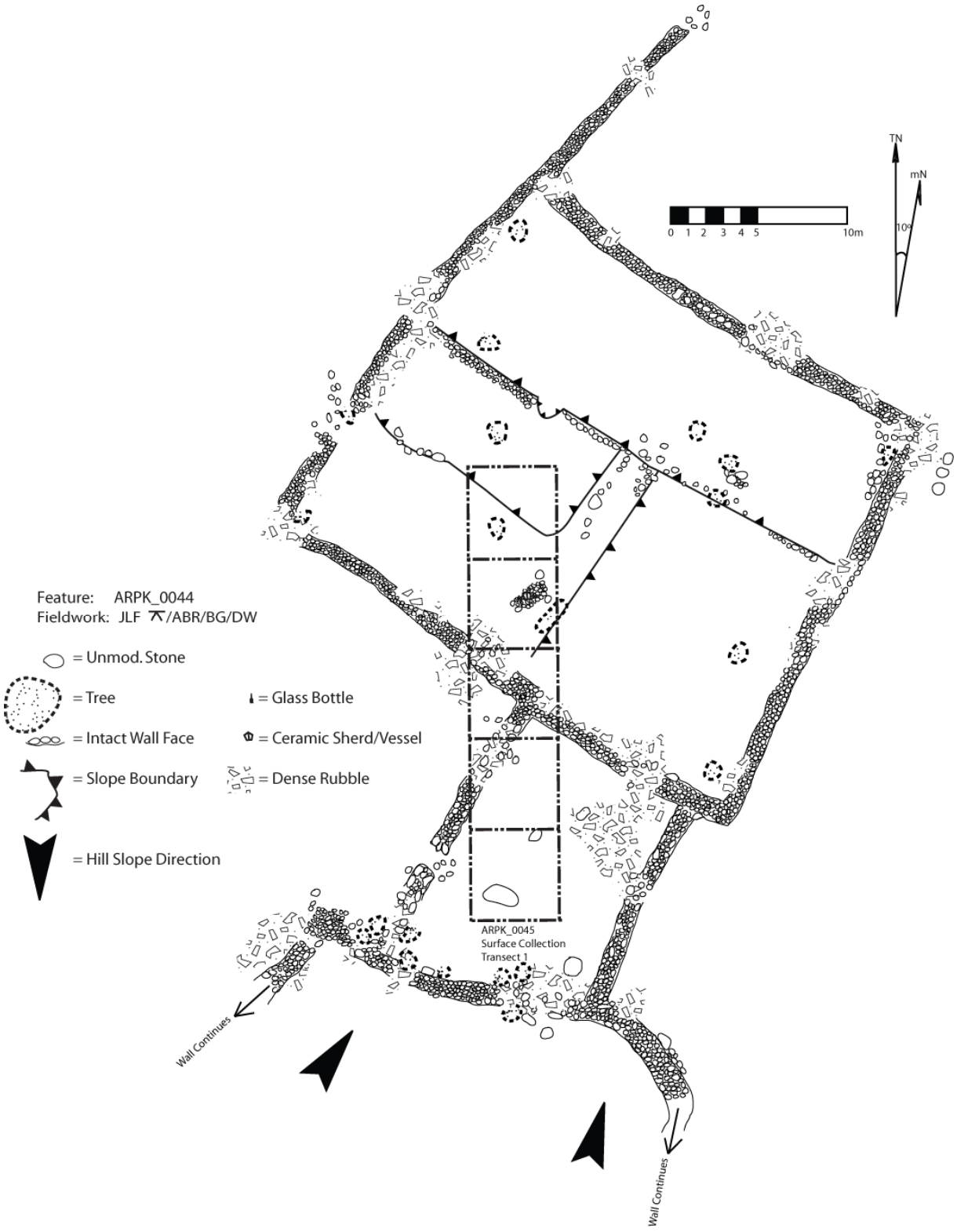


Figure 6.30. Map of ARPK_0045.

architectural form which only appears on the Kalawao landscape during the Hansen's disease period, which will be discussed in detail in the next chapter.

Site 11: Cistern Area South (Hawaii State Site Number 50-60-03-2430)

This site consists of a series of archaeological features that are perhaps most reflective of Kalawao's pre-contact history. The easternmost feature of this site (ARPK_0048) consists of a rectangular enclosure located upslope of a series of terraces (Fig. 6.31). The northwestern portion of the feature is a rectangular platform with a stone rubble fill and a well-defined eastern wall built up higher than the rest of the platform. The rest of the western part of the feature includes a number of stone mounds of unclear function. This site may represent an elite domestic site with a ritual component. Continuing to the east, there is another cluster of probable domestic structures (ARPK_0049, Fig. 6.32). This feature appears to be divided spatially by a stone-lined path in the middle which runs north-south, with a cluster of three C-shaped structures to the east, the southernmost one being more substantial than the others, as well as a rubble-lined terrace to the north. The western part of the feature contains a set of three attached C-shaped structures in the south, two larger structures attached to a much smaller western one. The northwestern portion of the feature includes a higher terrace, as well as a number of modified boulders. The path does not extend visibly beyond the structure, though this could be obscured by the leaf-litter covering the site, or it is possible that the path was only stone-lined where it passed through this feature.

The western part of the site is located in an area heavily covered by boulder scree deposited by landslides from the pali to the south. Just to the south of these features is a previously documented petroglyph (Kirch, ed. 2002, see feature KA-1), and in the southern part of this area there is a rectangular enclosure labeled as "KLW-30", documented during previous survey of this area by McCoy (2006). The two features in this area (ARPK_0050 and ARPK_0051, Fig. 6.33) are divided from the "Downtown" Kalawao site on the west by a high free-standing wall which runs along a ridge line that drops steeply to the west, turning towards the east to parallel Damien Road in the North. Included within these features are a round enclosure which may have served as a domestic structure or storehouse in the south, a large, low platform with a prominent upright stone in the southeast, and a series of agricultural terraces in the middle of the area. The northern part of this area contains more free-standing, core-filled walls, probably built later than the other components. The presence of an upright stone on a platform that may have served as an agricultural shrine of some sort in ARPK_0050 in close proximity to the terrace incorporating an upright stone by the cistern to the north (ARPK_0004) is notable given the potential importance of such features as loci of memory and power for Kalawao's Native Hawaiian inhabitants.

Site 12: "Downtown" Kalawao (Hawaii State Site Number 50-60-03-2431)

This site (Fig. 6.33) was an area of intense historic-period habitation, based on the presence of a large number of 19th-century artifacts, including ceramics, bottle glass, a gas lamp base, a metal bed-frame, and a door-knocker. The site has the most extensive midden scatter

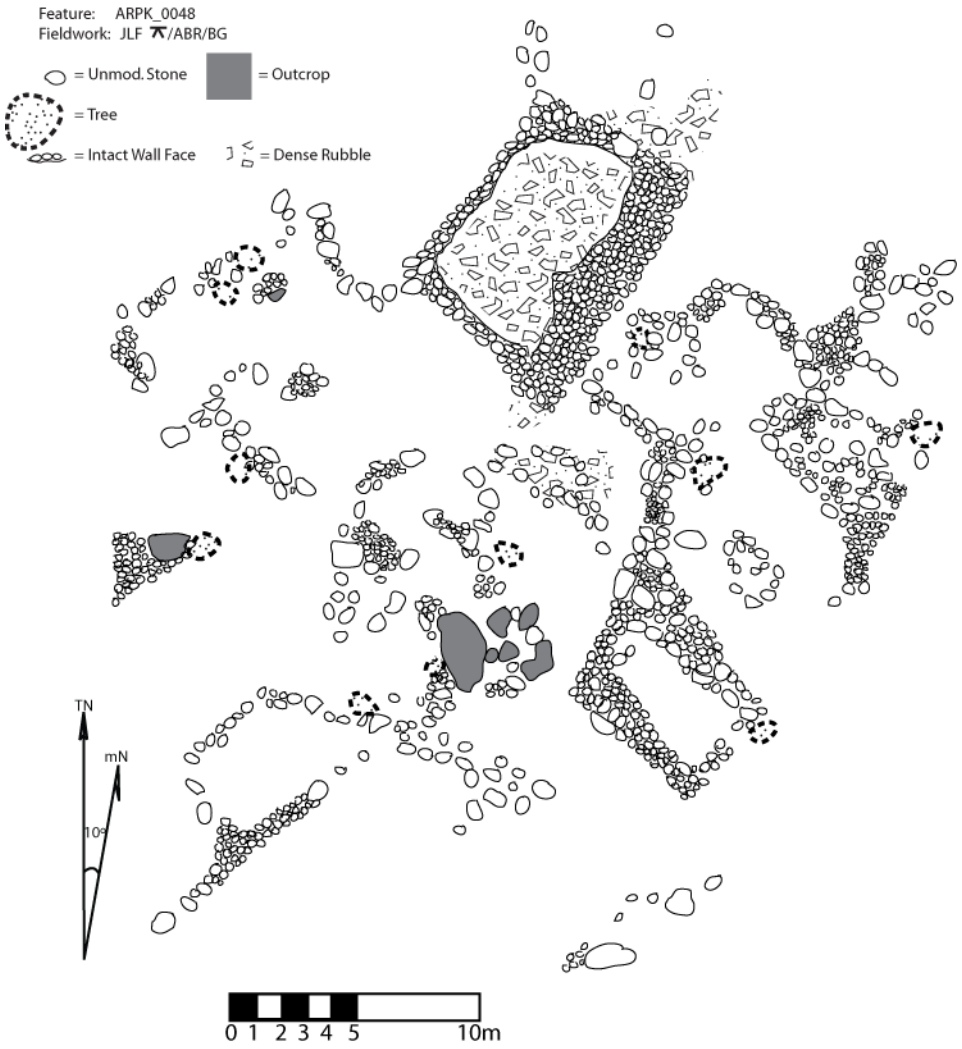


Figure 6.31. Map of ARPK_0048.

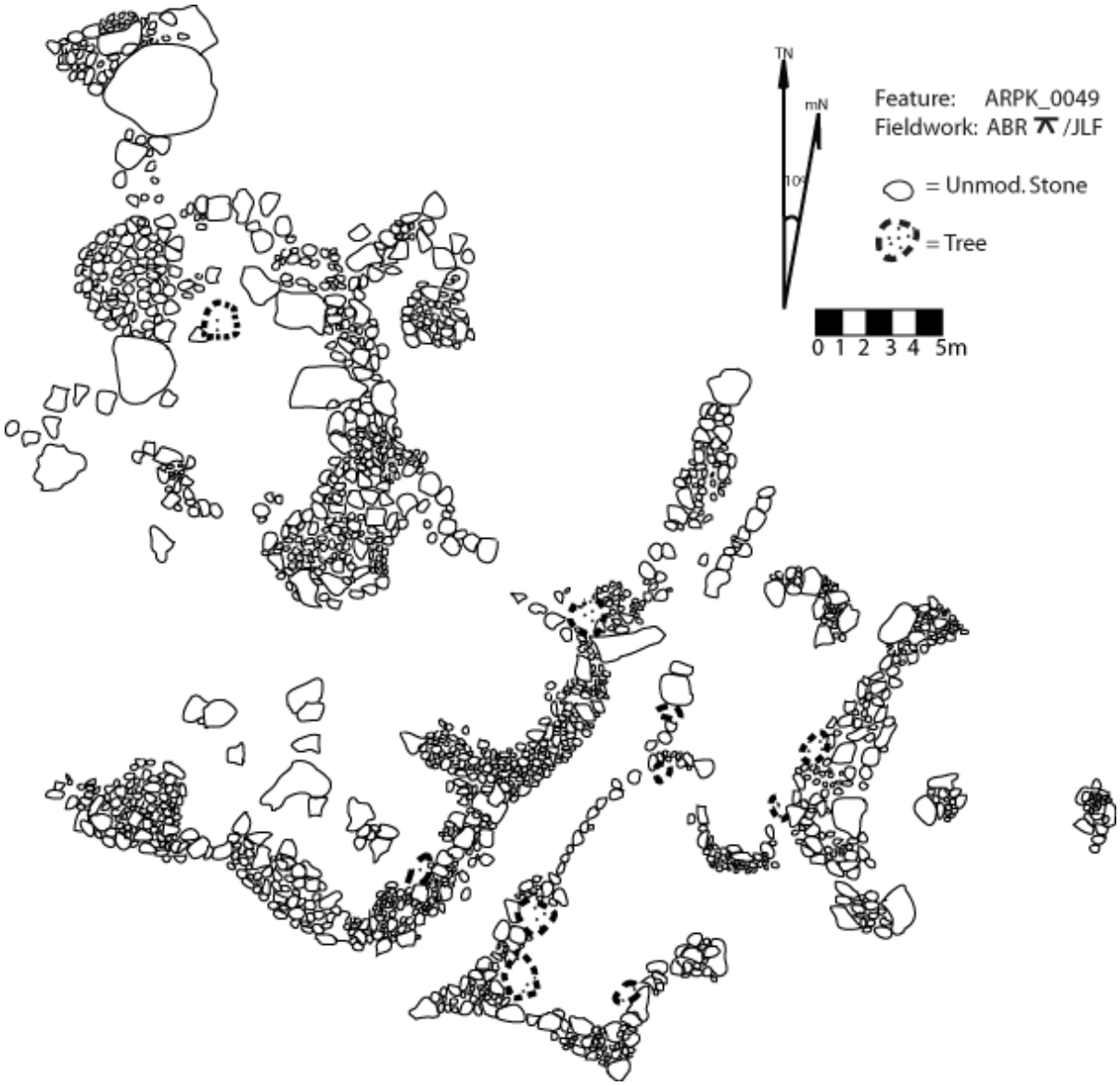


Figure 6.32. Map of ARPK_0049.

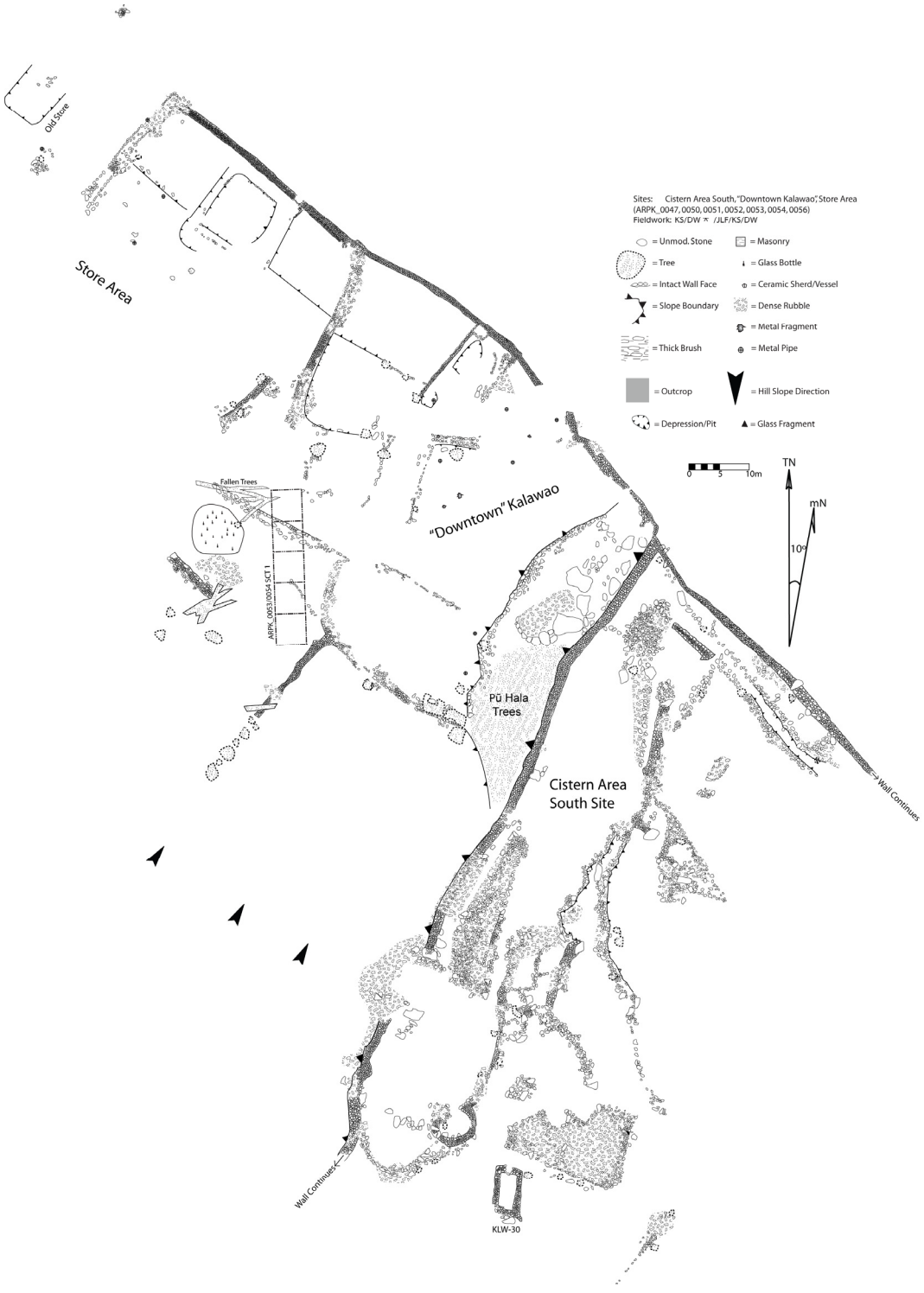


Figure 6.33. Map of three sites in Kalawao south of Damien Road. From right to left, the Cistern Area South, "Downtown" Kalawao, and Store Area sites, which are separated heuristically by roughly north-south running boundary walls, and by historical features.

documented by this study, and the systematic surface collection carried out in the area had the second-highest density of artifacts recorded (see Chapter 7). Architecturally, the area is marked by a series of terraces built parallel to the steep slope in the east, where the land rises up to the boundary wall separating this area from the Cistern Area South site. These terraces are covered by *hala* trees (*Pandanus tectorius*). The southern part of the site consists of several wide terraces defined by low stone walls running across the dominant talus slope, which comes down from the *pali* to the south. To the north of these terraces is a broad, relatively flat space with several large, partially stone-lined terraces built into the higher, western portion of the area. The southwestern portion of the site contained a dense bottle scatter around a large depression which may have been an *imu* (earth oven) used during the Hansen's disease period (Fig. 6.34). The area contains a number of notable plant species, including *milo* (*Thespesia populnea*), Eucalyptus (*Eucalyptus* sp.), and Ylang ylang (*Artabotrys* sp.).[30] There were probably a number of historic-period houses here, and the surface remains suggest that this area was bustling with residential and social activity throughout the late-19th century.

Site 13: Store Area (Hawaii State Site Number 50-60-03-2432)

This site is located in the vicinity of the "Old Store" as indicated on the 1906 Hawaii Territory Survey Map of Kalaupapa (see below). The southeastern area of the site includes a large terrace and enclosure complex that may originally date to the prehistoric or protohistoric period, though it was probably modified and expanded later (ARPK_0055, Fig. 6.35). Specifically, the large terrace and enclosure in the southeastern part of the feature may have been part of a pre-contact domestic cluster, while the free-standing walls and large enclosure walls to the north and east were likely constructed at a later date. Down slope from this feature are a series of terraces and depressions south of a wall paralleling Damien Road (ARPK_0056). These depressions are associated with a series of metal pipes, and may be evidence of post-contact irrigated pondfield agricultural activity. This would have been just east of the store itself as identified from historic maps and photographs. A depression containing a scatter of bottle glass and ceramics is the most likely space to contain the remains of the store itself, which began operating after 1873 (Greene 1985: 66). The original structure was abandoned with the Kalawao settlement, but still standing as late as 1930 (Greene 1985: 74). Several sacks of concrete were apparently dumped on this spot, probably long after the wooden store structure itself had decomposed. Close to the road in the central northern part of the site is a stone masonry feature that contains a metal spigot for water, probably both for drinking and for watering cattle and horses.

Uphill and to the southwest of the store itself is a single U-Shaped enclosure (ARPK_0057). Continuing west, there is a series of five rectangular enclosures, all attached, which scale a rise in topography before ending abruptly (ARPK_0058 and ARPK_0059, Fig. 6.36). ARPK_0058 consists of three well-defined attached rectangular enclosures constructed where the land slopes gently down to the north and east. ARPK_0059 is a large rectangular enclosure built where the east-running slope becomes much steeper, with a decomposing wall running north-south along the top of the slope, dividing the enclosure in two. To the east of this dividing wall, the land is steeper and covered in boulders, while to the west the slope is more

30 Kalaupapa locals often refer to this area as the location of the "Ylang ylang" vine.



Figure 6.34. Photograph of the bottle scatter and *imu* in the western part of ARPK_0054.

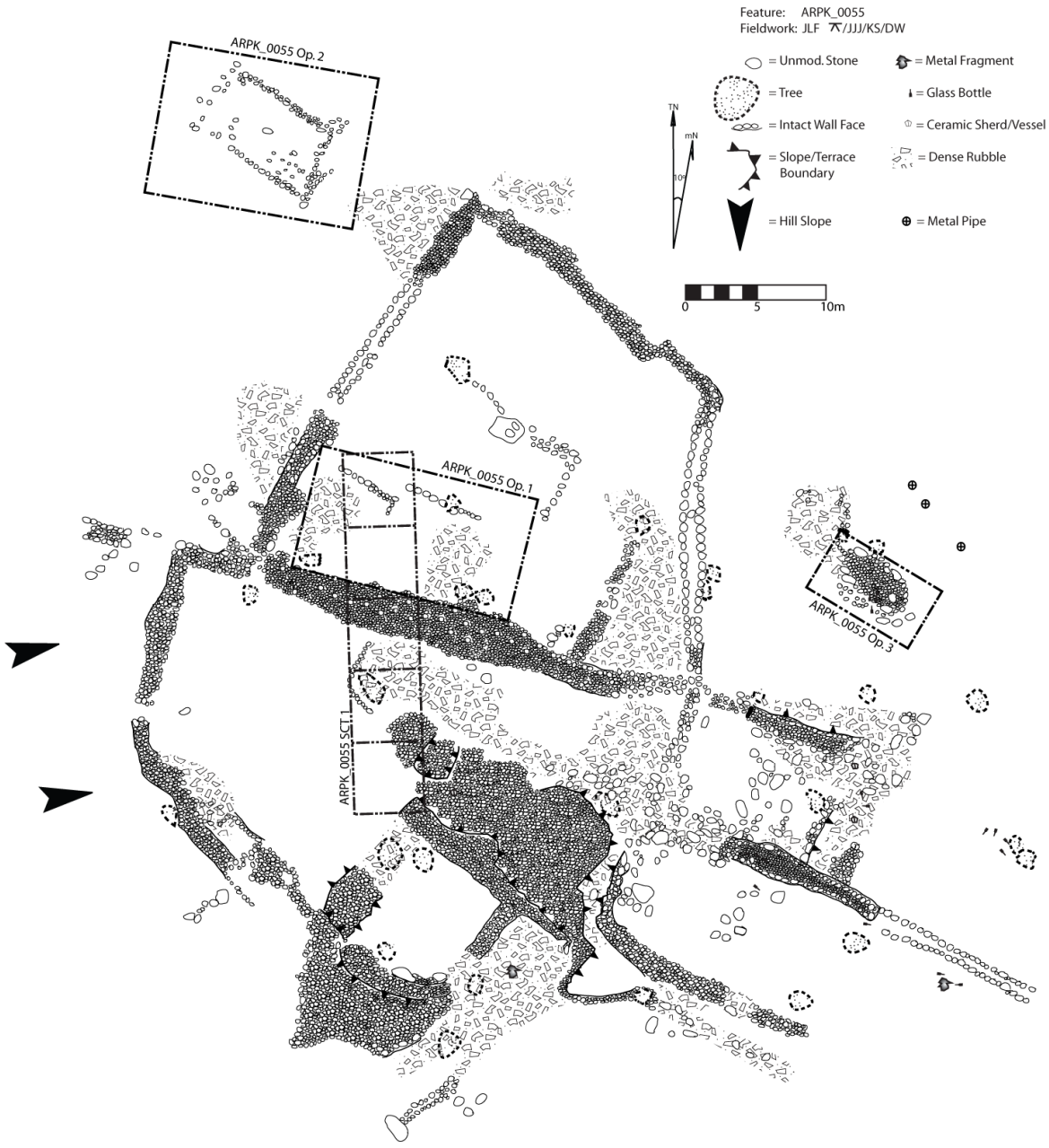


Figure 6.35. Map of ARPK_0055.



Figure 6.36. Enclosures to the west of the Kalawao store.

gentle, and the area is more clear. In the western area are two stone mounds that may be post-contact burials. A *noni* (*Morinda citrifolia*) plant was identified in the eastern part of the feature. These enclosures may have held cattle or other livestock during the historic period, or kept cattle and other livestock away from crops, and a picture in Greene (1985: 161, Illustration 22) appears to show livestock congregating around the store. The walls of these western enclosures are almost definitely from the post-contact period, as ceramics and glass can be seen eroding from the base of the walls in places. One particular wall had ceramics, bottle glass, ʻ*opihi* (*Cellana* sp.) shell, cowrie (*Cypraea* sp.) shell, other unidentified shell, and faunal bone, notably a parrotfish jaw plate, eroding out of the base. This evidence suggests that in certain places historic garbage was actually built into the wall as part of the core fill. On top of the western wall dividing ARPK_0058 from ARPK_0059 was a blue glass vessel bearing an embossed inscription indicating that it was a Morton's Salt jar from England, and upslope on the higher wall defining ARPK_0059 was an octagonal glass inkwell (see Chapter 8). Evidence of an earlier way of life is found in this area as well, as a number of lithic artifacts, including a poi pounder handle, were found along the top of the rise in the westernmost part of the site.

Site 14: Old Mormon House

This site, located within Makanalua *ahupuaʻa*, close to the border with Kalawao, and located on the coast, is known locally as the "Mormon stairs" (Fig. 6.37). The site consists of a set of stone and lime mortar masonry stairs, surrounded by an enclosure consisting of dry-stacked, core-filled basalt cobble walls, which runs over exposed basalt outcrop in the eastern part of the site. In the northwestern part of the site there is a poorly preserved structure that may be the remains of a canoe shed, given its long, narrow form and coastal location. It appears that this structure was robbed of stone, possibly to build the enclosure wall around the staircase, and then left to deteriorate. Historian Kerri Inglis (*pers. comm.* 2008) indicates that this house belonged to Jack Sing, a patient of high standing in the Mormon Church in Kalaupapa in the early 20th century. The site is built on sandy sediment, and a midden scatter consisting of shell, coral, and historic artifacts is present across the site. Notably, a large iron engine block from an automobile is rusting on the eastern part of the site, just inside the enclosure, while outside of the site a number of wooden beams are present. On the staircase, a clear glass jug, probably for wine, is present. This site should be associated with the early days of settlement in Kalaupapa, possibly existing as a place for exiles to socialize in a more remote location, an "escape" from the small, insular community of the leprosarium.

Site 15: Unnamed *Heiau* South of Damien Rd.

ARPK_0062 is a previously undocumented *heiau* located to the south of Damien Road, where the talus slope begins to rise towards the *pali* to the south of Kalaupapa peninsula (Fig. 6.38). The compound structure consists of a high terrace in the southeast, and three enclosures in the southwest, northeast, and northwest, with an earthen ramp stretching north from the structure. The site has a notable standing stone located on the terrace, towards the south-central part of the structure. A branch coral offering is visible on the surface on the western part of the structure,



Figure 6.37. Photograph of the "Mormon Stairs", facing southeast towards Waikolu Valley.

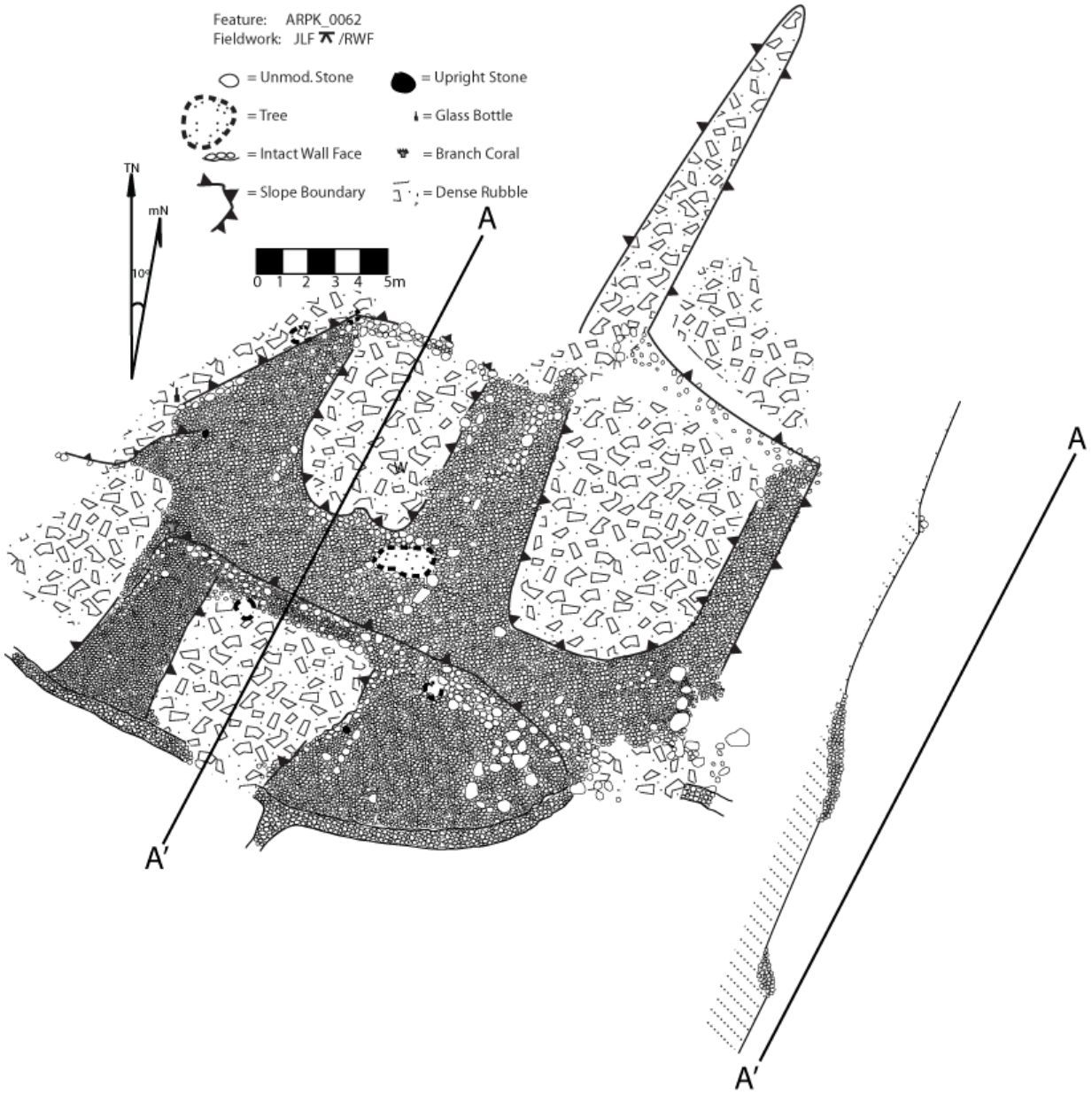


Figure 6.38. Map of ARPK_0062, a *heiau* on the talus slope of Kalawao.

and a large, waterworn cobble is located in the northwestern enclosure. The south of the site is defined by what may be a later field wall built over the structure. This *heiau* has few intact wall faces, and there is a large monkey pod (*Albizia saman*) tree growing in the middle of the structure, but its overall form is still identifiable from the surface remains. The structure appears to be constructed primarily of small to medium sized cobbles (ca. 10cm in diameter), with some larger cobbles and boulders interspersed underneath. A branch coral offering suitable for U-series dating is present on the surface, and would be one possible way to obtain a date for this structure. This *heiau* is another prominent ritual feature from the pre-Hansen's disease period in Kalawao, located within the core area of the settlement.

Site 16: Waikolu Bathhouse

ARPK_0063 is located roughly one kilometer upstream from the coast in Waikolu valley, on the east side of the valley above the stream. The site consists of a stone-lined, earth and rubble filled terrace, with a small masonry structure on top (Fig. 6.39). The masonry structure is a low concrete feature, roughly 4m north-south by 2m east-west, with an upright terra cotta pipe embedded in the northern section, and two low wings enclosing the structure on the east and west in the southern section, with the deteriorating remains of a flat concrete floor surface to the west. The structure is open to the south. This masonry structure is interpreted as a possible bath, with the upright terra cotta pipe serving as a place to pour heated water or to place hot rocks in water, so that the water of the bath would be heated while steam would escape in a controlled manner. The presence of Japanese-style baths, called *furo* (Niiya, ed. 1993: 142), has been noted by Mills (2007: 93-98) on several late-19th and early-20th century sites associated with ranching activities on the upland slopes of Mauna Kea, and it is reasonable to think that similar bath structures were present on Moloka‘i during the same period. A scatter of historic artifacts, including glass bottles, fragments of terra cotta pipe, ceramics, and a probable lantern lens, is visible on the surface. The site is interpreted as dating to the period of early Hansen’s disease settlement on Kalaupapa (1866-1900), and may be associated with one or several people exiled to the settlement, or Chinese laborers brought into Waikolu to grow taro for the leprosarium during this period. Specifically, the site may be associated with a limited expansion of settlement and cultivation of Waikolu valley that took place around 1891-1892 (Greene 1985: 207-208).

GIS Applications

Geographic information systems (GIS) are an extremely useful tool for archaeological landscape analysis. They provide a flexible means of representing and interpreting spatial data at multiple scales within the same overall framework, an ideal way to visualize mapped archaeological places (Barton et al. 2004; Ebert 2004; Knowles, ed. 2002; Kvamme 1999; Ladefoged et al. 2009; McCoy and Ladefoged 2009). For the ARPK project, GIS was used for two purposes: the integration of historical map data to link archaeological remains with specific past places, and for the analysis of space cells to create a model for the location of spatial and ritual power within the settlement. Future work with GIS will integrate additional archaeological

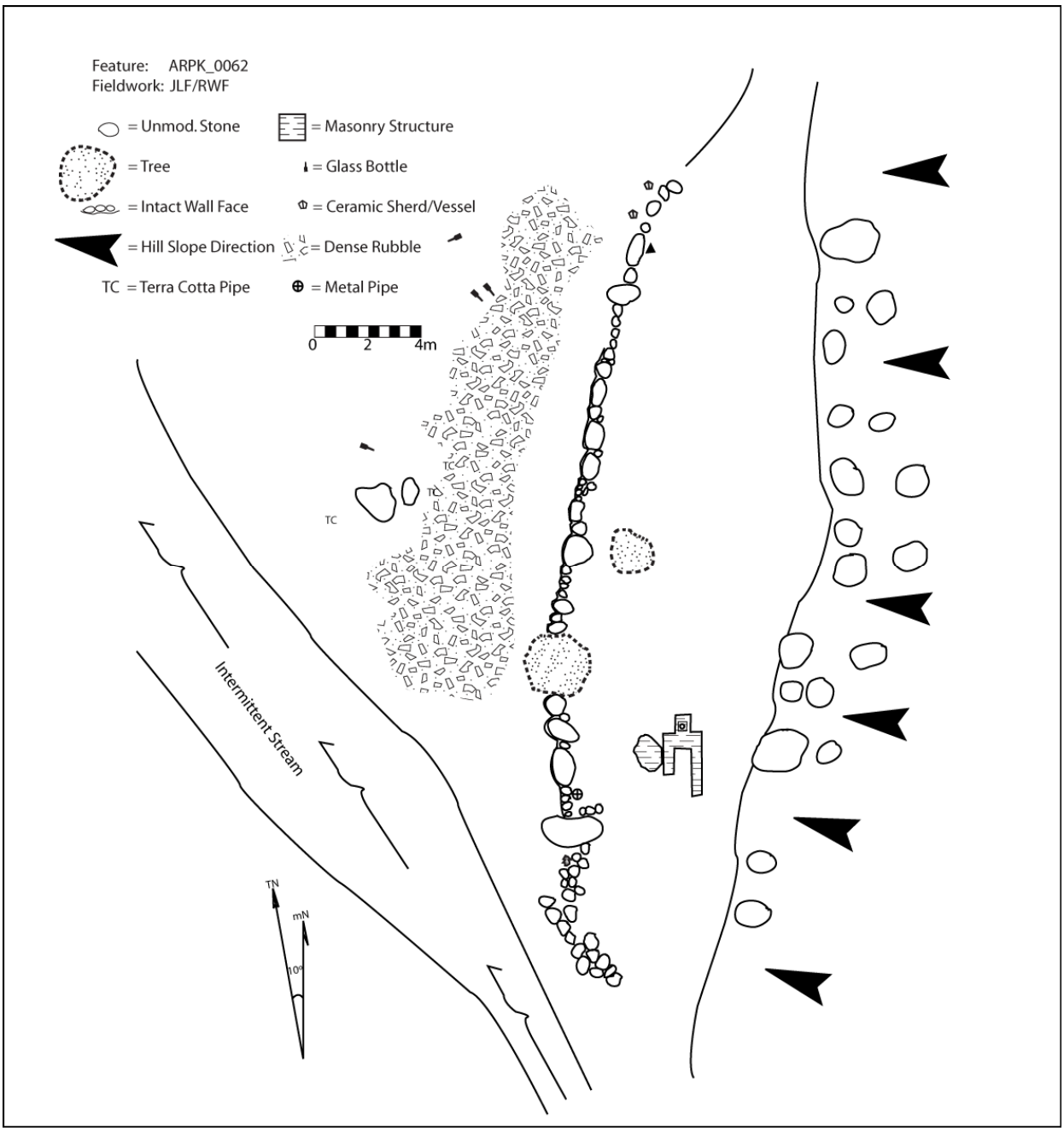


Figure 6.39. Map of ARPK_0063.

and historical data as well as more advanced computer modeling to further the interpretation of spatial data from this project.

1906 H.T. Survey Map and Site Identification

Various historical maps exist for the north of Molokaʻi Island, which vary in terms of scale and level of detail. For the purposes of this project, a map dated 1906 and entitled "United States Leprosy Station Sites in Waikolu, Kalawao and Makanalua, Molokaʻi, H.T.", by Walter E. Wall, Surveyor was selected, as it represented the location of a number of named buildings and locations, including the hospital compound, the store, and the dispensary, as well as the Roman Catholic and Protestant churches. The two churches, which are still standing in their original locations, were used as reference points, and GPS points recorded at these structures were used to rectify the 1906 map in GIS. From this baseline, other points in the research area could be linked to sites whose locations are noted on the map (Fig. 6.40).

The most successful site identification through this method involved the hospital compound wall at ARPK_0002, described below. The wall was identified as the north wall of the compound, which allowed us to identify the location of the old hospital, despite a lack of surface remains in the area. The location of the old store was also identified using this method, allowing the site to be associated with a specific depression at ARPK_0056. Finally, although the location was known, the kitchen of the Baldwin Home for Boys (ARPK_0035) also matches nicely with the rectified historic map. This method proved useful for making functional interpretations about portions of the research area that, because of their location close to the road, may have been impacted by modern construction activities without the need for subsurface testing. The identification of these sites can also inform future research as well as the interpretation of artifact assemblages in these areas.

Analysis of Space Cells

Plane table maps from the surface survey were integrated into a project GIS using datum points recorded with GPS in the field. In turn, the mapped architectural components were converted into polygons to produce maps of the space cells throughout the research area. Each polygon was coded for the type of architectural component represented (terrace, enclosure, etc.). Where the plane table maps of the previous section provide specific architectural details, the maps produced in GIS provide a larger-scale view of the settlement pattern in Kalawao (Fig. 6.41). In addition to architectural data, basic temporal data were included for each polygon. Temporal data were defined according to gross periods, namely pre-contact, post-contact, and Hansen's disease periods. These periods refer to the most likely period of construction and use for a feature, though in some cases where multiple periods are represented, an attempt was made at representing the multitemporal nature of the palimpsest. Finally, the location of important sacred sites was noted, including terraces or platforms with upright stones, and published location data for previously recorded sacred sites (Kirch, ed. 2002).

Focusing on the densest concentration of archaeological sites in the research area, which includes the Hospital, Cistern Area North, Cistern Area South, "Downtown" Kalawao, and the

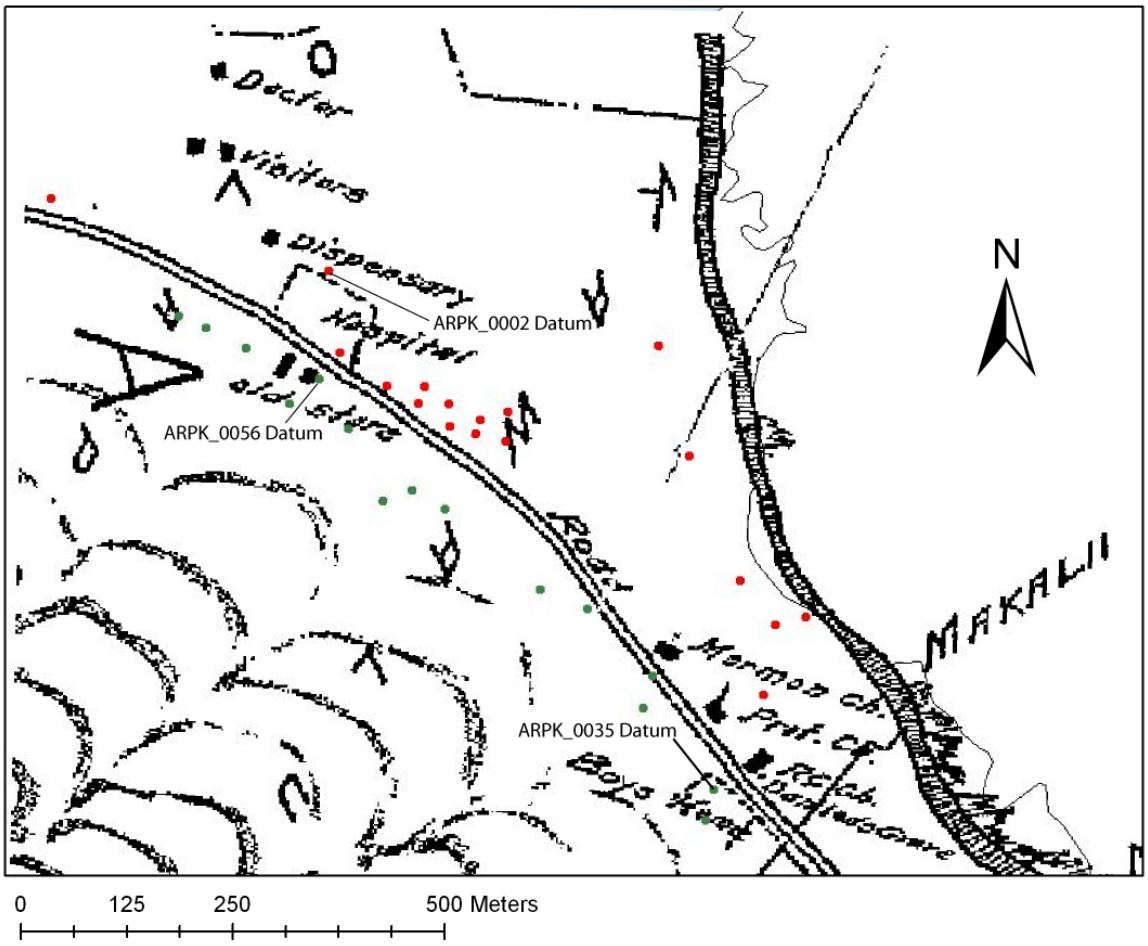


Figure 6.40. Detail of the rectified 1906 H.T. Survey Map entitled "United States Leprosy Station Sites in Waikolu, Kalawao, and Makanalua, Molokai, H.T." with ARPK survey points identified, including ARPK_0002 (hospital), ARPK_0035 (Baldwin Home kitchen), and ARPK_0056 (store).

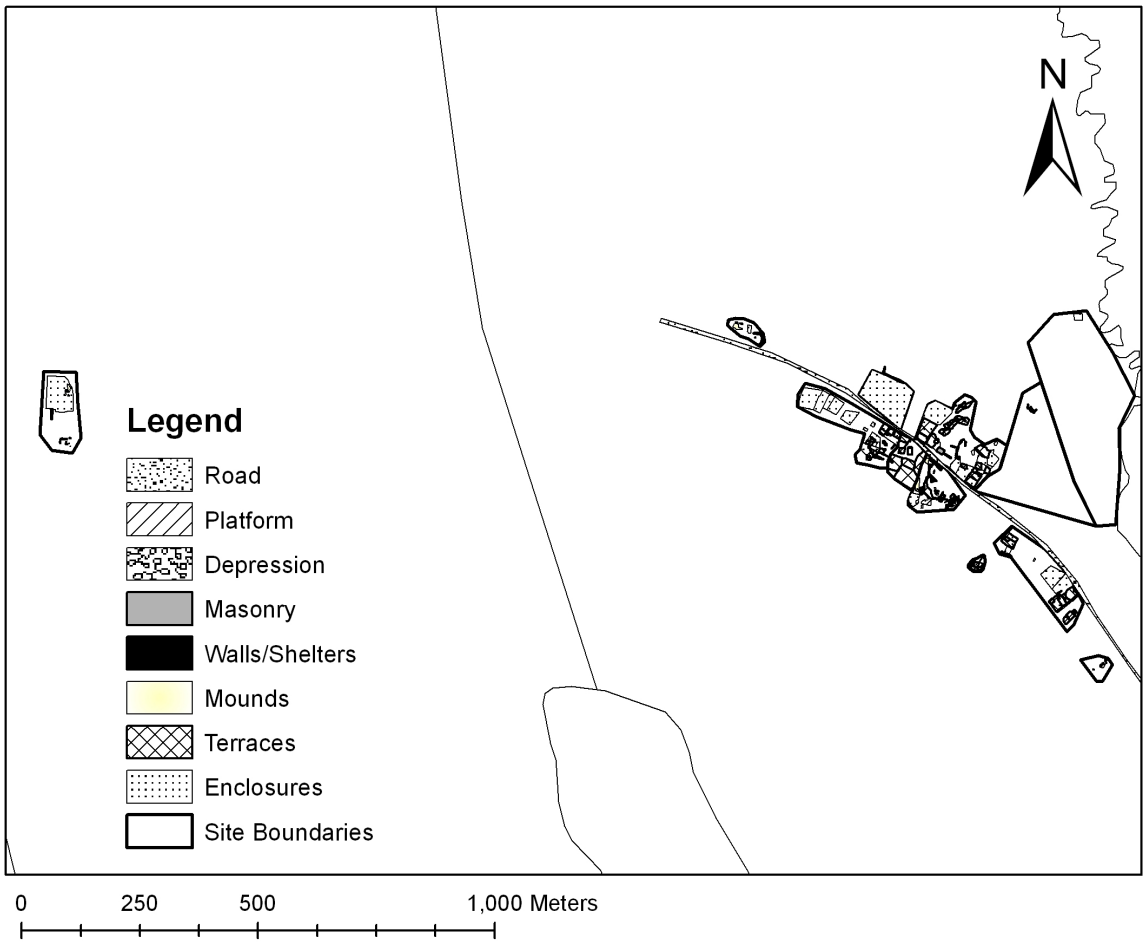


Figure 6.41. Map of site boundaries and space cells in the ARPK research area.

Store Area, several patterns become apparent. The overall spatial layout of the settlement pattern is reflective of the underlying Hawaiian structure that developed from the pre-contact period, consisting of field plot enclosures, sacred sites, and houses (Fig. 6.42). While many of the enclosures are a post-contact innovation (Kirch 1992: 175), their overall layout probably follows a pre-existing pattern. There is no "panoptic" arrangement in this landscape, nor any type of orthogonal grid suggesting an imposed Western order on the settlement pattern. Turning to the temporal interpretation of this settlement pattern (Fig. 6.43), it is important to note the close proximity of archaeological features from all periods within the core area of the leprosarium. The one area that was constructed and inhabited exclusively in the Hansen's disease period is the Hospital, though it is possible that earlier features were cleared out during the construction of that institutional space. In other areas, much of the evidence suggests intensive modification of the landscape during the post-contact period, especially through the construction of large enclosures, as in the western part of the Store Area. Many of these enclosures, however, are built around terrace systems that reflect the pre-contact agricultural landscape of the area. Large-scale modifications to the landscape that date definitively to the Hansen's disease period are limited to the Hospital area, and the cistern itself, though not the surrounding area. The presence of widespread late-19th century artifact scatter and the proliferation of small houses built in the Western style (to be discussed in Chapter 7) is represented by the overlay of Hansen's disease period occupation in this landscape, especially in the western part of the core area. Even when the kind of housing changed towards the end of the Hansen's disease period, the overall spatial arrangement of the landscape retained its Hawaiian form, though additional survey is needed to pinpoint more of these houses.

The presence of pre-contact sacred architecture in the form of standing stones, a petroglyph, and *heiau* in this area are further reminders of the Hawaiian underpinnings of the landscape. The humble prominence of such features are perhaps best encapsulated in the presence of the *pohaku a Kāne* standing quietly within meters of Kalawao's cistern. These sacred spaces would have been points of power in the landscape, loci of memory and nostalgia for Kalawao's Native Hawaiian exiles, both for a way of life that was changing rapidly throughout the archipelago (see Chapter 2), and for specific structures that may have been familiar from the landscapes in which people lived prior to their exile. Sacred space during the Hansen's disease period would have been focused strongly in the eastern part of the leprosarium, around the churches in Kalawao, which included a Mormon church (see above), as well as Catholic St. Philomena and Protestant Siloama. However, because of the nature of Christian ritual, the power of these places would have been focused on holy days, notably Saturdays and Sundays, while the Hawaiian sacred sites are located in the core of the settlement, spaces of everyday life for many of Kalawao's exiles. This tension between the new order of the leprosarium, and the long-term Hawaiian order of the *ahupua‘a* of Kalawao is a vital component of the landscape, which is informative for a consideration of the role of spatial organization in structuring power relations within the institution.

Domicide, the Cistern, and the Spatial Analysis of Power

The arrangement of Kalawao's landscape is enlightening in terms of Porteus and Smith's (2001: 3) concept of domicide, the "deliberate destruction of home against the will of the home

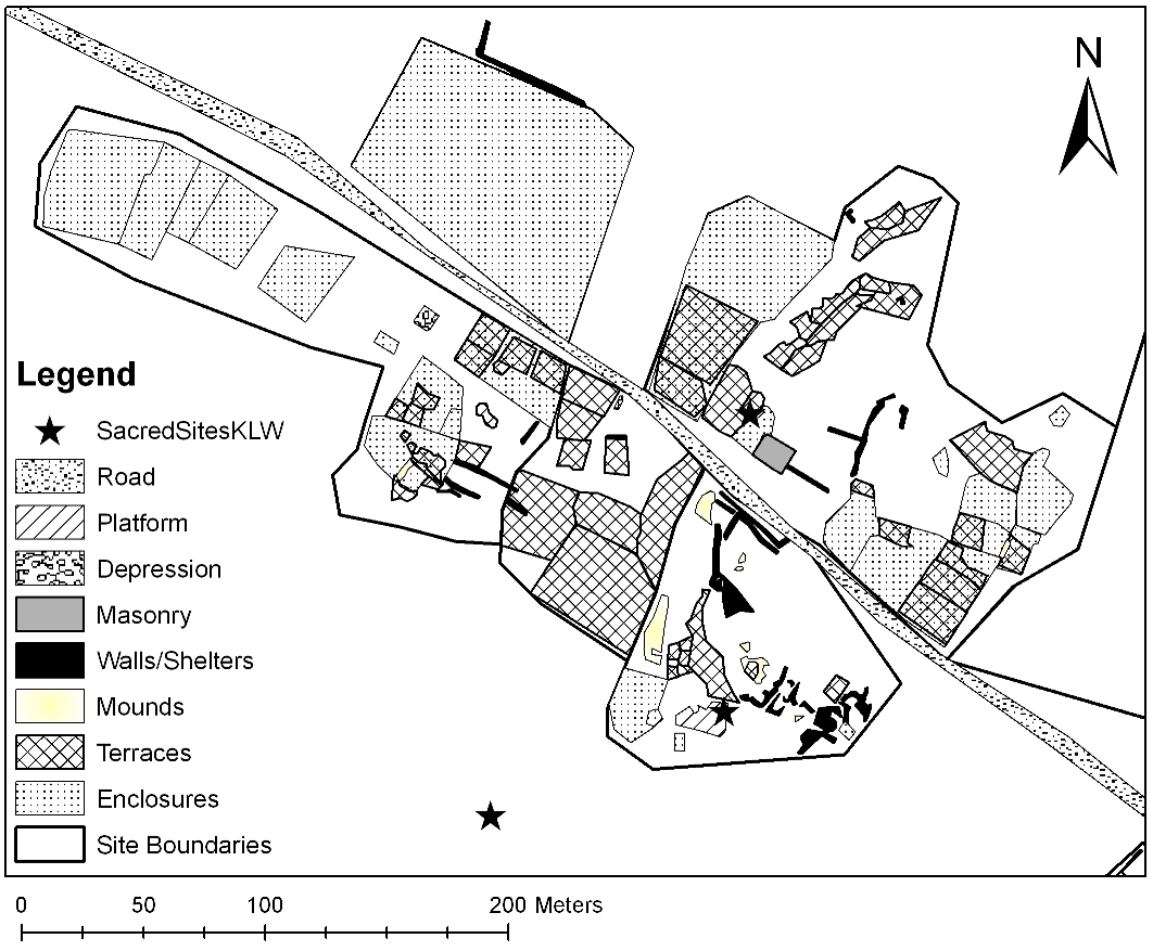


Figure 6.42. Map of space cells by type of architectural component in the core area of Kalawao, revealing the underlying Hawaiian structure of the settlement pattern, especially in the eastern half of this archaeological landscape.

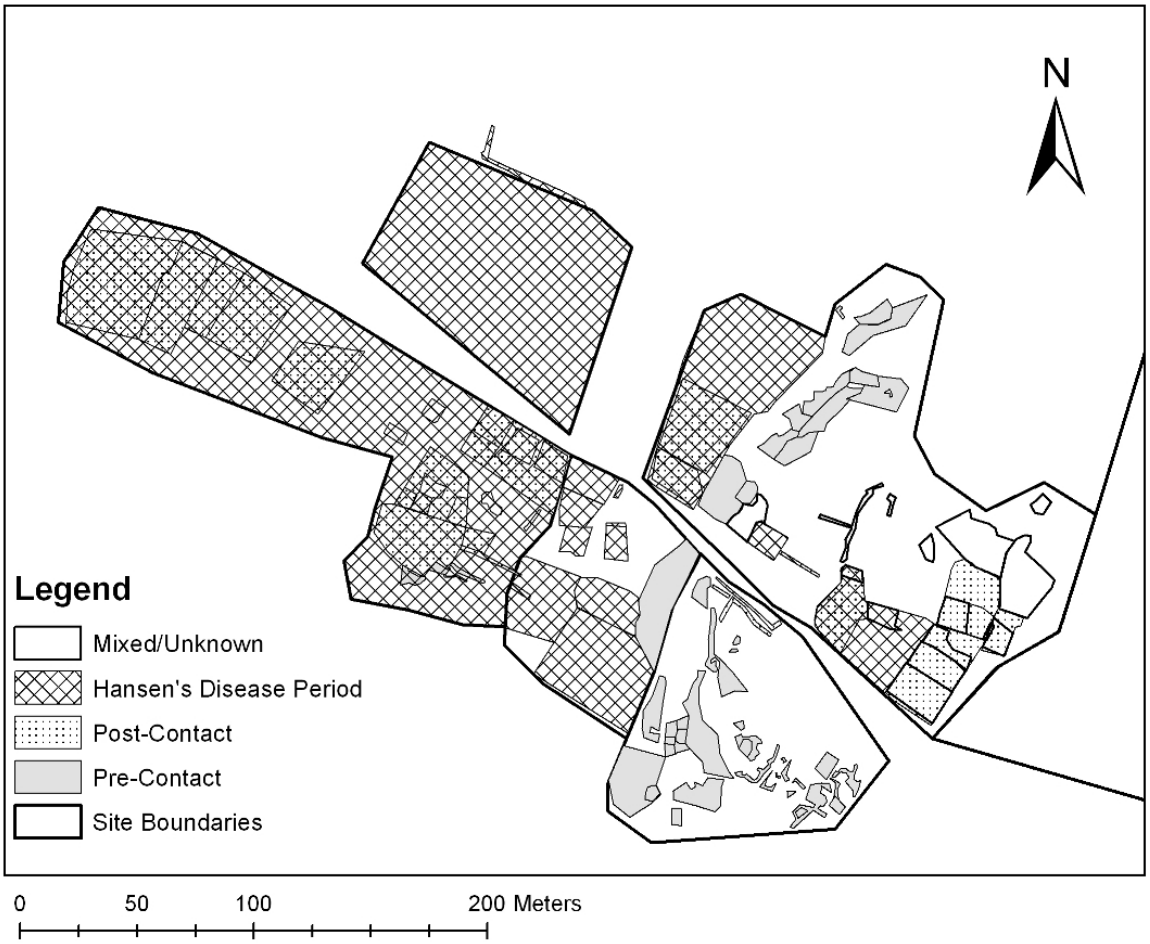


Figure 6.43. Map of space cells by period, note the prominence of pre-contact cells in the eastern part of the map, and the overlay of Hansen's disease period occupation on post-contact features to the west.

dweller". If the ʻ*āina*, land was as important an aspect of home as the *hale*, the house structure itself (see Chapter 8) for Native Hawaiians (Sahlins 1992: 189, 192), the Māhele (see Chapter 2) opened the door for the potential of domicide as lands became alienable commodities, and were widely sold to foreigners. The Act to Prevent the Spread of Leprosy began another wave of domicide, both for Kalaupapa residents forced to abandon their homes, and for those diagnosed with *mai hoʻoka ʻawale* and exiled to the newly established leprosarium. There, home was made not simply at a household scale, but at the scale of the community, with some larger-scale landscape modifications in the Hansen's disease period.

The massive walls located in portions of the survey area are a standing testament to the labor Kalawao's pre-Hansen's disease era residents put in to the ʻ*āina*, into their home. These walls would have surrounded plots of sweet potato, dry taro, melons, gourds, and other cultigens typical of nineteenth-century Hawaii. After 1866, "Fields were neglected or at best poorly farmed" by Kalawao's sick residents (Greene 1985: 53). Kalawao at this time was no longer a home for the people living there, and the exiles would have put in only the amount of effort necessary to survive, if that, into an *ahupuaʻa* that wasn't their home. Yet in the decades that followed, the growth of a community in Kalawao led to the re-establishment of a sense of home. This process is manifested physically in the remains of the cistern, which was completed by 1886 (Greene 1985: 158). The cistern represents the labor of many people, which would have included the exiles living in Kalawao.

Contemporary myth would attribute the structure to the work of Father Damien, the "hero of Molokaʻi" (Moblo 1997). Yet, Damien's hands alone could not have built the cistern. A broader view takes into account the labor of many people, which was an act of home creation. Improvements to the landscape, in this case the construction of a water storage facility, may have established a new connection to the ʻ*āina* for the residents of Kalawao. Of course, not everyone would have contributed to this process of home-making. Drunkenness, violence, and despair probably continued to characterize many people's experience of this place, but the appearance of significant new modifications to the landscape, such as the cistern, reflect an attempt to make the place a home, albeit within the emerging institutional context of the leprosarium. History, the whim of governments, and misplaced notions of "the common good" (see Porteus and Smith 2001) killed the things that made Kalawao a home in the mid-nineteenth century. Yet the continuing modification of the landscape in the Hansen's disease period reflects a tension between the brutality of a situation of exile, and the home-making impulses of exiles hoping to improve their situation.

Another tension implicit in the situation of Kalawao in the late-19th century is the institutional context of the leprosarium, in which the landscape can be seen as a result of negotiation between the state, interested in its coffers and outward appearances, and an inmate population trying to cope with living in exile. The question remains to be answered whether continuing landscape modification during the Hansen's disease period represents the "top-down" imposition of labor projects from the state, or the "bottom-up" carrying out of projects in which the inmates of the institution had a vested interest. Probably, the reality is something in between, a negotiation rather than an imposition of the will of one group over another. Finally, the overall arrangement of the landscape, which continues to reflect the underlying Hawaiian settlement pattern with an overlying scatter of Hansen's disease period architecture and artifacts, represents the many exiles for whom Kalawao was simply a place where they disposed of their refuse among the walls built by those who could no longer call the *ahupuaʻa* home. It also represents

the lack of an overall institutional spatial order within the leprosarium, so that the village structure that existed before 1866 continued to structure the life of the leprosarium.

The Institution that was a Village

Elizabeth Pauls writes, "forced and voluntary relocations remain relatively unexplored through historical archaeology, though they provide almost unique situations in which to observe the ways that relations with the land are established" (2006: 78). Related to this assertion are her questions, "How do [people's] surroundings reflect and effect changes in power-based relations within and outside the community? How do people come to feel at home in the world?" (Pauls 2006: 78). The survey data and spatial analysis provided above represent answers to these questions within the context of the leprosarium at Kalawao. The settlement pattern of the leprosarium at Kalawao reflects the ways that the pre-existing landscape shaped the social arrangement of the institution. Meanwhile, continuing, but limited modification of the landscape during the Hansen's disease period reflects the home-making impulses of some of Kalawao's exiles, though the latter question will be explored in greater depth in looking at some of the houses of the exiles in the next chapter.

The landscape of Kalawao was shaped as a Hawaiian place by physical "structures of the long run", which provided the traditional village layout used differentially by exiles and administrators as a framework for social life within the Hansen's disease settlement between 1866 and 1900. Unlike total institutions that rely on architecture to define boundaries between the instutionalized and the outside world, the natural landscape of North Moloka‘i and the Kalaupapa peninsula was used to create a bounded space of quarantine. Within that landscape, set apart by the state, architectural space was defined largely by what came before the 1865 *Act to Prevent the Spread of Leprosy*, though processes of landscape change continued throughout the life of the leprosarium. Large complexes, such as the Cistern Area North site, reflect a series of architectonic transformations of the Hawaiian landscape, many of which can be related to larger patterns in the history of the archipelago. Many of the terraces and shelters built in the northwestern part of this site may have been built as part of the pre-contact agricultural landscape of this area, while the larger enclosures built with high walls in the southern part of the site could be interpreted to reflect the mid-19th century "proliferation of stone walls" in Hawaii to keep crops away from cattle and to place a physical claim to recently-commodified land (Kirch 1992: 175). The site is capped by a mortar masonry cistern finished in 1886 to provide a backup supply of water to the hospital (Greene 1985: 158), evidence of the negotiated labor projects of the state and inmates in the growing settlement. Yet just to the northwest of that prominent feature is a small terrace with a standing stone, an abandoned Hawaiian sacred site. As the map shows, this site, despite being composed of features from different eras, consists of a discrete spatial entity, a "whole" in a sense. In many ways, the Cistern Area North site is a microcosm of the entire leprosarium, a landscape of many time periods and many traditions, lived in all at once by people exiled to the place whose only definite common background was a diagnosis. The institutional landscape of Kalawao was a Hawaiian structure, but one that was lived in within a new context, given the social upheaval caused by the Kindgom's leprosy policy.

In many colonial total institutions, such as Australian missions (Sutton 2003), Bureau of Indian Affairs boarding schools (Lindauer 1997, 2009), or California adobes and missions

(Lightfoot 2005; Silliman 2001), indigenous agency sometimes took covert forms, resistant acts away from the eyes of institutional staff. In Kalawao, indigenous agency was written onto the landscape, a constant reminder that despite the best intentions of government bureaus, superintendents, or missionaries, this was a *Hawaiian* place. The prominence of traditional sacred sites, whose forms if not actual names, purposes, and stories would have been recognizable to Kalawao's mostly Native Hawaiian population, was one aspect of this landscape, infusing this institutional space with indigenous religious power. The correspondence of Peter Kaeo (see Chapter 5; Korn, ed. 1976) provides one point of view of the indigenous experience of Kalaupapa's sacred landscape. For the many residents of Kalawao during the Hansen's disease period who did not leave a written record, one can only guess at the symbolic associations that architectural features, points on the landscape, and indigenous architecture may have had, but this would have been a source of power in the landscape.

The persistence of an indigenous spatial order in the landscape points to another peculiar aspect of Kalawao's institutional history. While the superintendent and the Board of Health were interested in maintaining order within the leprosarium, the form of that order only gradually became important. It is only quite late in the institutional history of Kalawao, and really only with the shift to Kalaupapa settlement that a more Western order was imposed on the landscape, and even today Kalaupapa remains an institution set up as a Hawaiian village in the modern world. The institutional landscape at Kalawao is remarkable for what it *does not* have: high walls, cell blocks, dormitories. This is the landscape of a Hawaiian village, suggesting that for the Board of Health the only crucial aspect of social life in the leprosarium was that the inmates not leave. Some semblance of social order was maintained for the purpose of an appearance of civilization in one of the Kingdom of Hawaii's earliest experiments with a total institution. This set-up provided a large amount of space for inmates to set up social life that made sense in terms of coping with their isolation. A key locus of power for the organization of social life lay in the houses of the exiles, and it is the household scale that will be examined next to interpret material life at certain points in the village landscape of the leprosarium.

Chapter 7.

Intensive Surface Collections and Test Excavations in Kalawao House Sites

Household-Level Research Objectives

Landscape archaeology in Kalawao, the focus of the previous chapter, provides a sense of place for the Hansen's disease settlement during the late-19th and early-20th century, revealing the overall village structure of the institution. Within the larger settlement pattern, individual households would have been important places of everyday life for various exiles living in the leprosarium, and this chapter emphasizes the importance of archaeological patterns at this scale. Household-level analyses are a staple of archaeological practice, where houses represent physical structures used by social groups on a daily basis that reflect a great deal about the societies of which they were a part (Hendon 1996; King 2006; Pauls 2006; Tringham 1995; Wilk and Rathje 1982). For the Polynesian outlier of Tikopia, Kirch (1996) has outlined the multiscalar nature of social space, and the importance of the house as a symbolic unit at different scales. For Hawaii, household archaeology has provided many important insights into cultural processes within the archipelago, from changes in architecture and household assemblages during the development of hierarchical, chiefly society prior to European contact (Field et al. 2010; Weisler and Kirch 1985), to the "compression" of household architecture related to the abolition of *kapu* in 1819 (Kirch 1992: 177; Ladefoged 1991, 1998).

In Kalawao, household-level research provided an opportunity to look inside the houses of the leprosarium's inmates, to examine patterns of daily life within the institution. Many total institutions were arranged on a household scale, including some almshouses (Baugher 2001) and homes for "fallen" women (DeCunzo 1995, 2001), which were meant to demonstrate exemplary behavior to reform inmates into respectable members of society. Some missions were also set up on the household model, such as that at Te Puna, New Zealand (Middleton 2007b, 2008), providing a civilizing example for indigenous people as an analog for the reforming model meant for whites. The idea behind this set-up was that the household would provide a softer means of transforming people's behavior than the hard institutional model used for prisons (Casella 1999, 2001; Garman 2005), as well as some missions (Middleton 2008: 29-31; Sutton 2003). Since the intention of the institution at Kalawao was to isolate rather than reform, the model for the institution was not clearly determined by need or the institutional philosophy of the state.

Kalawao, an institution "in between", as discussed in Chapter 3, was set up neither on a prison model, nor on the large household model. Rather, as shown in the landscape analysis, the model for Kalawao was a Hawaiian village, largely due to the existing settlement pattern in place when the first exiles arrived. Because of this layout, the house is a critical unit of analysis, as a locus of individual agency within the settlement. Inmates in the leprosarium were expected only to stay within the confines of the leprosarium, but the question of what they did within their peninsular prison was largely left to individual choice. Household organization was a structuring element of the *longue durée* for Hawaiian society, growing out of an ancestral Polynesian pattern (Kirch and Green 2001: 201-207) before developing according to a unique trajectory within the archipelago (Anderson 2001: 53-60). Yet for Kalawao during the Hansen's disease period, the traditional organizing principles of patterns of domestic life, such as rank and kinship, did not exist because of the institutional nature of the inmate population. In a way, Kalawao could be

seen as a village with no families, at least in the sense of extended kinship groups.

What, then, of the houses in the village? Historic photographs of Kalawao show houses built along the road, but almost no information is available about the internal organization of the structures, the objects therein, or the way the inhabitants organized household social life. Archaeological research provides a means for understanding these aspects of daily life in the leprosarium. Household archaeology in the settlement also suggests that traditional Hawaiian architecture, which is absent in the photographic record from Kalawao, was in fact used during the Hansen's disease period. Where landscape survey provided a big picture for the spatial layout of the landscape in Kalawao, household investigations provided small but intensive looks at the spatial practices and material culture of a sample of the leprosarium's inmates. Excavations in these houses represent an initial glimpse into the domestic consumption practices and daily habits of some of Kalawao's residents, patterns that would have contributed to the creation of social structures within the leprosarium.

Household-Level Testing Methodologies

During initial phases of field research in Kalawao, a series of systematically aligned, randomly spaced surface collection transects were carried out to sample the large amounts of material on the surface of the ARPK project research area. A total of 28 such transects, which consisted of between one and five north-oriented 5 x 5m squares were carried out across the ARPK features. Surface collections recovered a rich assemblage of artifacts, which will be discussed in more depth in the next chapter. An important outcome of this research in addition to the recovery of artifacts was the identification of areas with higher concentrations of artifacts (Fig. 7.1), which can be associated with domestic sites. In some cases, as with the transect at ARPK_0003, no domestic surface architecture was associated with a remarkably dense surface midden. This raises the question of whether the enclosure was simply a dump site during the Hansen's disease period, or whether a perishable house structure did not leave surface remains. In other cases, as at ARPK_0007, the presence of a visible architectural component could be associated with the surface midden. Following from the broad-scale surface survey, a more focused approach was used to understand the household archaeology of the Hansen's disease period in Kalawao.

Operations were carried out in areas determined to have a high potential for archaeological house remains. The term "operation" is used to denote an area in a previously recorded archaeological site or feature that was targeted for more intensive study. For each operation, a detailed map of surface architecture, artifact scatter, and other relevant details was produced at a scale of 1:100 or 1:50 using tape and compass, and a 100% surface collection was carried out within the area defined by the operation. Operation grids were oriented to the surface architecture, or to magnetic north.[31] In addition to mapping and surface collection, some operations included limited test excavations, which were carried out using systematic (1 x 1m units), stratified random (0.5 x 0.5m units), and judgmental sampling (other units), depending upon decisions made in the field about optimal data recovery strategy for each structure tested. Excavations were oriented to the operation grid. In most cases, the features targeted had only one operation, which is recorded in a detailed map as well as excavation records. The site

31 Roughly 10°E Declination from True North.

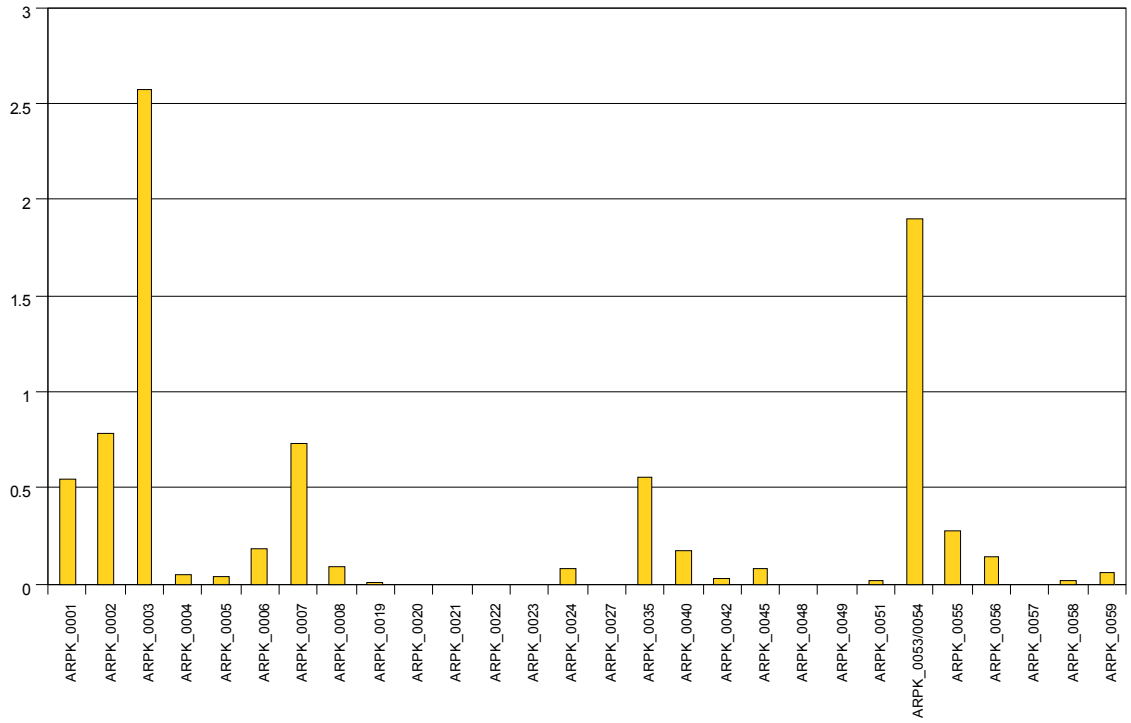


Figure 7.1. Density measurements (number of artifacts per square meter) from randomly spaced surface collection transects.

complex at ARPK_0055 contained three separate operations. Operations are described in detail below, including the surface investigations and summaries of archaeological excavations when applicable.

Excavations carried out were primarily test excavations, consisting of sets of 1 x 1m and 0.5 x 0.5m quadrats. Two larger excavations, a 2 x 2m quadrat, expanded from a 1 x 1m unit, and a 1 x 8m test trench, expanded from a 0.5 x 0.5m unit, were also excavated. The goal of these excavations was to characterize stratigraphic deposits, and to obtain a sample of the material culture associated with several houses in the settlement, in order to understand daily consumption practices and domestic assemblages. Excavations were carried out by stratigraphic layer, with layers sub-divided at 10-cm arbitrary intervals. This allowed for the construction of stratigraphic sequences within excavation units (Harris 1989), while taking advantage of arbitrary intervals to possibly define patterns not apparent in the visible layering (or lack thereof) in each site (Heizer and Graham, eds. 1967; Praetzellis 1993). Excavated deposits were separated as contexts, and the type of context was indicated on the excavation's standardized recording forms (Appendix 2). The excavation protocol used both stratigraphic layers and arbitrary levels, as well as a category of features. Features were smaller deposits contained within excavation units, as opposed to more extensive layers. Contexts were numbered sequentially for recording and cataloging purposes (the original context descriptions appear as Appendix 3). All excavated contexts were screened using 1/8" mesh, and artifacts from each context were field sorted by material type (e.g. glass, ceramic, lithic) and bagged separately. For most units, a stratigraphic profile was drawn as a visual representation of the stratigraphic sequence, and all profile illustrations appear in Appendix 4.[32]

Soil samples were collected from each excavated context. A 250-ml soil sample was archived for future research (e.g. soil chemistry, sedimentology, or paleoethnobotany) from every context. For all units with the exception of the test trench at ARPK_0055 Op. 2, and test unit 5 from ARPK_0001 Op. 1, a 4-liter sample was collected from each context, 250ml were removed for archiving, and the remainder was processed by flotation and wet-screening (Table 7.1). One deposit (PN 54) was collected completely for flotation and wet-screening because it appeared to contain material from a single discrete depositional event. A relatively simple set-up was used for flotation and wet screening protocol. A 5-gallon bucket was filled with water, and the soil sample to be floated was poured gently into the bucket. The suspension was stirred, and material that floated to the top, referred to as the "light fraction" was collected and dried in fine, breathable cloth. Following the collection of the light fraction, the remaining material was wet-screened through 1/16" mesh using a hose to remove the sediment. The material that remained after wet-screening, referred to as the "heavy fraction" was then dried. During laboratory analysis, light fraction and heavy fraction were sorted for artifacts and archaeological organic remains, and the remainder (primarily roots and small, unmodified stones) was discarded. The patterning of materials in light and heavy fraction generally followed the patterns observed from the excavations themselves (a summary of the artifacts present in each sample is provided for reference in Table 7.2).

32 As Sir Mortimer Wheeler (2004[1954]: 59) once observed, "The published sections are the readiest index of value of an excavation report", and I hope that these will provide a useful reference for future archaeological research in this area.

PN	Feature	Op.	TU	Ctx.	Sample Type	Sample Size	Subsamples
1	ARPK_0001	1	1	A	Bulk	4000mL	250mL Archive
2	ARPK_0001	1	1	B	Bulk	4000mL	250mL Archive
3	ARPK_0001	1	1	C	Bulk	4000mL	250mL Archive
4	ARPK_0001	1	1	D	Bulk	4000mL	250mL Archive
4	ARPK_0001	1	1	D	Closing	4000mL	250mL Archive
5	ARPK_0001	1	2	A	Bulk	4000mL	250mL Archive
6	ARPK_0001	1	2	B	Bulk	4000mL	250mL Archive
7	ARPK_0001	1	2	C	Bulk	4000mL	250mL Archive
8	ARPK_0001	1	2	D	Bulk	4000mL	250mL Archive
9	ARPK_0001	1	2	E	Bulk	4000mL	250mL Archive
10	ARPK_0001	1	2	F	Bulk	4000mL	250mL Archive
10	ARPK_0001	1	2	F	Closing	4000mL	250mL Archive
11	ARPK_0001	1	3	A	Bulk	4000mL	250mL Archive
12	ARPK_0001	1	3	B	Bulk	4000mL	250mL Archive
13	ARPK_0001	1	3	C	Bulk	4000mL	250mL Archive
14	ARPK_0001	1	3	D	Bulk	4000mL	250mL Archive
15	ARPK_0001	1	3	E	Bulk	4000mL	250mL Archive
16	ARPK_0001	1	3	F	Bulk	4000mL	250mL Archive
17	ARPK_0001	1	3	G	NO SAMPLE	-	-
18	ARPK_0001	1	4	A (NE)	Bulk	4000mL	250mL Archive
18	ARPK_0001	1	4	A (SE)	Bulk	4000mL	250mL Archive
19	ARPK_0001	1	4	B	Bulk	4000mL	250mL Archive
20	ARPK_0060	1	1	A	Bulk	4000mL	250mL Archive
21	ARPK_0060	1	2	A	Bulk	4000mL	250mL Archive
22	ARPK_0060	1	3	A	Bulk	4000mL	250mL Archive
23	ARPK_0060	1	3	B	Bulk	4000mL	250mL Archive
24	ARPK_0060	1	3	C	Bulk	4000mL	250mL Archive
25	ARPK_0060	1	3	D	Bulk	4000mL	250mL Archive
26	ARPK_0060	1	4	A	Bulk	4000mL	250mL Archive
27	ARPK_0060	1	4	B	Bulk	4000mL	250mL Archive
28	ARPK_0060	1	4	C	Bulk	4000mL	250mL Archive
29	ARPK_0055	1	1	A	Bulk	4000mL	250mL Archive
30	ARPK_0055	1	1	B	Bulk	4000mL	250mL Archive
31	ARPK_0055	1	1	C	Bulk	4000mL	250mL Archive
32	ARPK_0055	1	1	D	Bulk	4000mL	250mL Archive
33	ARPK_0055	1	2	A	Bulk	4000mL	250mL Archive
34	ARPK_0055	1	2	B	Bulk	4000mL	250mL Archive
35	ARPK_0055	2	1	A	Bulk	4000mL	250mL Archive
36	ARPK_0055	2	1	B	Bulk	4000mL	250mL Archive
37	ARPK_0055	2	2	A	Bulk	4000mL	250mL Archive
38	ARPK_0055	2	2	B	Bulk	4000mL	250mL Archive
39	ARPK_0055	2	3	A	Archive	250mL	No Subsample
40	ARPK_0055	2	4	A	Archive	250mL	No Subsample
41	ARPK_0055	2	5	A	Archive	250mL	No Subsample
42	ARPK_0055	2	6	A	Archive	250mL	No Subsample
43	ARPK_0055	2	3	B	Archive	250mL	No Subsample
44	ARPK_0055	2	4	B	Archive	250mL	No Subsample
45	ARPK_0055	2	5	B	Archive	250mL	No Subsample
46	ARPK_0055	2	6	B	Archive	250mL	No Subsample
47	ARPK_0055	2	6	C	Archive	250mL	No Subsample
48	ARPK_0055	2	4	C	Archive	250mL	No Subsample
49	ARPK_0055	2	5	C	Archive	250mL	No Subsample
50	ARPK_0055	2	6	D	Archive	250mL	No Subsample
51	ARPK_0001	1	5	A	Archive	250mL	No Subsample
52	ARPK_0001	1	5	B	NO SAMPLE	-	-
53	ARPK_0001	1	5	C	Archive	250mL	No Subsample
54	ARPK_0001	1	5	D	Bulk	1500mL(approx.)	250mL Archive
55	ARPK_0001	1	5	E	Archive	250mL	No Subsample
56	ARPK_0001	1	5	F	Archive	250mL	No Subsample

Table 7.1. List of soil samples collected during excavations.

PN	Volume Processed	Light Fraction Artifacts	Heavy Fraction Artifacts
1	3750mL	Charcoal, Bone	Glass, Metal, Mortar, Shell, Bone/Tooth
2	3750mL	Charcoal	Glass, Metal, Volcanic Glass, Charcoal, Shell, Bone/Tooth
3	3750mL	Charcoal	Volcanic Glass, Charcoal, Bone/Tooth
4	3750mL	Charcoal	No Artifacts
4	3750mL	N/A	N/A
5	3750mL	Shell, Seed	Glass, Metal, Shell, Bone/Tooth, Kukui Nut
6	3750mL	Charcoal	Glass, Metal, Volcanic Glass
7	3750mL	Charcoal	Shell
8	3750mL	N/A	N/A
9	3750mL	Charcoal	Volcanic Glass
10	3750mL	Charcoal	Glass
10	3750mL	N/A	N/A
11	3750mL	Charcoal, Shell, Carbonized Seed	Glass, Metal, Carbonized Seed
12	3750mL	Charcoal, Shell, Carbonized Seed	Glass, Metal, Bone/Tooth
13	3750mL	Charcoal, Shell, Carbonized Seed, Kukui Nut Shell	Glass, Metal, Bone/Tooth
14	3750mL	Charcoal, Carbonized Seed	Glass, Metal
15	3750mL	Charcoal, Shell, Carbonized Seed	Glass, Metal, Volcanic Glass, Shell, Bone/Tooth
16	3750mL	Charcoal, Kukui Nut Shell	Glass, Metal, Volcanic Glass, Charcoal, Kukui Nut, Blue Stone
17	-	-	-
18	3750mL	Shell	Glass, Metal, Bone/Tooth
18	3750mL	Shell	Glass, Metal, Bone/Tooth
19	3750mL	Charcoal, Carbonized Seed	Glass, Metal
20	3750mL	Shell, Possible Otolith	Metal, Kukui Nut
21	3750mL	Charcoal	Metal, Volcanic Glass
22	3750mL	Charcoal	Metal, Kukui Nut
23	3750mL	Charcoal	Metal, Volcanic Glass, Shell, Bone/Tooth, Copper Wire
24	3750mL	No Artifacts	Metal, Volcanic Glass
25	3750mL	No Artifacts	Volcanic Glass
26	3750mL	Carbonized Seed, Kukui Nut Shell	Glass, Metal, Charcoal, Carbonized Seed, Kukui Nut
27	3750mL	Charcoal, Carbonized Seed	Glass, Metal, Bone/Tooth
28	3750mL	Charcoal	Metal, Bone/Tooth, Fire Cracked Rock
29	3750mL	Charcoal	Glass, Metal, Ceramic, Mortar, Charcoal, Shell, Bone/Tooth
30	3750mL	Charcoal	Glass, Metal, Basalt Flake, Mortar, Charcoal, Shell, Bone/Tooth
31	3750mL	Charcoal	Metal, Basalt Flake, Shell, Bone/Tooth
32	3750mL	Charcoal	Metal, Shell, Bone/Tooth, Fire Cracked Rock
33	3750mL	Charcoal, Shell, Carbonized Seed	Charcoal
34	3750mL	Charcoal, Carbonized Seed	Metal, Volcanic Glass, Shell
35	3750mL	Charcoal, Shell, Carbonized Seed, Possible Bone	Glass, Metal, Charcoal, Shell
36	3750mL	Charcoal, Carbonized Seed	Metal, Volcanic Glass, Shell
37	3750mL	Charcoal, Shell, Carbonized Seed	Charcoal, Shell, Bone/Tooth, Carbonized Seed
38	3750mL	Charcoal	Metal

Table 7.2. Artifacts recovered from flotation and wet screening.

Change and Continuity in Kalawao Domestic Patterns

Extensive photographic evidence records architectural change in domestic spaces in Kalawao (Greene 1985), while archaeological research revealed the persistence of traditional Hawaiian houses on the landscape through the end of the 19th century. Household archaeology in the old leprosarium highlighted the importance of processes of change and continuity in the creation and use of domestic space. There are several classic accounts of the Hawaiian house, based primarily on ethnohistoric and ethnographic accounts (e.g. Brigham 1906; Hiroa 1954: 75-109; Kamakau 1976: 95-108; Malo 1951: 118-126), which are informative for archaeological research on houses in Kalawao. Much of these studies is focused on the lashing of house posts and ridge-pole, thatching techniques, and materials that do not generally preserve in the archaeological record, but they can give a general sense of the form and variability of these buildings. A number of kinds of domestic architecture existed in Hawaiian culture, but generally the house consisted of a thatch superstructure with or without a stone foundation. Several archaeological features that appear to represent the footprints of house structures with stone foundations were found in Kalawao.[33] In pre-contact Hawaii, domestic architecture was arranged in compounds, in which the household complex was composed of discrete structures with various functions, typically including buildings for sleeping, one or several structures for cooking, separate eating houses for men and women, and other buildings (Kirch 1985; Ladefoged et al. 1987; Weisler and Kirch 1985; see Chapter 4).

By the late-19th century, a variety of new forms of foreign domestic architecture were introduced and spread throughout Hawaii, including the post-on-pier style of structures visible in many historical photographs of Kalawao (Greene 1985), as well as by archaeological survey. Hiroa (1954: 100) notes, "In houses built after American contact...raised floors became popular, and the space below the floor served as a basement room which was much cooler than the rooms above." For indigenous forms of housing in the post-contact period, Ladefoged (1991, 1998) has noted the "compression" of the components of the house compound, in part related to changing concepts of the household associated with changing cosmology in the Hawaiian Islands, particularly the breaking of the *kapu* system (see also Kirch 1992: 177). One possible example of this lies in the site complex ARPK_0055, where an enclosure wall connects several components, at least some of which appear to date to the pre-contact period.

Several different kinds of structures were targeted in order to test spatial and material variability of household architecture and domestic objects in the settlement. Four features were chosen for detailed mapping, surface collection, and test excavation. The first three of these features (ARPK_0001, ARPK_0007, and ARPK_0060) were targeted by a single operation, while the fourth, a large site complex (ARPK_0055), had three separate operations carried out. In total, detailed mapping and surface collection covered 644 square meters of surface area, and 17 square meters were excavated. Operations targeted structures ranging from traditional Hawaiian structures (ARPK_0007 Op. 1, ARPK_0055 Op. 2), to foreign-influenced building styles (ARPK_0001 Op. 1, ARPK_0060 Op. 1). These operations provide information about continuity and change in household architecture, and variability in the household assemblages

33 Specifically, the stone foundations of Kalawao houses appear to represent forms perhaps similar to type "D" in Brigham 1908: 272, Fig. 71, or to houses in Hiroa 1954: 80, Fig. 48a, 82, Fig. 49a. Notably, the latter date well into the 20th century, 1936 and 1910 respectively, suggesting the long-term persistence of traditional Hawaiian housing forms.

within the leprosarium at Kalawao.

Change: ARPK_0001 Operation 1 and ARPK_0060 Operation 1

The feature ARPK_0001 consists of a set of remains surrounding a standing masonry chimney in the westernmost part of the ARPK research area (described in Chapter 6). Operation 1 was centered on the area in front of this standing chimney, a structure known to date to the period of the Hansen's disease settlement in Kalawao (Fig. 7.2). Surface collection and test excavation in this area revealed an artifact assemblage and deposits consistent with a house site, though one that was somewhat extraordinary when compared with other houses in Kalawao. The area defined as ARPK_0001 Operation 1 is a 10 x 12m rectangular area with a datum point on the southeast corner of the standing chimney, oriented to this structure, roughly 3°57' east of true north. Because of the dense concentration of surface artifacts, and to test for internal spatial variability in the area around the chimney, the operation was divided into four 5 x 6m quadrants, as well as a separate sampling stratum for the area immediately surrounding the standing chimney. Artifact patterning suggests that the highest concentration of artifacts lies in the immediate vicinity of the chimney, with higher density in the northern and western parts of the operation (Table 7.3), thus towards the central part of the overall complex at ARPK_0001.

In addition to surface collection, a total of five excavation units were carried out at ARPK_0001 Op. 1. Initially, three 1 x 1m test units, spaced systematically, were excavated to test for the depth of stratigraphic deposits in this area, as well as the presence or absence of intact subsurface architectural features. Test unit 1 was excavated to the south of the chimney, test unit 2 was excavated to the east, and test unit 3 was excavated to the northeast. Starting from test unit 1, subsequent units are spaced 2.5m grid east and 1.5m grid north from the northeast corner of one unit to the southwest corner of the next. Following the excavation of these units, two additional units were placed judgmentally. Test unit 4 was the expansion of test unit 3 into a 2 x 2m unit because of a potential architectural feature, thus test units 3 and 4 are described together below. Finally, test unit 5 was excavated to test the deposits of an apparent paving or wall feature visible on the surface in the northwestern part of the operation.

Test unit 1 is located 2.45m south[34] of the standing chimney at ARPK_0001. This unit was excavated in four contexts, though it was later determined that two of these contexts were from the same stratigraphic deposit, and were thus grouped together. While no clearly defined architectural features were present in this unit, it did contain a large concentration of artifacts, especially in the upper stratum. The unit consisted of two stratigraphic deposits:

(I) A dark greyish brown topsoil (Munsell [10YR4/2]) with a high concentration of artifacts (N=1137 for Ctx. A).

(II) A layer of the same color with a high density of unmodified pebble inclusions (20%) and very few artifacts (N=17 for Ctx. C and D combined).[35]

34 Directional notation within the section on operations is based on grid north/east/south/west, determined by the closest cardinal direction to the grid defined for each operation.

35 A Note on lettering and numbering of excavation stratigraphy: Individual contexts were given a letter in the field, thus each unit started with Context A, which was followed by B, C, etc. in the order in which contexts were excavated or revealed. In subsequent interpretation of stratigraphic sequences, Roman Numerals were assigned,

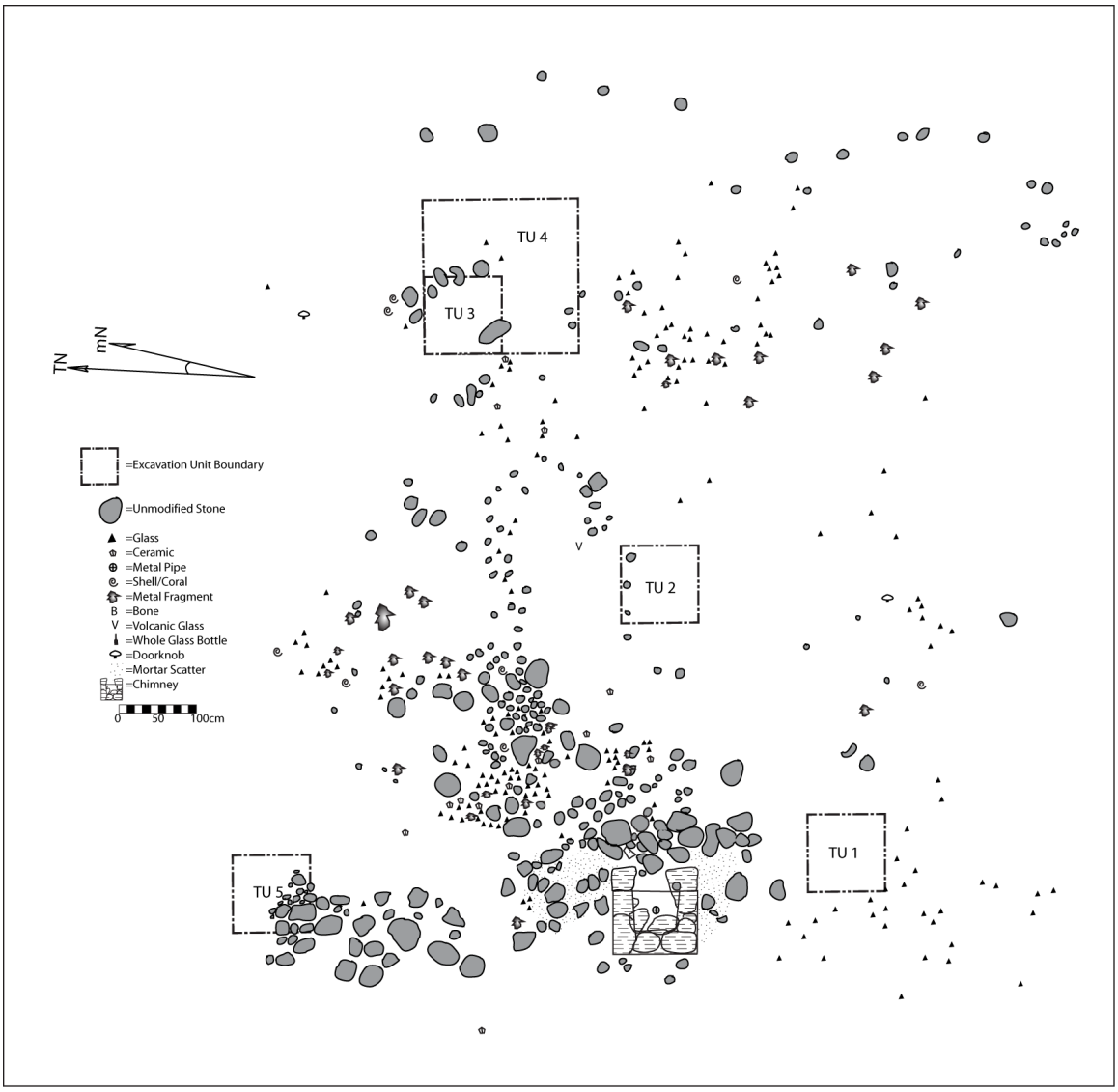


Figure 7.2. Plan of ARPK_0001 Op. 1.

Chimney Sample	169
Quad # 1 (NW)	163
Quad #2 (NE)	101
Quad #3 (SE)	39
Quad #4 (SW)	94
Small Finds	4
Total Result	**570**

Table7.3. Distribution of artifacts at ARPK_0001 Operation 1.

such that I represents the most recent deposit, II underlies I, etc.

The pebbly layer of Test unit 1 is interpreted as dating prior to, or during the construction of the house at ARPK_0001 Op. 1, while the accumulated material above is interpreted as a midden deposit built up over the use-life of the structure, probably as material swept out of, and possibly swept under the house or washed under by rain or other natural processes.

Test unit 2 is located 3.5m east of the SE corner of the standing chimney at ARPK_0001. This unit was excavated in six contexts, including a small clay pocket interpreted as a natural intrusion (Ctx. C), and a concentration of pebbles flanked by larger cobbles (Ctx. D). The upper contexts (Ctx. A and B) had a high concentration of historical artifacts, while below (Ctx. C-F), there was a denser matrix with only charcoal. The unit contained four stratigraphic deposits:

(I) A dark greyish brown (Munsell [10YR4/2]) silt loam with some more compacted inclusions towards the surface, containing glass, metal, and other material lies on top (roughly 0-20cm below datum) and is interpreted as dating to the use-life of the structure at ARPK_0001.

(II) A dark brown (Munsell [10YR3/3]) loam that is very loose, and contains a small, dense clay pocket and a rocky feature. The presence of charcoal in this layer suggests the possibility of an earlier agricultural deposit on this site.

(III) The concentration of stones in the north of the unit may indicate a planting feature, though a more likely interpretation is that these stones are a natural concentration. Time and resources prevented further excavation to test this hypothesis during fieldwork.

(IV) Below the loose, dark brown loam was a compact, dark brown clay soil with very little cultural material, only a few small pieces of charcoal (N=6, wt.=1g).

The stratum interpreted as subsoil in test unit 2 differs from that of test unit 1. Test unit 2 appears to contain deposits dating to the use-life of the structure at the chimney, as well as a possible earlier deposit which may relate to agricultural activity.

Test unit 3 was a 1 x 1m unit with its datum point located 7m east and 2.55m north of the SE corner of the standing chimney at ARPK_0001. This unit was eventually expanded to the south and east into a 2 x 2m unit (Test unit 4). Test unit 3 was excavated in seven contexts, while test unit 4 was excavated in two contexts. The key context in test unit 3 was Ctx. E, a stone feature that appeared to be the corner of a paving or wall footing (Fig. 7.3). Context E essentially divided test unit 3, with strata excavated sequentially on either side of the stones. Test unit 4 was not divided in such a way, because the apparent architectural feature in test unit 3 did not continue in the direction in which excavation was expanded. Test unit 4 had two contexts with no clear architecture, just midden as encountered elsewhere on the site. The stratigraphy of these units is interpreted as follows:

(I) Context A of test unit 3 consists of a mixed surface deposit, probably accumulated since site abandonment.

(II) A portion of a wall footing or stone pavement, possibly dating to the use-life of the chimney structure.

(III) Surrounding (II) is a midden deposit, with the densest concentration of artifacts to the west, and a lower concentration in the east.

(IV) Underlying (II) and (III) is a pebbly layer with very few artifacts, similar to the subsoil of test unit 1.

Test unit 5 is a 1 x 1m unit with its datum point located 5m north and 50cm west of the SE corner of the standing chimney at ARPK_0001. The unit's location was chosen to test whether the stone feature visible on the surface stretching to the north of the chimney was a pavement, a wall footing, or something else. The unit was excavated in six contexts, beginning with the removal of the leaf litter and vegetation growing on the surface, to expose the full extent of the architectural stone in the unit (Ctx. A). The stone feature (Ctx. B) was left intact, and the sediment around it was excavated (Ctx. C-F). Included in this sediment was a dense concentration of bottle glass (Ctx. D; Fig. 7.4). The depositional sequence in test unit 5 was the clearest of all those excavated at ARPK_0001 Op. 1. It consisted of:

(I) Leaf litter and vegetation with some accumulated sediment since site abandonment.

(II) A stone paving one course deep.

(III) A surrounding dark greyish brown midden layer (Munsell [10YR3/2-4/2]) gradually accumulated during the use-life of the structure at ARPK_0001.

(IV) A very dense concentration of bottle glass, possibly representing a discrete depositional event.

(V) Additional midden layer below the surface on which the bottle glass was deposited.

(VI) A mottled clay layer (Munsell [10YR3/2] 60%, [7.5YR5/4] 40%) which may be similar to the subsoil of test unit 2.

Excavations confirmed the presence of a single-course stone paving to the north of the chimney, which may have led to the entrance of the house (Fig. 7.5). Note that the subsoil is similar in test units 2 and 5, but different from that of test units 1 and 3/4, indicating a variable substrate underlying a somewhat uniform sheet midden layer in the vicinity of the standing chimney. A lack of subsurface architecture suggests that the structure at ARPK_0001 was dismantled, and building material from the site removed when settlement shifted to Kalaupapa around A.D. 1900, or that the foundations of the building were made of organic material and rested on the surface, and have since decomposed.

While ARPK_0001 represents non-traditional architecture through the presence of the stone masonry chimney, a more typical form considering the historic photographs and other archival evidence is represented at ARPK_0060. Defining the feature are a grid of stones set into the ground and two parallel single-course stone alignments stretching to the north (Fig. 7.6). This grid consists of the stone piers of a post-on-pier structure, much like those documented in late-19th century photographs of Kalawao, with the single-course alignments representing the entrance path to the structure. The tape-and-compass map of this structure revealed four rows of five stones each in the middle of the structure, two closely spaced rows of three stones at the entrance to the north, and a row of four stones at the back of the structure in the south. The long axis of this structure is oriented roughly northeast-southwest. Relatively few artifacts (N=10) were apparent on the surface, even after the leaf-litter was removed and all artifacts were collected from a 20m x 10m area (Table 7.4). This feature is typical of late-19th century

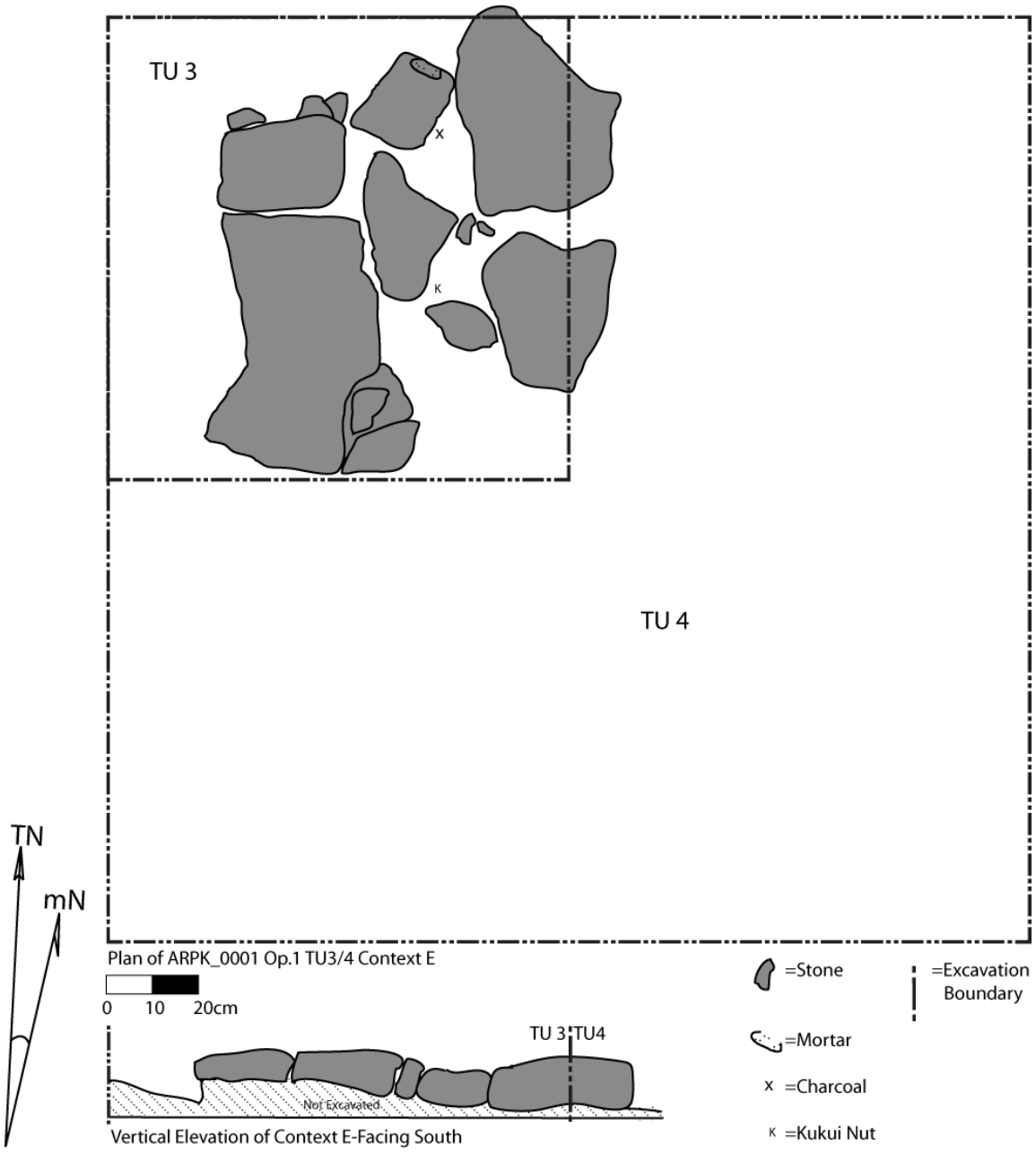


Figure 7.3. Plan and elevation view of ARPK_0001 Operation 1 Test Unit 3 Context "E", a possible architectural feature to the east of the chimney.



Figure 7.4. Concentration of bottle glass uncovered during excavation of ARPK_0001 Operation 1 Test Unit 5, interpreted as representing a discrete depositional event in the sheet midden surrounding the house.



Figure 7.5. Exposed corner of the stone pavement to the north of the chimney in ARPK_0001 Operation 1 Test Unit 5.

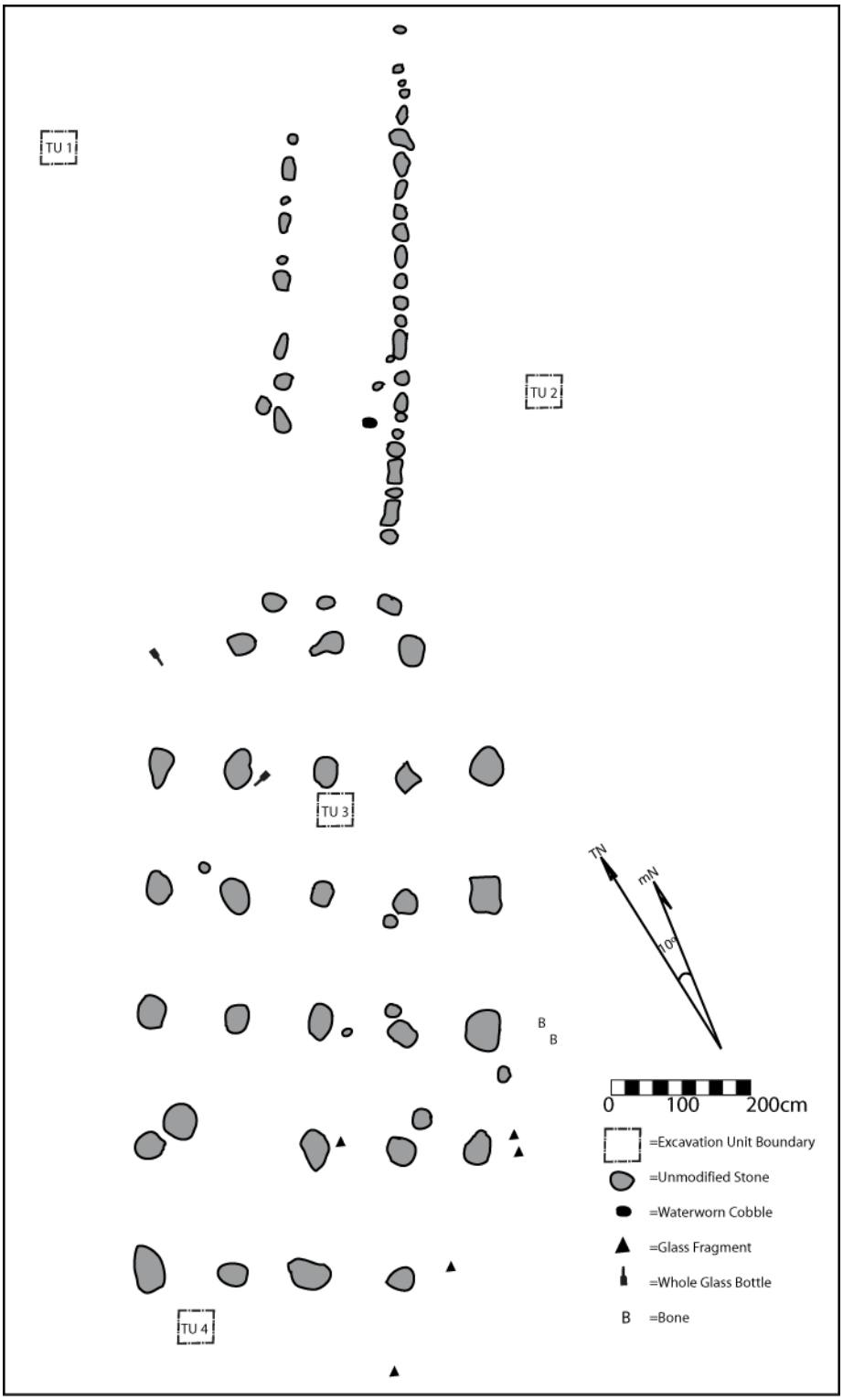


Figure 7.6. Plan of ARPK_0060 Operation 1, the footprint of a post-on-pier domestic structure

Field Collection #	Class 4	Object Name	Count	Color	Dimensions	Details
0060_Op1_1	BONE	PIECES	2	White	NR	Fragments of large mammal bone, probably cow
0060_Op1_2	GLASS	WINDOW	3	Clear	0.25cm thickness	Fragments of window glass
0060_Op1_3	GLASS	WINDOW	2	Clear	0.15cm thickness	Fragments of window glass
0060_Op1_4	GLASS	BOTTLE	1	Olive green	NR	Body shard
0060_Op1_5	GLASS	BOTTLE	1	Brown	NR	Brown bottle, two seams running from base to mouth, ghost seam "17 B 105" on side, "8" on bottom
0060_Op1_6	GLASS	BOTTLE	1	Clear aqua	NR	Clear aqua bottle, "AB Co", "26" on base

Table 7.4. Surface collected artifacts from ARPK_0060 Operation 1.

domestic architecture in the leprosarium, given the size and arrangement of architectural stone, which matches the historical record for this area. The house was probably occupied towards the end of the Hansen's disease period in Kalawao, given the presence of machine-made bottles with very late-19th to early-20th century manufacturer's marks, and the paucity of artifacts suggests that the last inhabitants of this structure may have taken their possessions with them when settlement relocated across the peninsula to Kalaupapa in the 1890s. Excavations consisting of a stratified random sample of four 0.5 x 0.5m test units confirmed this interpretation.

Test units 1 and 2 at ARPK_0060 were located outside of the entrance path to the structure to the east and west, in order to test for the possibility of a midden scatter in front of this structure. Both units demonstrated evidence of heavy root disturbance, and contained no artifacts. In both cases, excavation was halted at 10cm below datum.

Test unit 3 was a 0.5 x 0.5m test pit located in the interior of the post on pier structure at ARPK_0060. The unit was excavated in four contexts, the first three were arbitrary levels excavated in 10cm intervals below datum, and the last ended at the encounter with sterile substrate. The stratigraphic sequence consisted of three deposits.

(I) The most recent deposit is a very dark greyish brown (Munsell [10YR4/2]) loam with a light concentration of artifacts (N=7, wt. = 8g).

(II) A dark brown (Munsell [10YR3/3]) layer beginning about 12cm below datum with a higher concentration of artifacts (N=12, wt. = 84g), including a number of iron nails, which may be a deposit associated with the use-life of this house.

(III) A very dark brown (Munsell [10YR2/2]) clay soil with decaying bedrock and no artifacts.

Test unit 4 was a 0.5 x 0.5m test pit located just outside of the southern exterior wall of the structure at ARPK_0060. The unit was excavated in three contexts, which roughly correspond to the stratigraphic deposits of the site, though interfaces were difficult to interpret due to heavy root disturbance from a nearby palm tree (*Phoenix* sp.). The stratigraphic sequence consisted of:

(I) A topsoil layer containing among other things, flat glass in the northern and eastern portion of the unit, possibly from a broken window.

(II) A deposit that contains a dense concentration of unmodified pebbles (up to 30-40%) beginning around 10cm below datum and ending abruptly at 14cm below datum, possibly indicating a pebble-paved surface associated with the occupation of the house.

(III) A compact, sterile dark brown clay substrate, as encountered in test unit 3.

Excavations at ARPK_0060 indicate materials typical of a house site dating to late in the period of occupation of the Hansen's disease settlement at Kalawao. The artifact concentration from excavation was also relatively low when compared with other areas, though a few notable artifacts were recovered, including an antler fragment that may have been part of a bead, and a metal saw blade fragment. Overall, both ARPK_0001 Op. 1 and ARPK_0060 Op. 1 provide a glimpse of changes in domestic space during the Hansen's disease period.

Continuity: ARPK_0007 Operation 1 and ARPK_0055 Operation 2

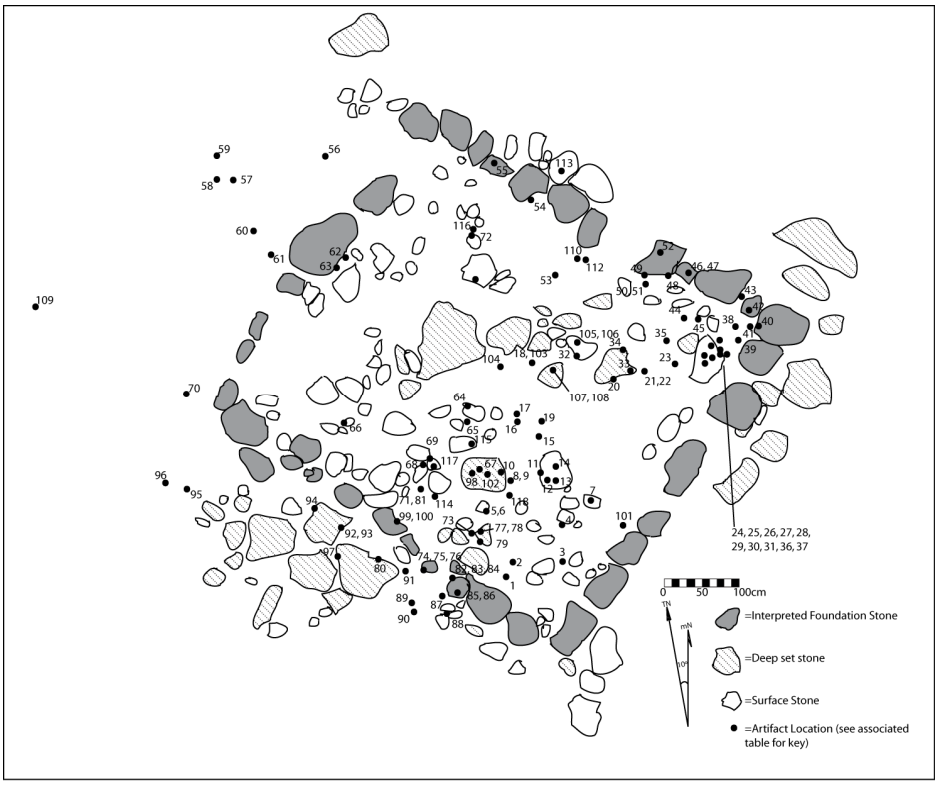
The operation at ARPK_0007 was centered on a roughly-square shaped foundation originally documented during the 2006 field season. The surface collection transect carried out in 2006 cut across this structure, so the material culture in this area was already partly tested. A total of 73 remarkably intact artifacts were recovered across the feature, including a stoneware bottle, rare for this area (Table 7.5). It is possible that the terraces and other walls within the larger enclosure comprising ARPK_0006 and ARPK_0007 would have been a part of a household compound in this area. A high concentration of coconut trees (*Cocos nucifera*) in the western half of this enclosure may reflect the presence of a cluster of these plants in the former house lot. Several thatched structures may have stood in the area, though only the one targeted by the operation had a stone footing, and this structure also had the highest concentration of Hansen's disease period material culture.

Because this feature had already been surface collected, and the sample artifact assemblage was promising for the Hansen's disease period, it was decided to target this structure with an operation. A roughly rectangular pattern of stones define the edge of the structure, with a few stones set in near the middle of the structure, and a possible paving at the entrance to the structure in the southwest. Upon removing brush and clearing away the leaf litter, it was realized that the surface assemblage related to the structure at ARPK_0007 had not been completely collected in 2006. A 9 x 10m area was demarcated and 100% of artifacts were collected from this area (Fig. 7.7). An additional 116 artifacts were collected, including those sitting on the surface, and artifacts which were only partly buried, but could be easily removed from the surface sediment. A rich assemblage, including decorated ceramics, bottle glass, and a "10-ball" from a set of pool balls was recovered (Fig. 7.8). This roughly square structure may have been small for permanent habitation (roughly 6m x 6m), though it could have fit one or two people without crowding, or the building may have been used intermittently. The high concentration of artifacts on the surface or partially buried in the sediment within and surrounding the structure suggests that this was a location of intense activity during the Hansen's disease period.

A small rectangular footprint for a structure, under heavy brush, represents an additional example of continuity of traditional Hawaiian domestic architecture during the Hansen's disease period. The spatial segregation of the structure from the rest of the architectural components of ARPK_0055 is notable (Fig. 6.36). Though only separated from the compound by a few meters, this building is outside of the main enclosure walls connecting the various components of the feature, which is important for considering the occupational history of the structure (see below). The structure at ARPK_0055 Op. 2 is defined by four low walls, most well preserved in the northeastern and southeastern part of the structure (Fig. 7.9). The eastern wall of the structure has a small stone *ahu* (mound) of undetermined function. Two hand-blown green glass bottles were embedded in the northern wall of the structure, with the bottle neck facing south, into the structure. These bottles appeared to indicate an early post-contact period date of occupation, which, along with the more traditional architectural form, suggested this structure would provide a good possibility for pre-Hansen's disease period deposits. After an 8m x 13m area was cleared and surface collected, two 0.5 x 0.5m test units, selected through random sampling from a grid laid across the feature were excavated.

KALA Catalog #	Field Collection #	Material Type	Object Name	Count
14930	0007_1_1_1	SHELL	PIECES	1
14931	0007_1_1_2	BASALT	FLAKE	1
14932	0007_1_1_3	METAL	PIECES	10
14933	0007_1_1_4	BONE	PIECES	9
14934	0007_1_1_5	CERAMIC	CUP	1
14935	0007_1_1_6	GLASS	BOTTLE	1
14936	0007_1_1_7	CERAMIC	BOWL	1
14937	0007_1_1_8	CERAMIC	PLATE	1
14938	0007_1_1_9	GLASS	BOTTLE	1
14939	0007_1_1_10	GLASS	BOTTLE	1
14940	0007_1_1_11	GLASS	BOTTLE	1
14941	0007_1_1_12	GLASS	BOTTLE	1
14942	0007_1_1_13	GLASS	BOTTLE	1
14943	0007_1_1_14	GLASS	BOTTLE	1
14944	0007_1_2_1	GLASS	VESSEL	1
14945	0007_1_2_2	GLASS	BOTTLE	1
14946	0007_1_2_3	GLASS	BOTTLE	1
14947	0007_1_2_4	GLASS	BOTTLE	1
14948	0007_1_2_5	GLASS	BOTTLE	1
14949	0007_1_3_1	CORAL	PIECES	1
14950	0007_1_3_2	METAL	DUCT	1
14951	0007_1_3_3	CERAMIC	BOTTLE	1
14952	0007_1_3_4	CERAMIC	BOTTLE	1
14953	0007_1_3_5	GLASS	BOTTLE	1
14954	0007_1_3_6	GLASS	BOTTLE	1
14955	0007_1_3_7	GLASS	BOTTLE	1
14956	0007_1_3_8	GLASS	BOTTLE	1
14957	0007_1_3_9	GLASS	BOTTLE	1
14958	0007_1_3_10	GLASS	BOTTLE	1
14959	0007_1_3_11	GLASS	BOTTLE	1
14960	0007_1_3_12	GLASS	BOTTLE	1
14961	0007_1_3_13	GLASS	BOTTLE	1
14962	0007_1_3_14	GLASS	BOTTLE	1
14963	0007_1_3_15	GLASS	BOTTLE	1
14964	0007_1_3_16	GLASS	BOTTLE	1
14965	0007_1_4_1	BONE	PIECES	2
14966	0007_1_4_2	SHELL	PIECES	1
14967	0007_1_4_3	CERAMIC	PLATE	1
14968	0007_1_4_4	CERAMIC	PLATE	1
14969	0007_1_4_5	CERAMIC	PLATE	1
14970	0007_1_4_6	CERAMIC	PLATE	1
14971	0007_1_4_7	CERAMIC	BOWL	1
14972	0007_1_4_8	CERAMIC	BOWL	1
14973	0007_1_4_9	CERAMIC	PLATE	1
14974	0007_1_4_10	CERAMIC	BOWL	1
14975	0007_1_4_11	GLASS	BOTTLE	1
14976	0007_1_4_12	GLASS	BOTTLE	1
14977	0007_1_4_13	GLASS	BOTTLE	1
14978	0007_1_4_14	GLASS	BOTTLE	1
14979	0007_1_4_15	GLASS	BOTTLE	1
14980	0007_1_4_16	GLASS	BOTTLE	1
14981	0007_1_4_17	GLASS	BOTTLE	1
14982	0007_1_4_18	GLASS	BOTTLE	1
14983	0007_1_4_19	GLASS	BOTTLE	1
14984	0007_1_4_20	GLASS	BOTTLE	1

Table 7.5. Artifacts surface collected in 2006 from the transect at ARPK_0007.



Sort #	Description	Count
1	Tan, yellowish brown square stoneware with "sharp" stamp	1
2	Brown bottle, complete	1
3	Porcelain doorknob	1
4	Whiteware sherd	1
5	Clear glass shard	1
6	Whiteware rim	1
7	Tan, yellowish brown decorated stoneware rim	1
8	Bone	1
9	Whiteware sherd	1
10	Whiteware base	1
11	Rusty metal rim	1
12	Handprinted/sponge stamped earthenware	1
13	Whiteware bowl base	1
14	Stoneware base	1
15	Clear glass shard	2
16	Whiteware base	1
17	Brown bottle base "SB+CC 21"	1
18	Clear bottle neck and lip	1
19	Green glass shard	1
20	Whiteware sherd, handpainted	1
21	Whiteware sherd, handpainted	1
22	Marine Shell	1
23	Clear bottle, broken lip "P C"	1
24	Bone	1
25	Whiteware bowl base	1
26	Bone	1
27	Bone	1
28	Bone	1
29	Whiteware base	1
30	Clear glass shard	2
31	Clear glass shard	1
32	Whiteware sherd	1
33	Aquamarine glass shard	1
34	Aquamarine glass shard	1
35	Aquamarine bottle base, *(star) symbol	1
36	Whiteware base	1
37	Clear glass rim	1
38	Clear glass shard	5
39	Ironstone bowl base, maker's mark	1
40	Marine Shell	1
41	Clear glass shard	1
42	Bone, sawed	1
43	Whiteware base	1
44	Green bottle, complete, "R 199"	1
45	Green bottle, complete	1
46	Square glass bottle base	1
47	Square glass bottle base	1
48	Whiteware base, small green decorated corner	1
49	Brown bottle base	1
50	Brown bottle base	1
51	Brown bottle shard	1
52	Square glass bottle shards	4
53	Brown bottle shard	1
54	Brown bottle neck	1
55	Clear bottle base	1
56	Green bottle, complete	1
57	Aquamarine bottle, complete	1
58	Aquamarine bottle base, "Honolulu B&M Co."	1
59	Enameled white metal bowl	1
60	Green bottle, complete	1

Sort #	Description	Count
61	Metal strap, barrel?	1
62	Cow Bone	1
63	Aquamarine bottle base, "PCCY"?	1
64	Aquamarine bottle neck	1
65	Cow Bone, Sawed	1
66	Whiteware bowl base	1
67	Whiteware bowl rim	1
68	Green bottle neck	1
69	Cow Bone, Cut	1
70	Metal strap, barrel?	1
71	Yellowware base	1
72	Aquamarine bottle shard	1
73	Whiteware sherd, blue sponge-stamped pattern	1
74	Ironstone bowl base, maker's mark	1
75	Whiteware rim, hand painted blue/red/green	1
76	Whiteware rim, hand painted light blue	1
77	Clear flat glass shard	3
78	Aquamarine melted glass	1
79	Whiteware base	1
80	Clear bottle (mends)	2
81	Whiteware base, blue line	1
82	Banded slipware/mocha rim, white/blue/brown	1
83	Whiteware rim	1
84	Black glass shard	1
85	Aquamarine bottle shard	1
86	Clear/cloudy flat glass shard	1
87	Whiteware rim, green leaf pattern	1
88	Green bottle shard	1
89	Patent medicine/liquor bottle with rope pattern, "5 90C" on base	1
90	Cow Bone, Cut	1
91	Metal frag.	1
92	Clear flat glass shard	1
93	Bottle shard	2
94	Whiteware base	1
95	Ceramic Billiard Ball, 10-ball	1
96	Square bottle base, "A"	1
97	Whiteware sherd	1
98	Aquamarine melted glass	1
99	Whiteware rim, yellow flower design	1
100	Whiteware sherd	1
101	Bone Fragment (NC)	1
102	Clear glass shard (NC)	1
103	Clear glass shard (NC)	2
104	Clear glass shard (NC)	1
105	Clear glass shard (NC)	1
106	Brown bottle shard (NC)	1
107	Clear glass shard (NC)	2
108	Black glass, textured on one side, smooth on the other (NC)	1
109	Clear glass shard (NC)	1
110	Embedded brown bottle base fragment (NC)	1
111	Clear glass rim (NC)	1
112	Clear glass shard (NC)	3
113	Aquamarine bottle, complete (NC)	1
114	Green bottle shard (NC)	1
115	Shell (NC)	1
116	Brown bottle shard (NC)	1
117	Whiteware sherd, painted green (NC)	1
118	Whiteware base (NC)	1

Figure 7.7. Plan of ARPK_0007 Operation 1, including a key with details about surface collected artifacts.



Figure 7.8. Artifacts recovered from surface collections at ARPK_0007 Operation 1, including decorated ceramics and a 10-ball from a set of billiard balls.

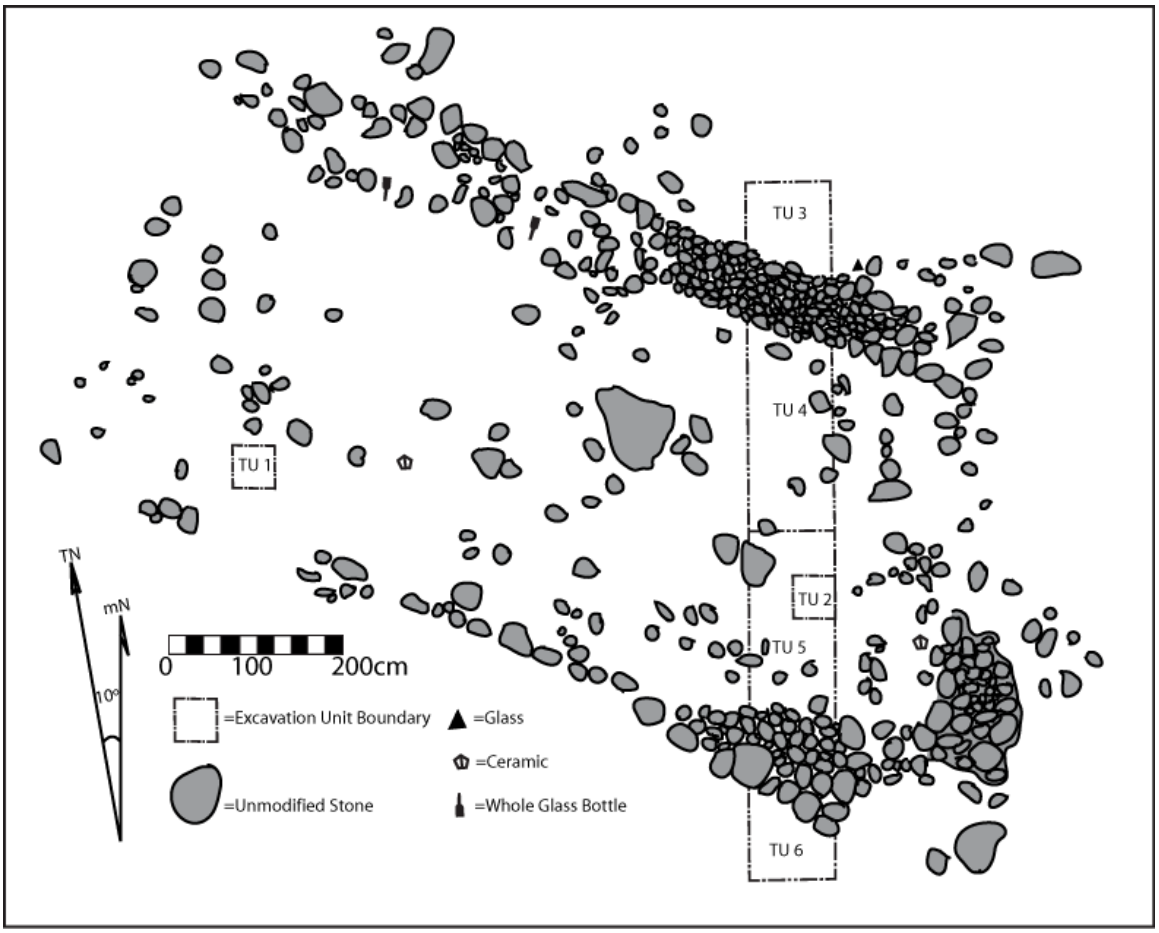


Figure 7.9. Plan of ARPK_0055 Operation 2.

Test unit 1 at ARPK_0055 Op. 2 was excavated in the western part of the structure. The excavation consisted of two contexts, generally corresponding to the layering of the soil. The deposits consisted of:

(I) A layer of dark, organic-rich (Munsell [10YR2/2]), root disturbed soil ending around 10cmbd.

(II) A layer with a high concentration of pebble-sized stones, and a higher concentration of artifacts, including cow bone at the transition from (I) to (II).

(III) A lighter (Munsell [10YR3/2]), more compact substrate, which was not excavated.

Test unit 2 was excavated in two contexts, and there was a similar depositional sequence to that of test unit 1. A small boulder was encountered 15cm below datum in the northeastern part of this unit. To get a better sense of the overall depositional sequence at ARPK_0055 Op. 2, and to determine the relationship of subsurface deposits to surface architecture, a 1 x 8m trench was excavated, incorporating Test unit 2 (Fig. 7.10). This trench was divided into four contiguous units. Test unit 3 was located outside of the structure to the north, Test unit 4 and 5 were located inside the structure, dividing the interior deposits into a northern (Test unit 4) and southern (Test unit 5) half at the 4 meter mark of the trench, and test unit 6 was located outside of the structure to the south. Test unit 3 was excavated in two contexts, both of which were heavily disturbed by the roots of a nearby Java Plum tree (*Syzygium cuminii*). Test units 4 and 5 were excavated in three contexts each. Test unit 6 was excavated in four contexts. All contexts were excavated roughly according to natural stratigraphy (precise interfaces were obscured by post-depositional processes, especially root action), with the exception of Ctx. B in units 4/5 and Ctx. C in test unit 6, which were ended at arbitrary 10-cm intervals.

The depositional sequence in test unit 3 was obscured by root action, but there was an apparent transition from:

(I) A mixed topsoil layer containing sediment accumulated since site abandonment and artifacts left on the surface when the structure was abandoned.

(II) A rockier (approximately 30% unmodified pebble inclusions), relatively artifact-rich (N=1020 for II, vs. N=164 for I) layer, still very root disturbed, transitioning to fewer artifacts, though an intact substrate was not identified because of the roots.

Test Units 4 and 5 had a shared depositional sequence, consisting of:

(I) A dark (Munsell [10YR2/2-3/2]) topsoil layer.

(II) A rocky layer (30% unmodified pebbles) of the same color sediment as (I), with a much higher artifact concentration.

(III) A lighter, more clay-rich layer with fewer pebbles (Munsell [10YR3/2], 10% unmodified pebbles) and no artifacts, identified as the subsoil layer.



Figure 7.10. The trench at ARPK_0055 Operation 2, during excavation. Test unit 2 is visible in the middle of the trench, and the basal stones of the foundation are visible to the right, in the southern portion of the trench.

If (II) is identified as the occupation layer for this structure, there may be a slightly higher concentration of artifacts to the north in test unit 4 (N=113, wt.=143g) when compared with test unit 5 (N=66, wt.=86g).

Test unit 6 had the most complex depositional sequence of the units excavated at ARPK_0055 Op. 2:

(I) A dark, organic rich topsoil layer.

(II) A deposit of cobbles and sediment running alongside the exterior of the south wall of the structure.

(III) A rocky, artifact rich layer, like the occupation layer from test units 4 and 5.

(IV) A clay substrate, like that found below the occupation layers elsewhere on this site.

The topsoil (I) and cobbles (II) together overlie the rocky occupation layer (III), which overlies the clay substrate (IV). It is unclear what purpose, if any, the cobble deposit had, though it is interesting to note that it appears to have been deposited either late in the use-life of the structure, or after its abandonment, overlying the rocky, artifact-rich habitation layer and lying above and against the basal stones of the southern wall. Possibly these cobbles washed against the structure during an erosional event, with sediment sliding off the talus slope of the cliffs to the south.

The excavation of this trench provided a cross-section of the structure at ARPK_0055 Op. 2 (Fig. 7.11). The walls of the structure did not reveal any buried courses of architectural stone, though the bottom of the basal stones for the walls of this structure, clearest in the south of test unit 6 (Fig. 7.12), were revealed. Across the structure, a discrete rocky layer suggests that the habitation surface for this building was pebble-paved during occupation. The structure is interpreted as a house site with a stone foundation, pebble-paved floor, and probably a thatched superstructure. The highest concentrations of artifacts were found to the outside of the structure (Fig. 7.13), notably downslope (test unit 3). A high concentration of faunal material was found within the structure, though further testing would be necessary to determine whether this indicates a specialized function for the building itself, or an activity area within the house. Root disturbance, erosion, and other post-depositional processes have altered the stratigraphy of this structure, but this excavation allows a viable reconstruction of these deposits (Fig. 7.14). The fact that the stone structure at ARPK_0055 Op. 2 was spatially separated from the earlier structures at this feature, including post-contact era enclosure walls, fits within a general archaeological pattern for Hansen's disease period domestic architecture (see below). That the stone architecture decomposed more quickly when compared with more substantial stone structures in the area (e.g. ARPK_0022 or the enclosure at ARPK_0050/0051) suggests that it was constructed relatively quickly, possibly after the arrival of the first patients in 1866, and abandoned after a relatively brief period of occupation. The presence of a coin with a date of 1893 in Test unit 6 context B provides a *terminus post quem* (TPQ) for site abandonment, relatively late for the occupation history of Kalawao. Thus the structure at ARPK_0055 Op. 2 encapsulates two patterns of domestic architecture. On the one hand, its spatial segregation sets it within the range of variability for buildings constructed and inhabited during the Hansen's disease period, when a more scattered settlement pattern for domestic sites emerged within the larger Hawaiian landscape. The location of this building in close proximity to the settlement's store is also notable, as the store would become an important locus of material distribution and social activity over the course of the history of the leprosarium. On the other hand, the form of

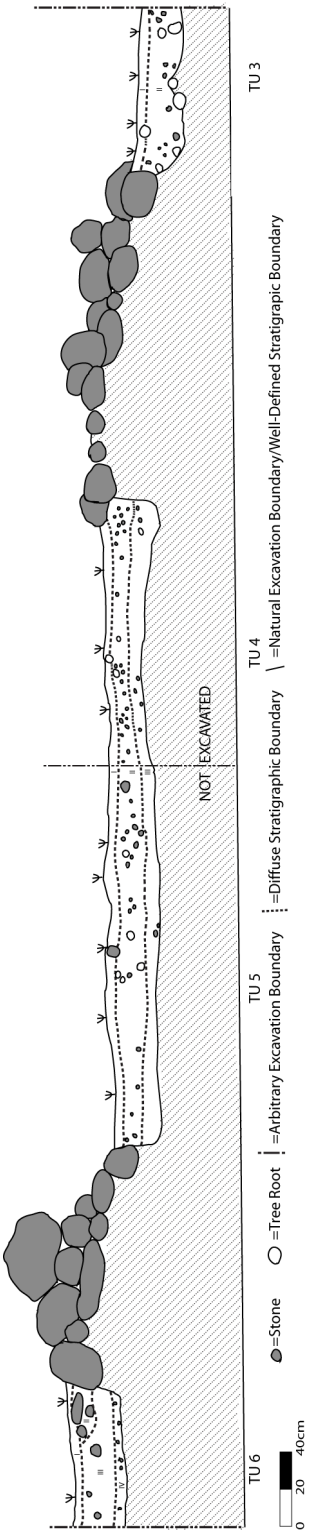


Figure 7.11. Stratigraphic profile of the excavation trench at ARPK_0055 Operation 2.



Figure 7.12. Detail of the exposed basal stones of the foundation wall for the domestic structure at ARPK_0055 Operation 2, Test Unit 6.

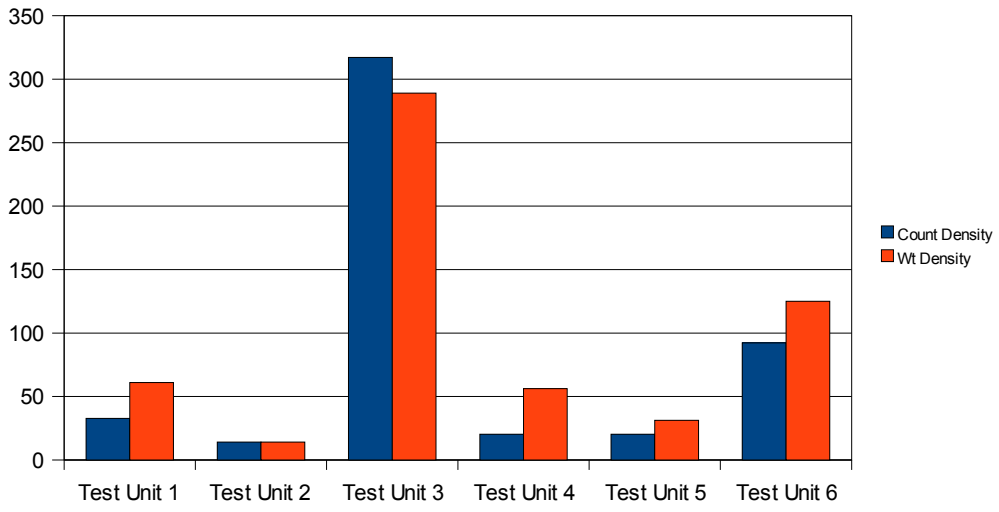


Fig. 7.13. Density of artifacts per 50cm^2 in the test units at ARPK_0055 Operation 2, indicating the higher density of objects in test units outside of the structure (Test Unit 3, Test Unit 6) when compared with units excavated inside of the structure.

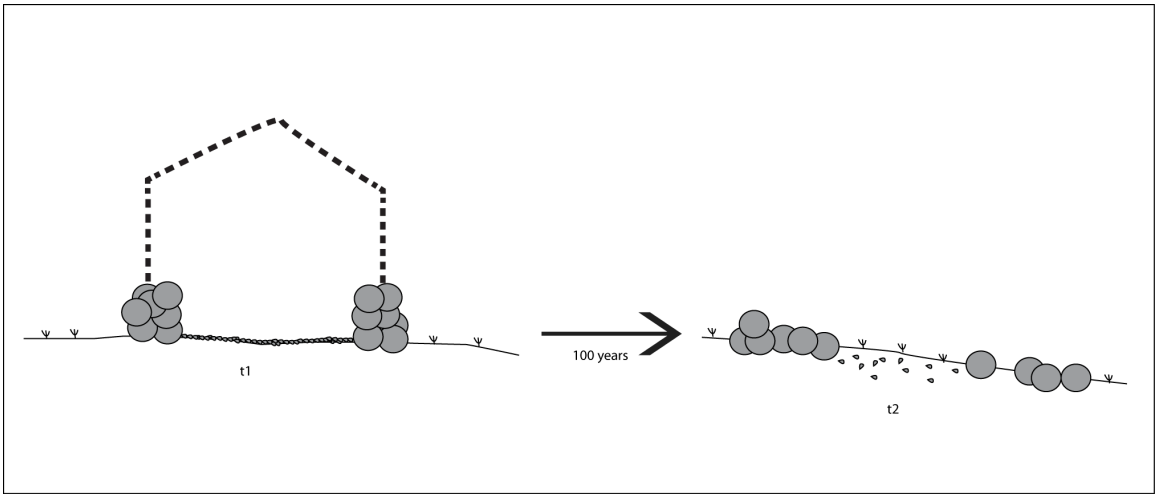


Figure 7.14. Model of formation processes at ARPK_0055 Operation 2, showing the decomposition of the thatched superstructure (represented as a dashed line), collapse of stone foundation walls, and dispersal of stones from the pebble paved floor, where t1 represents the structure at the time of abandonment, and t2 is the structure after roughly 100 years have passed.

the structure and stratigraphic deposits at ARPK_0055 Op. 2, notably the evidence for pebble paving, suggest a building more within Hawaiian traditions of domestic architecture. In some ways, this building is a microcosm of the entire settlement, representing a set of Hawaiian practices taking place within an emerging institutional context.

Other Operations: ARPK_0055 Operation 1 & Operation 3

Two additional operations were carried out at the site complex designated ARPK_0055. This complex was documented in 2007, and consists of a series of terraces and enclosure walls, with the footprint for a low rectangular structure in the western part of the site (Fig. 6.36). The operations were centered in areas where surface midden indicated a high potential for addressing other questions of domestic life in Kalawao. The original 5m x 25m surface collection carried out at this feature in 2007 revealed a variety of artifacts, including a marbled ceramic doorknob. Operation 1 was carried out in the area closest to the location of this doorknob, under the working assumption that the doorknob indicates the approximate location of a domestic structure. An area of 9m x 10m was cleared on two small stone-faced, earth-filled terraces, the lower terrace covered with a dense scatter of stone cobbles (Fig. 7.15). Few artifacts were found on the surface at ARPK_0055 Op. 1 (N=13), and no surface evidence of household architecture was found after clearing the leaf litter. A stone poi pounder was located to the north of the operation, documented and left *in situ*. Two 0.5 x 0.5m test pits were excavated at this operation, one on each terrace, to test the nature of deposits in this area.

Test unit 1, located on the upper terrace of this operation, was excavated in four contexts, divided at arbitrary levels, with the exception of Ctx. D, which was excavated as a natural subsoil layer. The unit contained two strata:

(I) A dark (Munsell [10YR3/2-2/2]), loose layer containing abundant 19th-century midden deposit (N=46 for Ctx. A), which had been badly disturbed by roots, ants, and possibly burrowing mammals (some rabbit [Lagomorph] bone has been tentatively identified from Ctx. C, see Chapter 8).

(II) A more compact, relatively lighter (Munsell [10YR3/2]) clay layer with no definite historical material.

Test unit 2 was excavated in two contexts, corresponding approximately to the natural layers, which were comprised of:

(I) A dark, very loose topsoil with very few artifacts (N=2)

(II) A very rocky (up to 85% unmodified stone inclusions), dark yellowish brown (Munsell [10YR3/4]) clay layer, which probably consists of decaying bedrock.

The dark deposit is probably terrace fill from the occupation period of this site, though the variability in artifact concentration may indicate differential use. While further testing would be needed to ensure the veracity of the pattern, it does appear that the upper (western) terrace at ARPK_0055 Op. 1 saw more deposition of material used on a daily basis, and the lower (eastern)

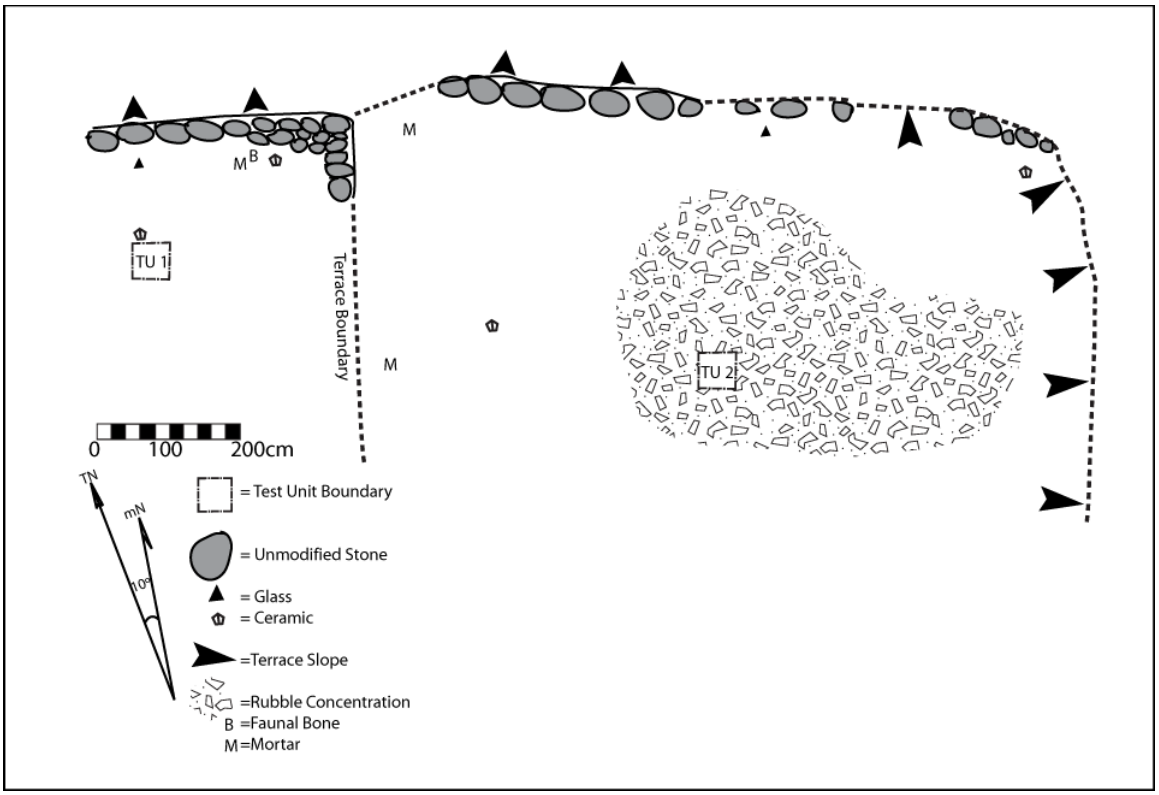


Figure 7.15. Plan of ARPK_0055 Operation 1.

terrace may have been kept clean for the most part. One possible interpretation of this pattern is that the upper terrace was used for cooking, while the lower terrace was used as a sleeping area with some kind of structure built on top to protect against the wind and rain, or that the lower terrace was simply an open area for sitting that was swept clean of refuse. The presence of extensive slope wash on these terraces may also mean that artifacts from the southern part of the site complex could be mixed in with these deposits, at least in the upper part of the deposit. Surprisingly, the artifact assemblage recovered from test unit 1 at ARPK_0055 Op. 1 was one of the richest from the research area, and had one of the highest concentrations of organic material (see below). While further testing would be needed to ensure that this apparent pattern is not simply a result of sampling error, it is a compelling hint at the potential of future research in this area.

Finally, a small operation was carried out as a surface collection of a 5m x 8m area on a small stone terrace in the northeastern part of ARPK_0055 with a particularly high concentration of bottle glass and other artifacts (Fig. 7.16). Initially, the operation was carried out to document the context of a number of bottles with diagnostic markings, including a brown glass "CLOROX" bleach bottle. Investigations also revealed an intensively retouched glass blade with a prismatic cross-section. A total of 333 individual artifacts were recovered, 257 of which were glass. Other artifacts recovered included a single brick, several ‘*opihi* (Cellana sp.) shells, patent medicine and soft drink bottles, refined earthenware ceramics, and a small carbon rod. Among the glass artifacts, 58% (N=151) showed some kind of potential evidence for modification, although there is some reason to be skeptical of this figure, as not all "flaked" glass has necessarily been retouched or used (Conte and Romero 2008). Nonetheless, the clear evidence for retouch and/or use wear on some glass artifacts makes this assemblage a compelling collection for considering the innovative worked glass technologies of exiles living in Kalawao (see Chapter 8).

Comparing Domestic Architecture, Deposits, and Assemblages

Household archaeology revealed a degree of variability in domestic architecture for the Hansen's disease period in Kalawao. Four discrete structures, representing three styles of domestic architecture were documented. These styles included a structure with a standing masonry chimney, for which additional architectural remains were not found, but which presumably consisted of a post-on-pier structure (ARPK_0001 Op. 1); a post-on-pier structure, for which the grid of stone piers remains on the ground (ARPK_0060); and domestic structures built in a traditional Hawaiian style with rectangular stone footings, presumably for a thatch superstructure (ARPK_0007 Op. 1 and ARPK_0055 Op. 2). This last type of structure was persistent through the 20th century in the Hawaiian Islands (several examples of traditional thatch houses recorded in Hiroa [1954] date well into the 20th century; see also Bayman 2009: 141-147), and the TPQ of 1893 provided from a coin excavated at ARPK_0055 Op. 2 suggests continued habitation of traditional Hawaiian-style thatch structures late in the occupation period for Kalawao. Archival research may reveal when the first post-on-pier structures were constructed at Kalawao, but photographic evidence suggests that such buildings were widespread by at least the 1880s (Greene 1985). The archaeology of the settlement has revealed that both traditional and introduced domestic structures remained inhabited side-by-side well into the

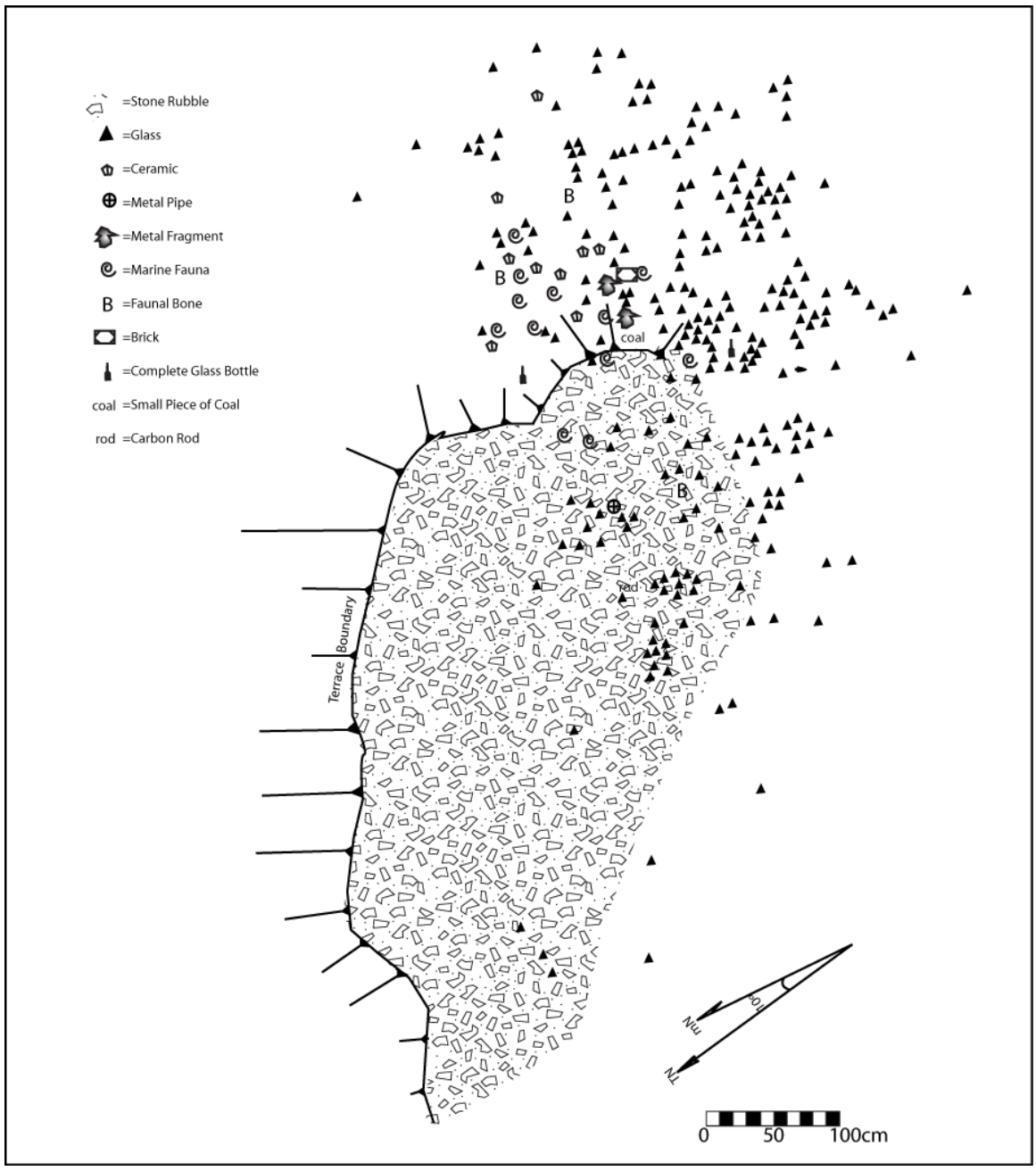


Figure 7.16. Plan of ARPK_0055 Operation 3.

1890s. In keeping with the theme of the modern leprosarium as an institution "in between", the domestic architecture at Kalawao was by no means uniform,. The diversity of household spatial arrangements in this place reflect parallel processes of adaptation of the new, and retention of the old within the context of change and continuity in Hawaiian culture during the late-19th century.

Excavations were intended to test for subsurface architectural remains, as well as to recover artifacts. With the exception of the relatively well defined pebble-paved surface at ARPK_0055 Op. 2, no subsurface architectural features uncovered during test excavations could be clearly interpreted. However, excavations did succeed in characterizing the stratigraphic deposits present in Kalawao. Archaeological deposits in the research area tended to be shallow (ca. 30-40cm at most), consisting primarily of material deposited during the Hansen's disease period, based on the material culture recovered. One possible pre-Hansen's disease deposit is interpreted as agricultural soil with large charcoal inclusions, such as the one present at the bottom of ARPK_0001 Op. 1 TU 2. Sediments in the research area consisted primarily of loose, friable loams and silty clay loams, with tree roots being the primary cause of disturbance. The densest concentrations of stone inclusions should most likely be attributed to cultural activity (e.g. Layer (II) from ARPK_0055 Op. 2 Tu 4/5), with the exception of situations where decaying bedrock is encountered (e.g. Layer (III) from ARPK_0055 Op. 1 TU 2). Sediment color for the research area can be characterized as dark greyish brown to very dark greyish brown (Munsell [10YR4/2] and [10YR3/2] for the most part; see Table 7.6). While the vertical component of the deposits in the research area is fairly well understood at this point, the horizontal variability has not been completely defined for the sites examined here. More extensive areal excavations, or a more widespread program of testing using 0.5 x 0.5m test pits might shed more light on the subject. At this point, it should be noted that most domestic sites appear to be covered by an extensive if shallow sheet midden, both on the surface and in stratigraphic deposits, indicating that refuse disposal took place close to the home. There is no evidence for the use of rubbish pits at this point. The concentration of artifacts outside of the structures appears in the initial analysis to be higher than inside, although small artifacts tend to be ubiquitous. For post-on-pier structures, it is possible that material was swept out of the door to the house, and then under the building, while for thatch houses, floors may have been swept but not all objects caught during sweeping.

To compare the household assemblages recovered from the excavations carried out in Kalawao, several measures of variability for the intensity of occupation during the Hansen's disease period were used. Density measurements used in comparing the randomly-spaced surface collection transects carried out during the initial phase of research indicated that higher concentrations of surface artifacts could be associated with domestic contexts. The surface density of artifacts at operations that targeted surface architecture thought to be domestic was more variable (Fig. 7.17). At some operations (ARPK_0001 Op. 1, ARPK_0055 Op. 3), the concentration of artifacts on the surface was higher than any of the randomly-spaced areas targeted with surface collection transects. At others, especially ARPK_0055 Op. 1 and ARPK_0055 Op. 2, the lack of surface remains masked a dense subsurface midden. This does not negate the prior observation about artifact density and domestic sites, but points to the need for subsurface testing to gain a more complete sense of the location of houses in Kalawao. Since these density values represent a different kind of sampling, they are more useful for comparison with one another, in that they indicate a higher rate of accumulation of materials on the surface at ARPK_0001 in front of the chimney, and at ARPK_0055 at the terrace where a large amount of

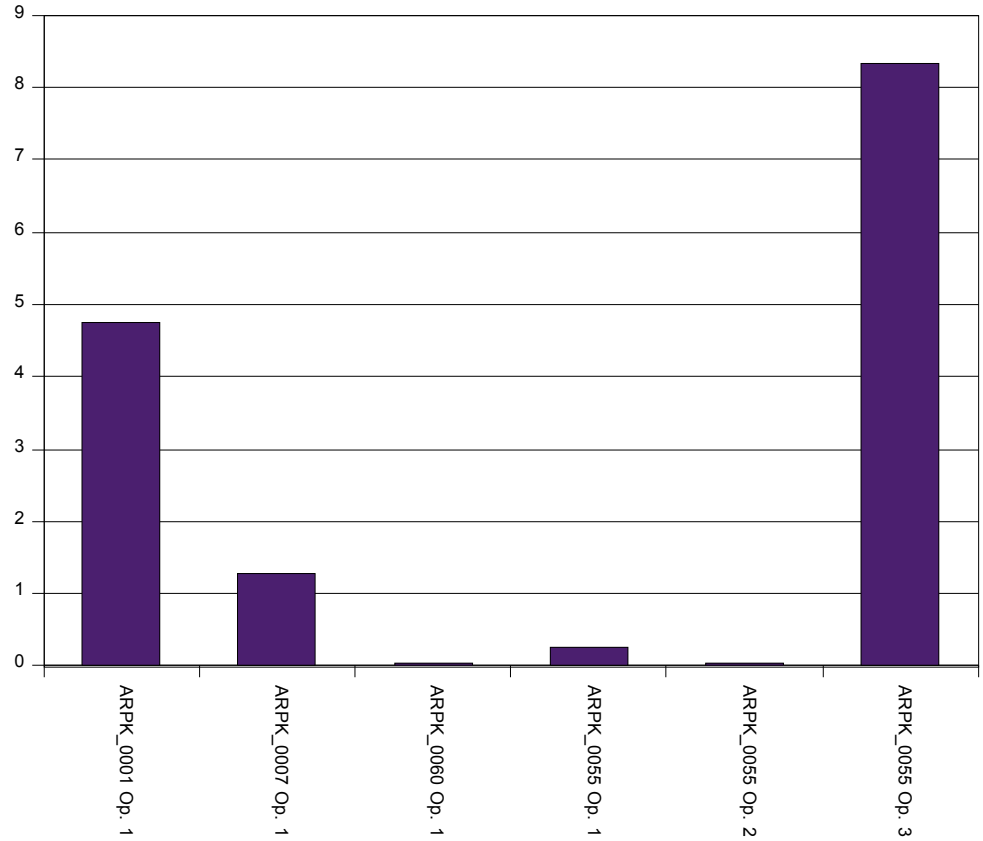


Figure 7.17. Density measurements (number of artifacts per square meter) for surface collections in the different operations, indicating the much higher densities of material at ARPK_0001 Op. 1 and ARPK_0055 Op. 3.

Munsell	
[10YR2/2-3/2]	12
[10YR2/2]	6
[10YR3/2-2/2]	3
[10YR3/2-4/2]	3
[10YR3/2]	11
[10YR3/3]	4
[10YR3/4]	1
[10YR4/2]	13
N/A	3
Total Result	**56**

Table 7.6. Munsell soil colors recorded during excavations.

bottle glass accumulated. In the latter case, the presence of worked glass tools is significant, indicating that ARPK_0055 Op. 3 represents a discrete activity area where bottle glass tools were at least used, if not produced.[36]

Turning to the subsurface remains, an initial calculation of the density of materials, both by count and weight (Fig. 7.18)[37] from the artifact assemblages excavated at the four operations where subsurface testing took place indicates that ARPK_0001 had a much denser midden assemblage than any of the other structures tested, while ARPK_0060 had a significantly lower density of artifacts. However, this pattern is more complicated than an initial glimpse suggests, especially when the density measures are broken down by material type (Fig. 7.19, 7.20). The higher density of artifacts at ARPK_0001 reflects primarily the higher density of metal and glass in the excavated deposits at that particular structure, while organic materials appear in a higher density at ARPK_0055, notably faunal material by weight at ARPK_0055 Op. 2, and charcoal by both count and weight at ARPK_0055 Op. 1.

In addition to artifact density measurements, which may indicate the rate of use, discard, and deposition of materials, richness provides a measure of variability in artifact assemblages recovered from these excavations. An initial glimpse at the kinds of objects found at each operation suggests the variety of materials that were available to inmates in the leprosarium, notably the glass and metal objects found in domestic contexts (Table 7.7). For quantitative analysis, richness was calculated as the number of different kinds of artifacts separated in the lab during artifact analysis. For example, where one bag of glass was collected in the field, it was separated into brown bottle glass, green bottle glass, clear window glass, and other kind of glass, and each different kind of glass added a value of one to the richness value for each context. An examination of richness for each operation where excavations were carried out (Fig. 7.21) indicates that ARPK_0055 Op. 1 had a much higher richness than any other operation, while ARPK_0001 had a richer assemblage than ARPK_0055 Op 2 and ARPK_0060 Op 1. Breaking the richness measurements down further by test unit (Fig. 7.22) indicates that this may reflect a slight bias caused by the extremely high richness value of ARPK_0055 Op 1 test unit 1. Given that this unit was only one of two 50cm x 50cm units carried out at that particular operation, the question of sample size must be raised as a major caveat when interpreting these data. However, this pattern certainly calls attention to a high potential for a rich domestic assemblage in the area of ARPK_0055 Op. 1, especially if the western terrace at this operation represents a discrete activity area. The high density of ceramics, faunal material, and charcoal may indicate a cooking area, but again, given the small sample size, further testing would be necessary to sharpen this initial interpretation. Further analysis of richness statistics taking sample size into account suggests that the ratio between richness and sample size is negatively correlated for both the individual test units and the aggregate data for operations (Fig. 7.23, 7.24). In other words, larger sample sizes tend to produce relatively lower richness values for the number of artifacts recovered. This may be due to large assemblages of non-diagnostic glass and metal, as

36 No evidence of manufacturing debris was recovered at this operation, but excavations with screens might recover many smaller flakes of glass not visible on the surface.

37 Density measurements were calculated per 50cm x 50cm unit, rather than square meters, to reflect the fact that this was the smallest unit used for subsurface testing. Because the depth of deposition was fairly consistent, measurements are calculated using the number of 50cm x 50cm units excavated, or equivalent (thus one 1 x 1m unit = four 50cm x 50cm units) as a proxy for the amount of sediment removed.

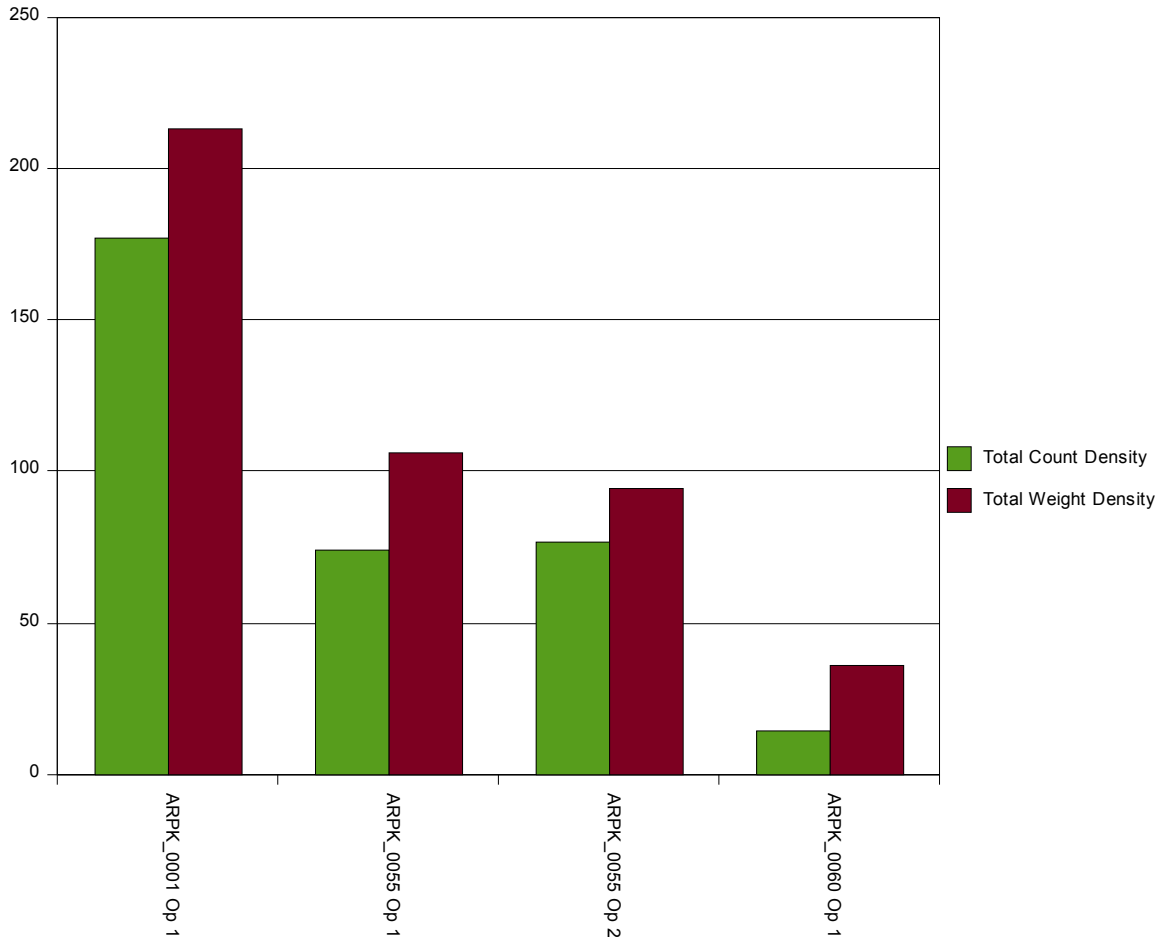


Figure 7.18. Count and weight densities of excavated artifacts.

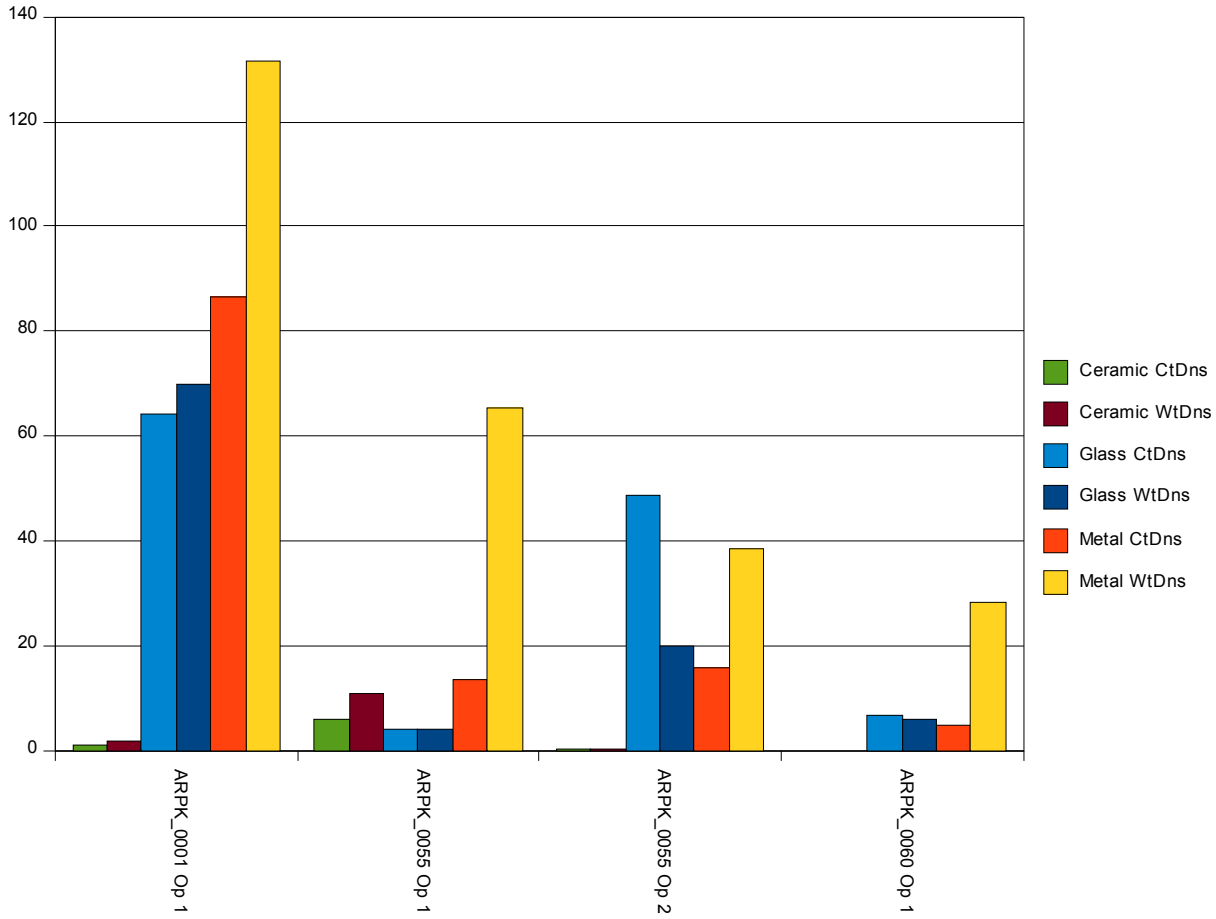


Figure 7.19. Count and weight densities for industrially produced artifacts recovered from excavations.

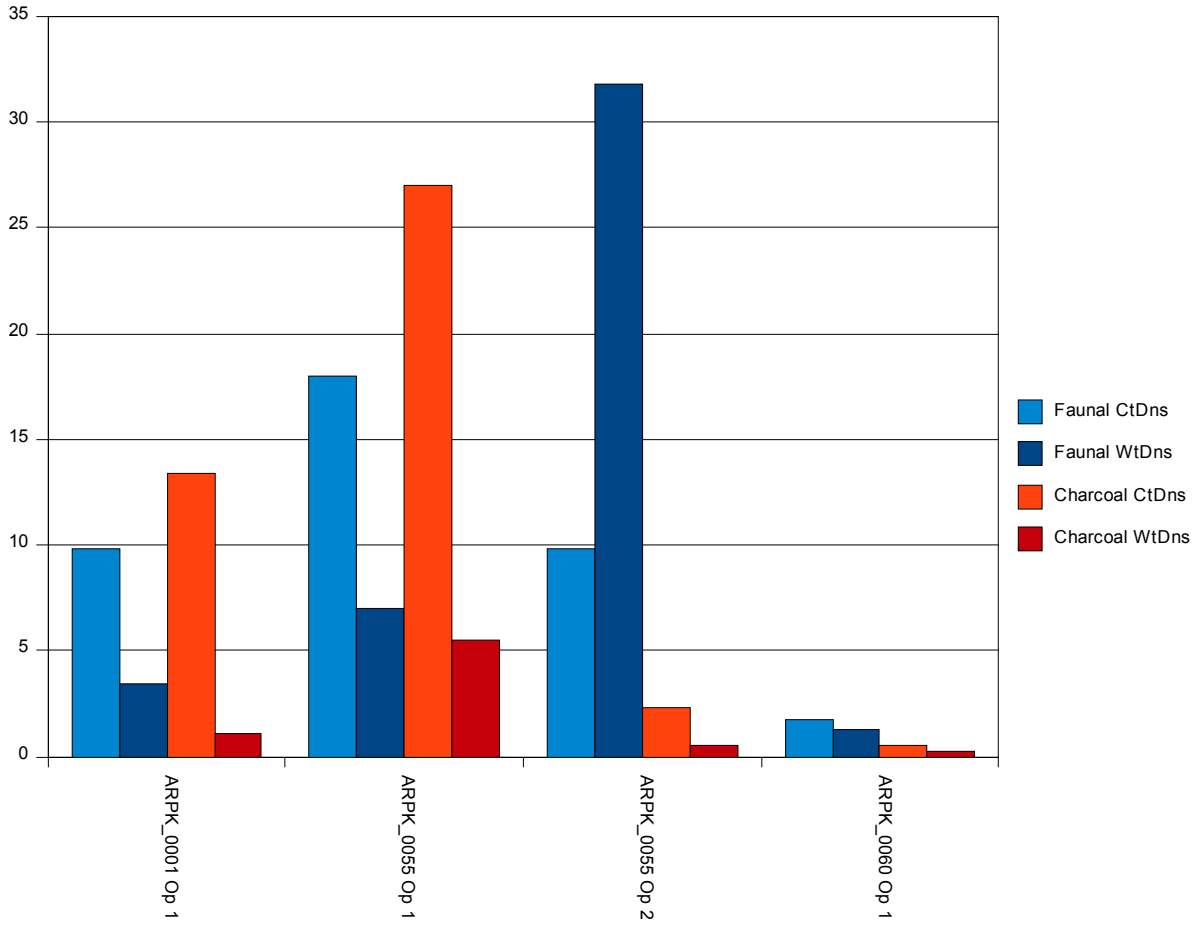


Fig. 7.20. Count and weight densities of organic materials recovered from excavations.

Operation	Material	Name	
ARPK_0001 Op 1	BASALT	FLAKE	2
	BONE	FRAGMENTS	138
	BRICK	PIECES	1
	CARBON	ROD	1
	CEMENT	PIECES	14
	CERAMIC	FLOWERPOT	6
		TEACUP	5
		VESSEL	18
	CHARCOAL	PIECES	375
	COAL	PIECES	1
	CORAL	PIECES	5
	FAUNAL	FRAGMENTS	16
	FIRE CRACKED ROCK	FRAGMENTS	1
	GLASS	BOTTLE	523
		DRINKING VESSEL	1
		FLAKE	60
		FRAGMENTS	824
		SCRAPER	1
		VESSEL	17
		WINDOW	369
	GLASS AND METAL	PIECES	1
	METAL	AXE	1
		COIL	1
		COPPER SHEET	2
		CYLINDER	1
		FASTENER	1
		FRAGMENTS	1009
		HOLED STRIP	1
		KEY	3
		NAIL	1311
		PEG	1
		PIPE	29
		RIVET	9
		ROD	50
		VESSEL	2
		WIRE	1
	MORTAR	PIECES	24
	NUT	KUKUI NUT	4
	PLASTER	PIECES	2
	SHELL	PIECES	117
	VOLCANIC GLASS	FLAKE	3
	WOOD	PEG	1
ARPK_0055 Op 1	BONE	FRAGMENTS	36
	CERAMIC	BOWL	1
		VESSEL	11
	CHARCOAL	PIECES	54
	GLASS	BOTTLE	4
		BUTTON	3
		FLAKE	1
	METAL	FRAGMENTS	2
		NAIL	23
		PEG	1
		SCREW	1
	PLASTER	PIECES	11
ARPK_0055 Op 2	BASALT	HAMMERSTONE	1
	BONE	FRAGMENTS	205
	CERAMIC	VESSEL	5
	CHARCOAL	PIECES	61
	GLASS	BOTTLE	204
		CORE	1
		FLAKE	73
		FRAGMENTS	698
		VESSEL	56
		WINDOW	231
	METAL	COIN	1
		FRAGMENTS	40
		NAIL	370
	SHELL	PIECES	6
	TOOTH	FRAGMENTS	44
	TOOTH AND METAL	FRAGMENTS	1
	VOLCANIC GLASS	FLAKE	1
ARPK_0060 Op 1	ANTLER	FRAGMENTS	1
	BASALT	FLAKE	1
	BONE	FRAGMENTS	5
	CHARCOAL	PIECES	2
	GLASS	BOTTLE	2
		WINDOW	25
	METAL	FRAGMENTS	1
		KEY	1
		NAIL	16
		SAW	1
	SHELL	PIECES	1
Total Result			7154

Table 7.7. Objects recovered from household-level excavations.

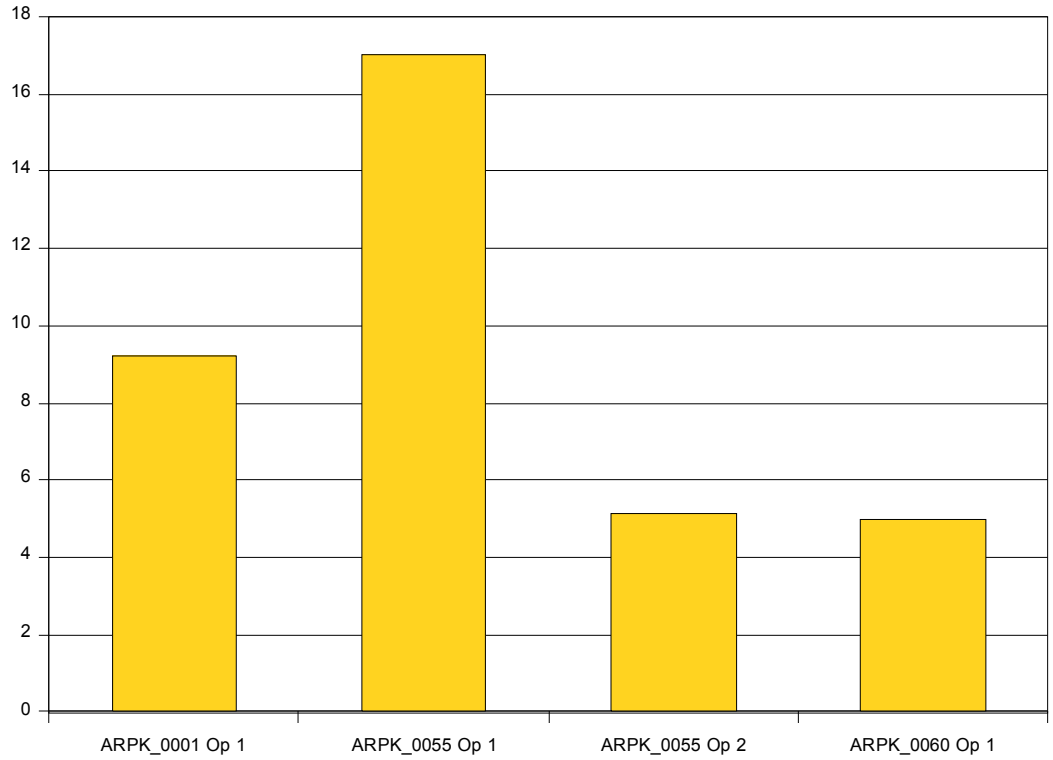


Fig. 7.21. Richness values, as calculated by operation.

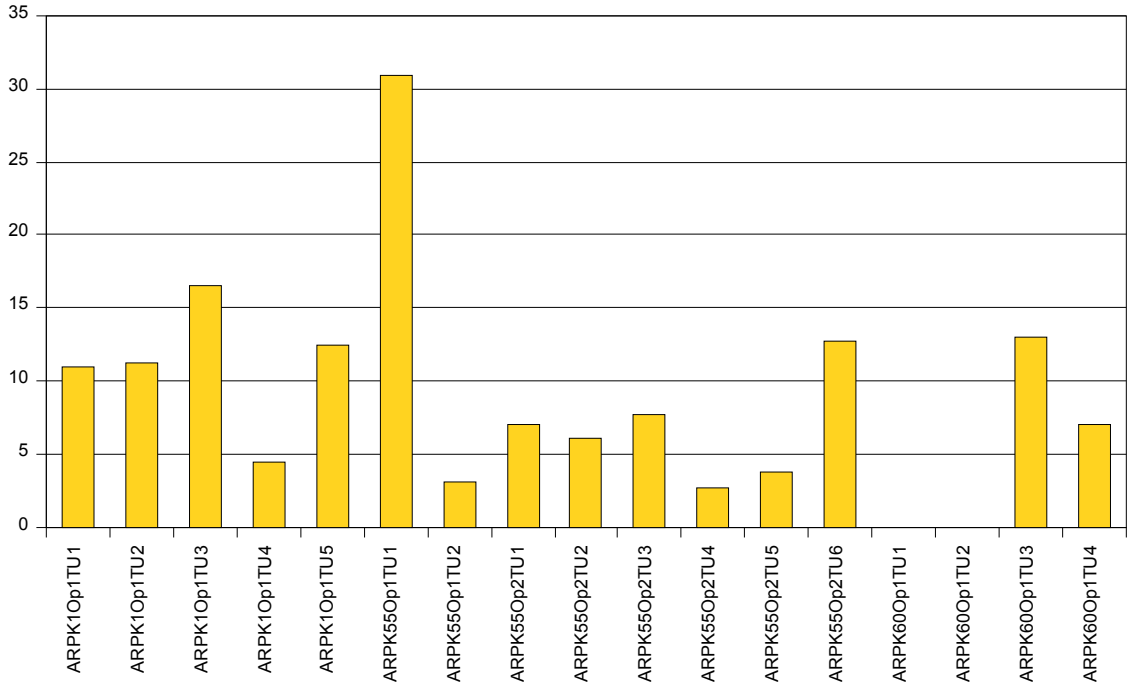


Figure 7.22. Richness values, as calculated by test unit.

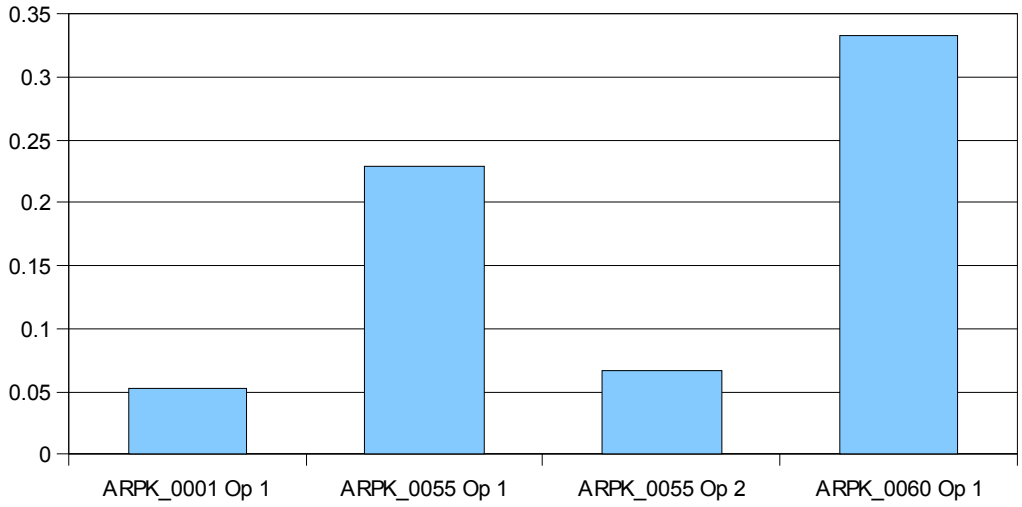


Figure 7.23. Ratio of richness to sample size, note that operations with higher sample size have a lower ratio, indicating the sampling problems when interpreting richness data.

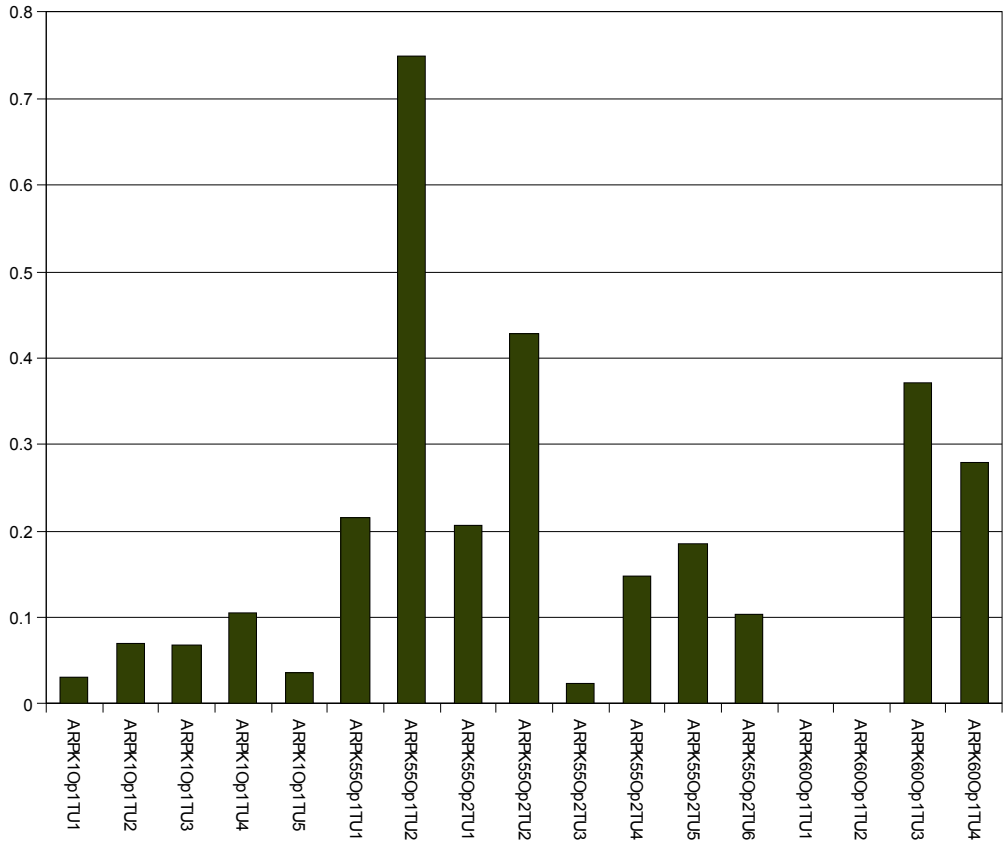


Figure 7.24. Richness-sample size ratio data by unit, again indicating the problems with this data (ARPK_0055 Op. 1 TU2, for example, has a sample size of 4 and a richness of 3, giving a highly skewed ratio).

recovered at ARPK_0001 Op. 1 and ARPK_0055 Op. 2, which add to the count, but not the richness data. Again, further data recovery is needed to refine these patterns, both in terms of the number of houses excavated, and the size of the excavations, but there is potentially useful interpretive information to be gained by comparing household assemblages from throughout Kalawao in this way.

The house at ARPK_0001, of which only the standing chimney remains, was probably a prominent residence in the community, as reflected in the large amount of material recovered at the site. The masonry chimney is probably the only one associated with a domestic structure for the settlement. Its fireplace would have been a major gathering place on cold, windy or rainy days in Kalawao, and the prevalence of burned material at this site may reflect this activity. Being the lone house with a standing chimney documented at Kalawao, this structure may have belonged to a particularly affluent or large social group. The large amount of material on the surface at ARPK_0007 Op. 1 may suggest that the structure was abandoned, and material now on the surface was left at the time of abandonment. In contrast, the relatively bare surface at ARPK_0060 suggests that the site may have had a discrete midden area. It is also possible that this house was inhabited through the abandonment of Kalawao in favor of occupation on the other side of Kalaupapa peninsula, thus the possessions of this structure's inhabitants were removed, and the house may have been dismantled and the building materials removed at the time of abandonment. Given the relatively sparse amount of material at ARPK_0060, and the structure's architecture, it is also possible that the house was only inhabited for a short period of time. For ARPK_0055 Op. 1, the high density of subsurface organic materials, and apparent internal differentiation between the two terraces suggests a domestic pattern reminiscent of the Hawaiian house compound tradition, although additional testing is necessary to accurately interpret this area. The house at ARPK_0055 Op. 2 had few artifacts on the surface, but a high density of subsurface artifacts. This house, built in the traditional Hawaiian style, was abandoned towards the end of the occupation period in Kalawao, and is representative of the practices of one or a few of Kalawao's exiles, a model for one mode of household life in the settlement.

Field Archaeology and the Houses of the Exiles

Household archaeology in Kalawao has left more hypotheses to be tested than questions answered. There has simply not been enough excavation to interpret these sites and their assemblages definitively. If the 1886 figure of roughly 215 houses in the settlement (see Chapter 5) is to be believed, the sample here represents a limited testing of less than 2% of the domestic structures in Kalawao during the Hansen's disease period. This is without taking into account the potential for multiple house construction phases or abandonment and re-habitation cycles over time, which would further complicate the matter.[38] This is not to say that the interpretations suggested above are incorrect, but that they represent more hints than final answers. Nonetheless, the results of initial test excavations of Kalawao domestic contexts do provide some

38 Here the major problem is one of chronological control in domestic sites. Because the settlement was inhabited over a short period of time by a dynamic population, there may be houses that were inhabited or abandoned at different moments, but that appear contemporaneous from an archaeological perspective, an issue that future research should attempt to deal with.

interesting material for thinking about household life during the Hansen's disease period. Among the salient patterns found during household investigations were the co-existence of traditional and introduced domestic architecture within the institutional landscape, higher and lower midden density and richness within and between different house sites, and the great variety of objects in domestic assemblages. This last pattern will be outlined further in the next chapter, which will focus on material culture throughout the leprosarium. Overall, the variability of objects in this institution reflects the availability of consumer choice for Kalawao's exiles, a pattern that does not exist in many types of total institution.

In the previous chapter, a spatial analysis of the Kalawao institutional landscape pointed out that this was a Hawaiian place, in which indigenous agency was written into the settlement pattern. An analysis of domestic space revealed that in some cases, the household structure itself was constructed according to Hawaiian architectural traditions. Further excavations could compare activity areas within domestic spaces to see if some of the inmates of the leprosarium were using introduced architectural forms in Hawaiian ways. Comparing the assemblages from different domestic contexts, there is tentative evidence that not all households were equal within the leprosarium, and this variability can not be attributed to simple institutional mandates. The variability of domestic assemblages reflects consumer choice among inmates of the leprosarium, especially once the store became a central location for the distribution of goods in the leprosarium beginning in the 1870s. The fact that some domestic assemblages are denser or richer than others could be interpreted to reflect economic or demographic patterns, though in reality both forces were probably at work simultaneously. At this point, denser assemblages could be said to reflect larger household groups or higher status, while richer assemblages reflect consumer choices for a greater variety of objects in the home.

Weisler and Kirch's (1985: 148) indicators of household status for pre-contact Hawaii, especially "high density and range of formal artifacts (e.g. adzes, gaming stones, stone lamps, gourd stoppers, bone picks, tattoo needles", and "density of shellfish and other faunal remains" could be relevant aspects of domestic assemblages in the leprosarium. Of course, the range of formal artifacts would have to be greatly expanded to include the ceramics, metal objects, and glass bottles circulating in post-contact Hawaii, with the great range of beverages, medicines, perfumes, and inks packaged therein also taken into consideration. Notable are the high density values for industrially-produced objects at ARPK_0001, and the high richness value for ARPK_0055 Op. 1, suggesting that the two places were important points in the institutional landscape. Further household testing will be needed to fully elucidate the apparent variability of household assemblages within the leprosarium, and household testing should be augmented with testing of institutional spaces controlled by the state, such as the hospital and store, which were identified but not tested specifically for this project.

Returning to the theme of sense of place that permeates this project on the archaeology of the recent past at Kalawao, it is worth exploring the possible meanings of the house in the context of the leprosarium. Structures of wood and structures of thatch, the Hawaiian houses of this institution provided places for carrying out an everyday routine. If removal of people from their homes and exile to a remote peninsula on the north of Moloka‘i because of diagnosis with Hansen's disease can be seen as a process of domicide (Porteous and Smith 2001), the establishment of patterns of daily life may have been an important means of re-establishing a sense of home for residents of the institution. Having been removed from the world they knew, simple acts of cooking and eating, drinking, cleaning provided a way to establish order and

control over a small part of the world to which Hansen's disease exiles were quarantined. Houses may also have represented places of refuge for Kalawao's inmates, a chance to escape what would have at its height been a bustling, perhaps at times somewhat chaotic existence out in the community of almost 1200 inmates (see Chapter 5). While there is still much to be learned about the houses of the exiles, their importance to the life of the village being run as an institution in Kalawao is remarkable. Perhaps no better sense of the vitality of these places can be given than in the words of some of the inmates themselves:

> Going on, we came to a group of houses which evidently had stood many years, and here we found patients who were old residents. The houses were small and crowded. We asked why they crowded together so--why they did not move into some of the empty houses we had seen along the way? They only laughed and said, "Oh, we are all friends, and want to stay together" (1888 *Report of the Special Committee on the Leper Settlement at Kalawao, Moloka‘i*, quoted in Greene 1985: 182-183).

It is possible that these "houses which...stood many years" were traditional thatch houses like that at ARPK_0055 Op. 2, while the empty houses were some of the newly built houses that some exiles complained of for letting in the wind and rain (Greene 1985: 182). What the legislature's Special Committee interpreted as "crowding" may have been for many patients a welcome sense of warmth and conviviality in a settlement that was a source of sadness for so many. Where *mai ho‘oka ‘awale* separated families, some found a way to cope in a new home created within the institutional community, friends with whom they could associate as a domestic unit. Where some bonds of kinship had been severed by domicide, new ones were formed within the houses of the exiles.

Chapter 8.

Material Culture in Kalawao

Studying the Material Life of a Hawaiian Leprosarium

Field archaeology in Kalawao has shown that the leprosarium did not fit into expected patterns for a total institution, with settlement patterns and domestic architecture more typical of a late 19th century Hawaiian village. In a similar way, analyses of artifacts recovered from surface collections and test excavations suggest that the inmates in Kalawao did not live with a stark, uniform kind of material assemblage as might be expected within the framework of theories of the institution and the written histories of the leprosarium itself. Rather, the artifact analyses below are notable for their richness and variability. In many archaeological studies of total institutions, especially prisons, inmates are assumed to have a shared material culture, and material expressions of individuality are interpreted as "resistance" (e.g. Casella 1999, 2001). Given the presence of the Kalawao store as a central location for distribution of material culture, variability in this context is more likely to represent the eclectic nature of assemblages resulting primarily from charitable donations, as is sometimes found in almshouses and homes for fallen women (Baugher 2001; DeCunzo 1995, 2001; Spencer-Wood 2001). These variable artifacts are distributed differentially in the settlement, though, representing the individual consumption preferences of different groups of inmates.

Archaeological and anthropological investigations of colonialism have analyzed numerous examples of introduced materials being adopted into indigenous contexts based on form, function of the material, or contexts of exchange (Cusick, ed. 1998; Gosden 2004; Murray, ed. 2004; Smith 2007; Thomas 1991). Hawaii has been a valuable location for studying the processes of adaptation and assimilation of foreign material culture by indigenous people, as well as the continuity in production and use of indigenous material forms after European contact. Studies along these lines have used materials ranging from the ceramics and bottle glass that are mainstays of historical archaeology the world over, to stone and metal adzes, sailing ships, clothing, and houses (Bayman 2003, 2009; Kirch 1992; Mills 2002, 2003). Artifacts from Kalawao exhibit many of the patterns evident in the material culture of colonialism in the Hawaiian Islands. Evidence for the continuity of indigenous forms of housing was examined in Chapter 7, and this chapter will focus on the materials that people would have used in and around their houses in Kalawao during the Hansen's disease period. Objects would have played an important role in people's everyday lives within the institution, with different materials functioning in identity formation, foodways, and medical treatment, among other possibilities. Above all, these materials can be thought of in terms of coping strategies for the exiles of Kalawao, including the production of tools and the formation of social relations within "the world of goods" (Douglas and Isherwood 1996).

Ceramic Analysis

Ceramic analysis is a cornerstone of research in historical archaeology, albeit a problematic one at times (Beaudry et al. 1988; Brooks 2005; Deetz 1996: 68-88; Majewski and

O'Brien 1987; Noel Hume 2001). Ceramics tend to represent a relatively small percentage of non-traditional artifacts on Hawaiian sites following European contact (e.g., Goodwin 1994: 110-113; Kirch 1992: 179), and Kalawao is no exception, with ceramics representing just under 4% of the entire collected assemblage from the leprosarium (Table 8.1). My ceramic analysis uses identified ware types, vessel forms, and color as informative attributes for understanding the role of ceramics in domestic consumption practices within Kalawao's exile community. While some of the ceramic analysis was based upon the identification of manufacturer's marks for sourcing and chronological information, much of the interpretation here follows Miller (1984: 1) in focusing on "ceramics in terms of consumption rather than production, technology, or chronology of forms". The issue of ceramic consumption in the leprosarium involves the global networks through which these items moved. However, since people in Kalawao were not producing ceramics, nor did they have much control over the ceramic types brought into the settlement, the more interesting question is how people used them within the context of the emerging exile community.

Ceramic Ware Types

Artifact typology can be a tricky subject in archaeological analyses, especially in a systematic approach where types represent formal distinct entities within material assemblages (Dunnell 1971). For historical ceramics, typologies are typically based on a division into general categories distinguished by manufacturing techniques, especially clay fabric and firing temperature. The four categories used in this analysis are (following Aultman et al. 2008): *coarse earthenware*, relatively low-fired ceramics with visible inclusions in the paste; *refined earthenware*, which has a denser paste than coarse earthenware and is usually cream to white-colored and more highly fired; *stoneware*, very high fired ceramics that are impervious to liquids and are often salt glazed; and *porcelain*, a ceramic with a uniform paste that is impervious to liquids, fired at a very high temperature so that the clay particles often vitrify, and the paste is often translucent. Further subdivision into types is based upon historically known manufacturers and decorative motifs, and in the absence of these, other typological divisions, especially for coarse earthenwares. Besides tablewares, which will be the focus of the investigation to follow, ceramic construction materials were recovered. These consisted of a small number of ceramic plumbing fixtures, including terra cotta pipes and porcelain wash basins, and several doorknobs of white porcelain (Fig. 8.1) as well as marbled brown earthenware (Fig. 8.2). One of the porcelain fixtures was recovered at the Baldwin Home for boys, with a manufacturer's mark indicating manufacture in Richmond, California in the early 20th century (Fig. 8.3; see Chapter 6).

For the ceramic assemblage in Kalawao, ware types (Table 8.2) were identified based upon widely known types from historical sites worldwide, primarily those defined in the Digital Archaeological Archives of Comparative Slavery (Aultman et al. 2008), though other sources were used as well. Of the entire ceramic assemblage (N=364), the majority of sherds were identified as whitewares (77%; N=279), referring to a high-fired refined earthenware with a uniform white paste and clear lead glaze, manufactured primarily in Great Britain from the 1820s through the present. Other prominent ware types included yellowware (3% of the ceramic assemblage; N=11), which has a dense, yellow or cream colored paste and a clear to yellow

Material	Count	Percentage
ANTLER	2	0.02%
BASALT	11	0.12%
BONE	491	5.33%
BRICK	2	0.02%
CARBON	2	0.02%
CEMENT	14	0.15%
CERAMIC	364	3.95%
CHARCOAL	492	5.34%
CLAY	2	0.02%
COAL	2	0.02%
CONSTRUCTION MATERIAL	3	0.03%
CORAL	50	0.54%
FAUNAL	0	0.00%
FIRE CRACKED ROCK	1	0.01%
GLASS	4318	46.85%
GLASS AND METAL	2	0.02%
METAL	3094	33.57%
METAL AND CERAMIC	1	0.01%
MORTAR	29	0.31%
NUT	4	0.04%
OTHER MINERAL REMAINS	4	0.04%
PLASTER	14	0.15%
PLASTIC	1	0.01%
RUBBER	1	0.01%
SHELL	220	2.39%
STONE	30	0.33%
TOOTH	51	0.55%
TOOTH AND METAL	1	0.01%
VOLCANIC GLASS	9	0.10%
WOOD	1	0.01%

Table 8.1. Materials, their counts, and their relative percentages in the Kalawao assemblage (total number of artifacts is 9216).



Figure 8.1. Fragment of a porcelain doorknob.



Figure 8.2. Marbled earthenware doorknob with a portion of the metal rod preserved.



Figure 8.3. Plumbing fixtures and mortar from the Baldwin Home. Note the "PACIFIC" mark on the right-most artifact.

tinted glaze, manufactured in Britain and North America from the 1820s through the early 20th century. Creamware (N=7) and pearlware (N=3), which are considered the forerunners of British whitewares were also identified, though in very small numbers, as they were generally manufactured and used in an earlier period. In addition to ceramics of European and North American origin, a small number of East Asian ceramics were identified. One sherd of a Chinese bamboo pattern rice bowl was found, representing one of the most common ceramic types associated with overseas Chinese in the 19th and 20th centuries (Greenwood 1996; B. Williams *pers. comm.* 2009). Another identified type is a Japanese geisha girl pattern porcelain (Litts 1988), produced primarily for export, specifically to European markets from the 1890s through the 20th century (D. Ross, *pers. comm.,* 2009). Some additional sherds of porcelain are almost certainly of East Asian origin, but could not be identified to a specific ware type.

Ceramic Variability: Manufacturer's Marks, Decorations, and Forms

All of the 19th-century ceramics with identifiable manufacturer's marks recovered during fieldwork in Kalawao (N=6; Fig. 8.4) can be traced to England, and specifically Staffordshire, with the post-1837 version of the Royal Arms Mark (Godden 1991). Marks that could be linked to specific Staffordshire potteries with certainty include those of Thomas Furnival & Sons, which operated in Cobridge producing earthenwares from 1871-1890 (Godden 1991: 263, Mk. 1649), and the Royal Patent Ironstone of George Jones & Sons, which operated from 1861 through the mid-20th century (Godden 1991: 359, Mk. 2216-2219). Artifacts for which a partial name on the manufacturer's mark allows for a likely association are from the Challinor firms, possibly that of Edward & Charles Challinor, who were based in Fenton from 1862-1891 (A. Brooks *pers. comm.* 2010). That these marks link specific vessels to England is interesting in terms of the charitable impulses of the English, who had concerns about leprosy in their own empire. There is some evidence that the English encouraged charitable donation to Kalaupapa by valorizing the life of Father Damien, as the Catholic Truth Society was responsible for translating and publishing his correspondence (De Veuster, ed. 1889). In terms of the consumption of English goods in Hawaii, the special place that England may have held in the life and imagination of the Hawaiian Kingdom is notable. This is best documented among the monarchy, who cultivated political relations with the British, which would have played into the success of English exports to the archipelago in general.

The majority of the ceramic assemblage comes from vessels without identifiable marks. However, a large portion of the ceramic assemblage (41%; N=151) did have some kind of decoration. Decorative techniques identified among the Kalawao ceramics include molding, hand painting, transfer printing, and sponge-stamping (Table 8.3). The most common decorative technique was hand painting, which is evident on 49% of the decorated sherds (N=74; Fig. 8.5). There is a high likelihood that at least some of the hand-painted wares came from England. Such wares were imported into Hawaii throughout the 19th century, including the famous "Lokelani" pattern, manufactured in England and imported by W. W. Dimond & Co. Ltd., Honolulu (Kirch 1992: 109). Sponge stamping was identified on a small portion of the decorated ceramics (7%; N=10; Fig. 8.6). Sponge-stamped wares were produced in great quantities in Scotland, where the technique originated (Webster 1999: 68), though they were also commonly produced in Welsh and English potteries (Brooks 2003; A. Brooks *pers. comm.* 2010). One of the more remarkable

Ware Type	
Bamboo	1
Billiard Ball	1
Creamware	7
Earthenware/Flowerpot	2
Flowerpot	8
Ironstone	6
Marbled Earthenware	2
Pearlware	3
Porcelain	18
Porcelain (Geisha Girl)	10
Slipware	1
Stoneware	14
Terra Cotta Pipe	1
Whiteware	279
Yellowware	11
Total Result	**364**

Table 8.2. Ceramic ware types.

Decoration Type	
Banded Slip	2
Base Stripe Only	5
Fake Shell-Edge	2
Hand Painted	74
Hand Painted, Stamped	5
Incised	1
Molded	11
Molded, Decal	1
Molded, Transfer Print	2
Not Determined	2
Rim Stripe Only	16
Slipped	6
Stamped	10
Transfer Print	13
Transfer Print, Decal	1
Total Result	**151**

Table 8.3. Ceramic decoration techniques.



Figure 8.4. Manufacturer's marks from Kalawao ceramics (From left: "[CH]ALLINOR", Anchor and Sword indicating Thomas Furnival & Sons, "[GEO]RGE JONES & SONS").



Figure 8.5. Hand-painted whitewares from Kalawao.



Figure 8.6. Sponge-stamped wares from Kalawao, and one sherd of banded slipware (upper right).

decorative motifs recovered from Kalawao was a black transfer print pattern with fish and aquatic plants on a cream-colored vessel of unusual form (Fig. 8.7). Finally, a clearly identifiable decorated type included in the Kalawao assemblage was the "Fake Shell-Edge Blue" Whiteware from England (Fig. 8.8) that was also identified in the assemblage of a pre-Hansen's disease sweet potato farm elsewhere on Kalaupapa peninsula (Goodwin 1994: 110).

Wilkie and Farnsworth suggest the potential of color, among several aspects of decorated ceramics, for providing a meaningful dimension of ceramic variability in their analysis of an assemblage from a Caribbean plantation (2005: 275-277). Within the Kalawao assemblage, 53 different color combinations were identified among the decorated ceramics (Fig. 8.9). By far the most common color combination was blue on white (17% of the decorated ceramic assemblage; N=26), reflecting a practically global obsession with the blue on white ceramics of East Asia, which were imitated throughout the world's potteries from the 17th century onwards. However, green on white was also a common color combination among the decorated ceramics (10%; N=15) as was the green and pink on white combination that defined the Lokelani pattern mentioned above (7%; N=10). The number of colors on a given sherd was as high as five, though most decorated sherds had only two, the white paste of the ceramic and one color for the decoration (Fig. 8.10). Colors with a high status association for Hawaiians, notably red and yellow, the colors of chiefly attire, are rare in the assemblage, with most of the red on white ceramics coming from the Geisha Girl porcelains. Rather, the variability of the assemblage may point to an interest in colorful things among Kalawao's exiles. That a ceramic was colorful may have made it attractive, the colors themselves being less important.

Vessel form is another important aspect of post-contact ceramic assemblages in Hawaii. Kirch (1992: 182) has noted the importance of large, shallow bowl forms in the Anahulu Valley during the middle of the 19th century, which "were likely used in communal serving of such dishes as *poi* or stews". Because of the fragmentary nature of the Kalawao ceramic assemblage, most sherds (54%; N=195) could not be identified as part of a specific kind of vessel. In some cases, ceramic sherds were so small that they could not confidently be called vessel sherds, and were simply referred to as sherds. The pattern of preference for bowl forms does appear to hold true in Kalawao, with bowls comprising 40% (N=68) of identified vessels. That said, plates, a vessel form associated with the more individualistic foodways of the west in historical archaeology (Deetz 1996) also account for a significant component of Kalawao ceramics (26% of identified vessels; N=44). This is especially true among the whiteware assemblage (Fig. 8.11), where the percentage of bowls and plates among vessel forms is even closer (37% and 46% of identified vessels respectively). This does not necessarily mean that food sharing was in decline in Hawaiian culture. Rather, the increase in plates in the later 19th century may reflect changes in cuisine, especially given the growing importance of rice, salmon, and beef in the exiles' diets in Kalawao, and possibly different ways of cooking these foods (see below). One ceramic form that is apparently rare in the Hawaiian Islands is the stoneware bottle, of which a few examples are represented in the Kalawao ceramic assemblage (Fig. 8.12). These may have been used as beverage or sauce containers, again representing a changes in Hawaiian diets at the end of the 19th century.

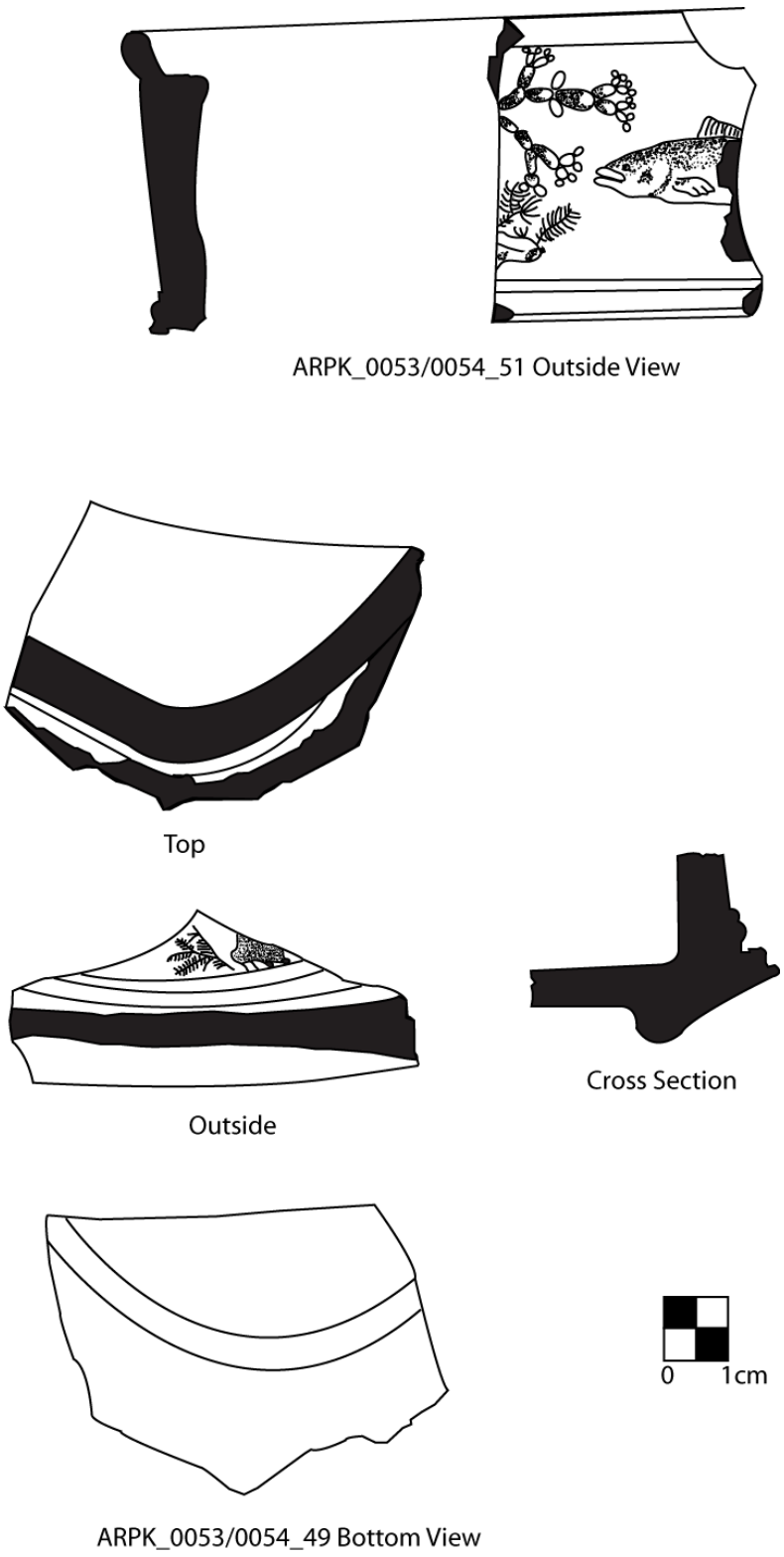


Figure 8.7. Cream colored ware with fish and aquatic plant transfer print motif. Black areas are exposed ceramic paste.



Figure 8.8. "Fake shell edge blue" whiteware.

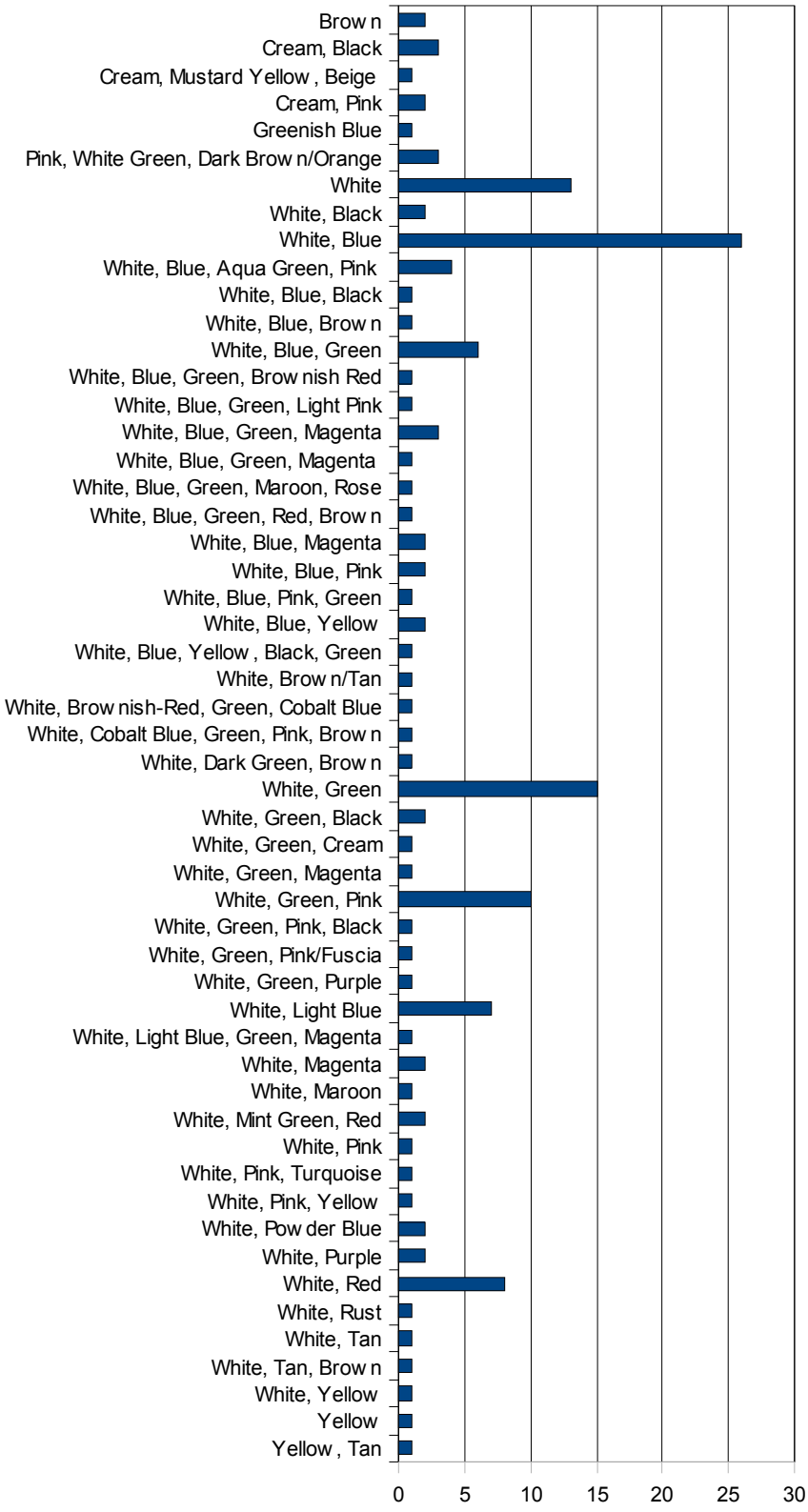


Figure 8.9. Color combinations on decorated ceramics from Kalawao.

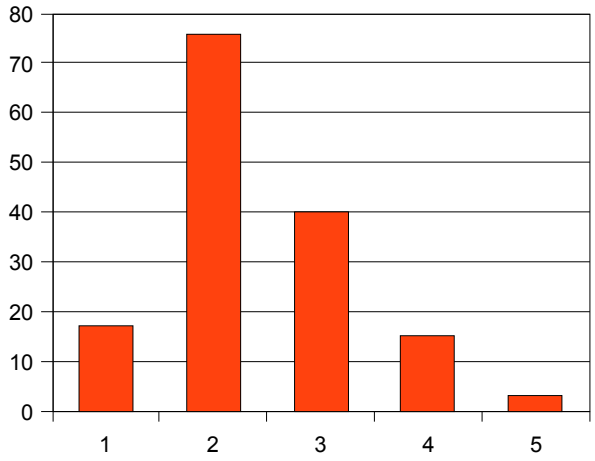


Figure 8.10. Number of colors on decorated ceramics.

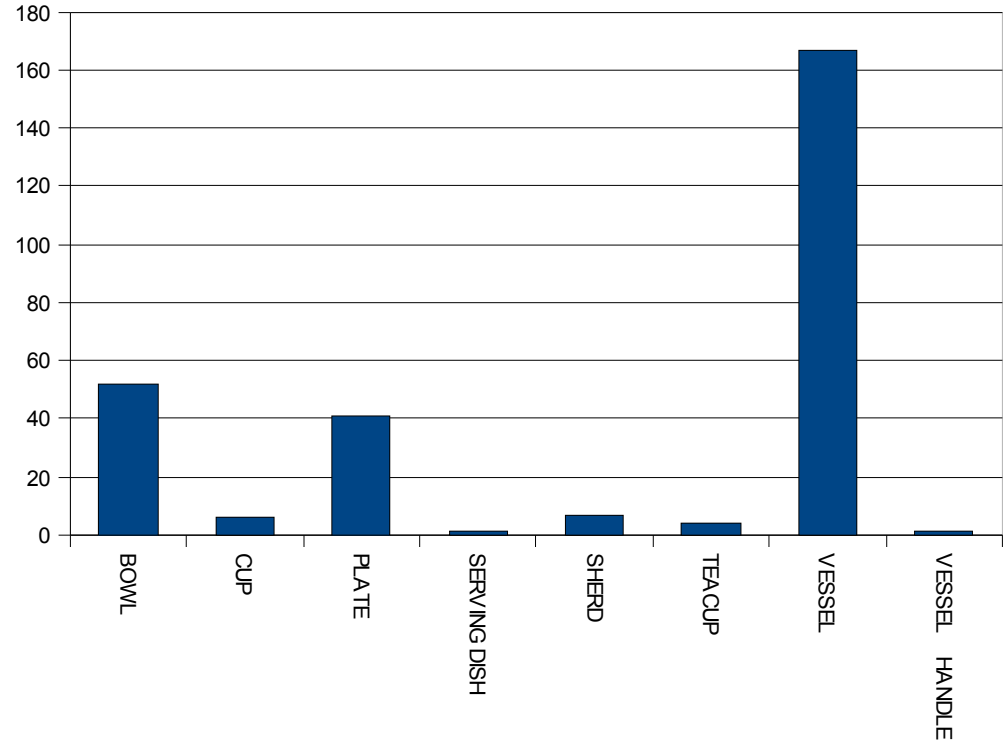


Figure 8.11. Whiteware vessel forms.



Figure 8.12. Stoneware bottle found on the surface of ARPK_0007. Stoneware bottles were commonly used as ginger beer containers in the late 19th century.

Ceramics and Consumption in the Leprosarium

One possible archaeological correlate to Foucault's (1995) concept of 'normalizing' power is the plain white, uniform ceramics that were part of a material culture that developed around some 19th century total institutions as a means of doing away with individual distinctions among the inmate populations in places of reform. The ceramic assemblage of Kalawao does not exhibit such uniformity, though as mentioned above, the interpretation of this assemblage must be tempered by the economic reality of the leprosarium. Consumer choice is an important element of the household assemblages from which these data are drawn, but equally important is the likelihood that the ceramics in people's houses were chosen from an already variable pool of goods donated to the leprosarium's store. That said, it is interesting to note that there appears to be some degree of consumer choice reflected in the distribution of color combinations for decorated ceramics in Kalawao domestic assemblages (Fig. 8.13). Surprisingly, the highest ratio of different color combinations to total number of decorated ceramics[39] (Fig. 8.14) was at ARPK_0002, which is the Kalawao hospital. This pattern suggests that one of the most "institutional" spaces in Kalawao also had the most colorful ceramics. However, this measure is not statistically robust at this point, so further data collection is necessary to elucidate this pattern more precisely. Regardless, the variability of the kinds of ceramics that people in Kalawao had in their houses is remarkable for this context, suggesting the degree to which consumer choice was instrumental in determining what objects people used on a daily basis.

Bottle Glass Analysis I, Manufacturer's Marks: Drinks, Medicine, and other Sundries

Glass artifacts made up nearly half of the total recovered artifact assemblage from Kalawao (47%; N=4318). Unfortunately, the vast majority of this glass was lacking relevant diagnostic features. Bottle glass analyses used the standards set by Parks Canada (Jones and Sullivan 1989), which provide guidelines for recording color, manufacturing techniques, and other attributes of bottle glass as well as glass vessels. The main focus of the glass analysis is bottle glass, which makes up about 40% of the total glass assemblage (N=1715; Table 8.4). Another 36% of the glass assemblage is characterized simply as "shards", being too small or too damaged to assign with confidence an object name. The one other significantly large category of glass artifact is window glass (17%; N=729), with the rest of the assemblage consisting of fragments from a small number of serving and drinking vessels (Fig. 8.15), white glass buttons (Fig. 8.16), and various tools of flaked glass (see below). The vast majority of the glass artifacts recovered from Kalawao were of clear glass (72%; N=3123), followed by brown (9%; N=399; Table 8.5). While glass color is notoriously problematic as a temporal marker (Jones and Sullivan 1989:12-14), the presence of a large amount of clear glass suggests that most of the assemblage comes from the very end of the 19th century at the earliest, and the issue of late bottle glass dates will be returned to below in terms of the issue of site abandonment in Kalawao.

39 In calculating this, features with a decorated ceramic assemblage of three or fewer were excluded from the sample.

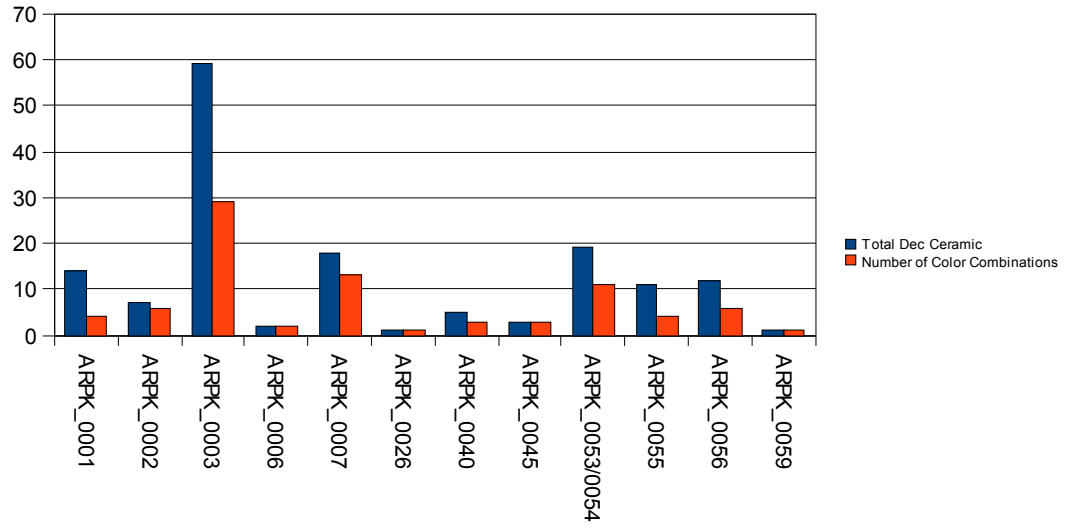


Figure 8.13. Distribution of decorated ceramics by feature.

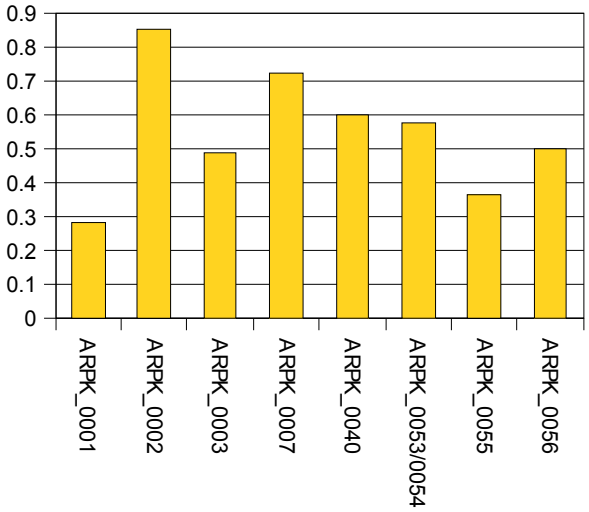


Figure 8.14. Proportion of number of color combinations to total number of decorated ceramics, excluding sample sizes of three or less.

Object Name	
BOTTLE	1715
BUTTON	5
CORE	1
CUP	7
DRINKING VESSEL	1
FLAKE	135
FLAT	43
LIGHTBULB	1
MEDICINE BOTTLE	2
MUG	1
PRISMATIC BLADE	1
SALT JAR	1
SCRAPER	1
SHARDS	1551
SUNGLASS	1
TINTED FLAT GLASS	1
TUMBLER	1
UNKNOWN	1
VESSEL	120
WINDOW	729
Total Result	**4318**

Table 8.4. Glass object names.



Figure 8.15. Shards from a glass vessel, probably a serving bowl.



Figure 8.16. Fragments of a white glass button. Similar examples were found throughout the settlement.

Bottle Chronology and Contents: Manufacturing Techniques and Marks

When examining bottle glass, it is important to keep in mind that people were not consuming the bottles themselves, but the liquids or powders inside the bottles, whether drinks, perfumes, medicines, ink, or something else. After the goods in the bottles were consumed, the bottles could be repurposed, as containers for water or other liquids, or as raw materials for tools (see below). Clear glass dominates the bottle glass assemblage (38%; N=655), followed by brown (20%; N=339; Table 8.6), which follows the overall pattern for glass color in Kalawao. The bottle assemblage from Kalawao includes a number of machine manufactured bottles with crown-tops (Fig. 8.17). These bottles likely held soft drinks, soda water, or beer, though it is difficult to determine the contents of a bottle of this time period based on form alone. The high prevalence of machine manufactured bottles suggests that most of the glass recovered from Kalawao would date to the later part of the Hansen's disease period through periods after which most historians consider Kalawao to be abandoned. Machine manufactured bottles began to be widely produced beginning in the 1880s, and fully automatic commercial bottle manufacturing did not begin until 1904 (Jones and Sullivan 1989: 38-39).

Diagnostic bottle manufacturer's marks are useful chronological indicators, and may also hint at the contents of some bottles. In the bottle glass assemblage, 7% (N=118) exhibited some kind of diagnostic marking, usually involving embossed letters, numbers, or shapes. Commonly occurring marks indicate primarily dates in the early 20th century, with bottles coming from the United States, notably San Francisco which has a long history of trade relations with Hawaii (Table 8.7; Fig. 8.18).[40] Beer consumption is indicated by several bottles with embossed marks. Kalawao's residents enjoyed the imported beers of Anheuser-Busch, as well as those of the Christian Moerlein Brewing Co., which produced beer from the mid-19th century through the beginning of prohibition in 1920.[41] Notably, Busch was one of the pioneers of the use of pasteurization and refrigeration techniques, which would give that particular brew an advantage in long-distance shipping, allowing the beer to arrive in places like Hawaii unspoiled. There is also evidence for consumption of locally-brewed beer in the presence of several bottles bearing the mark, "HONOLULU B&M Co., LTD., HONOLULU, T.H." (Fig. 8.19). These bottles would have contained beer from Hawaii's first brewery, the Honolulu Beer and Malt Company, which began brewing beer in 1897, and the "T.H.", indicating Territory of Hawaii, puts these bottles after the 1898 annexation of the Kingdom of Hawaii by the United States.[42] Honolulu Beer was the forerunner of Primo Beer, which is also represented in short brown bottles with a stippled decoration on the shoulder (Fig. 8.20). Beer consumption would have been an important part of the social life of Kalawao, as it remains an important part of the life of Kalaupapa today.

In addition to beverages, glass bottles in Kalawao were used to hold other kinds of liquids, including perfumes, medicines, and cleaning supplies. A small number of bottles (4% of the glass bottle assemblage; N=65) are interpreted as containers for such things. The use of

40 Indeed, just before the Hansen's disease period, Kalaupapa was engaged in trade with San Francisco providing sweet potatoes to feed the gold rush population (see Chapter 5).

41 See http://www.anheuser-busch.com/briefHistory.html (last accessed 9 March 2010); http://www.christianmoerlein.com/main.html (last accessed 9 March 2010).

42 See http://honoluluweekly.com/cover/2009/04/ale-love-you-hawaii/ (last accessed March 9, 2010); http://www.primobeer.com/about_home.aspx (last accessed March 9, 2010).

Color	
"Smokey" Green	1
Amber	73
Amethyst	61
Blue	5
Brown	399
Clear	3123
Clear	12
Clear Aqua	343
Clear Aqua	1
Clear Green	23
Clear, Smoky Tint	7
Cobalt Blue	2
Dark Blue	1
Dark Green	2
Dark Olive Green	3
Dark tint	1
Green	161
Grey/dark blue	1
Light Clear Aqua	1
Light green	1
Olive Green	71
Olive Green-Brown	3
Teal Blue	5
White	18
Total Result	**4318**

Table 8.5. Colors for all glass artifacts.

Color	
Amber	72
Amethyst	58
Blue	5
Brown	339
Clear	655
Clear	12
Clear Aqua	317
Clear Green	20
Clear, Smoky	7
Dark Blue	1
Dark Green	2
Dark Olive Gre	2
Green	146
Light Clear Aq	1
Light green	1
Olive Green	69
Olive Green-Br	3
Teal Blue	5
Total Result	**1715**

Table 8.6. Colors for glass bottles only.



Figure 8.17. Machine manufactured crown-top bottles, a type commonly found in Kalawao.

Mark	Manufacturer	Location	Date
AB	Adolphus Busch Glass Manufacturing Co.	St. Louis, Missouri	1904-1928
Slanted AB	Adolphus Busch Glass Manufacturing Co.	St. Louis, Missouri	1904-1907
SB&G Co	Streator Bottle & Glass Co.	Streator, Illinois	1881-1905
PCGW	Pacific Coast Glass Works	San Francisco, California	1902-1924
P/C	Pacific Coast Glass Co.	San Francisco, California	1925-1930
Circle-Diamond	Owens-Illinois Pacific Coast Co.	San Francisco, California	1932-1943
HA	Hazel Glass Co.	Wellsburg, West Virginia	1920-1964

Table 8.7. Common manufacturer's marks on glass bottles.

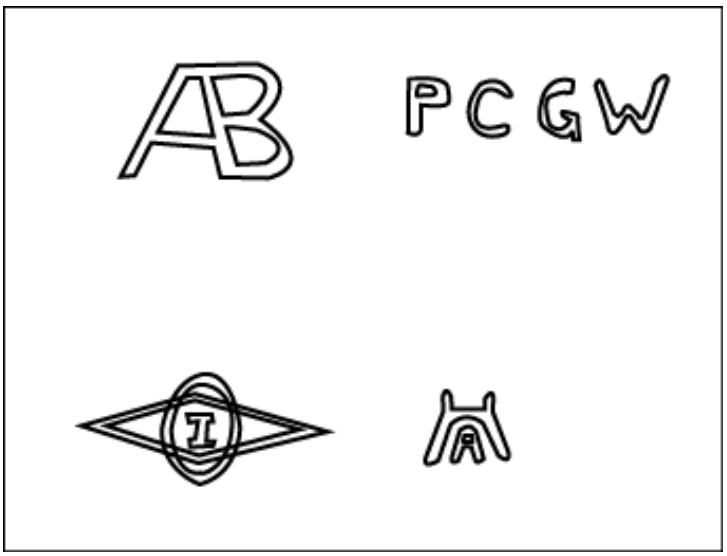


Figure 8.18. Some common bottle glass manufacturers marks found in Kalawao (Clockwise from top left, "Slanted AB", "PCGW", "Oval-Diamond", "HA", see Table 8.7 for details about manufacturing locations and dates. Not to scale).

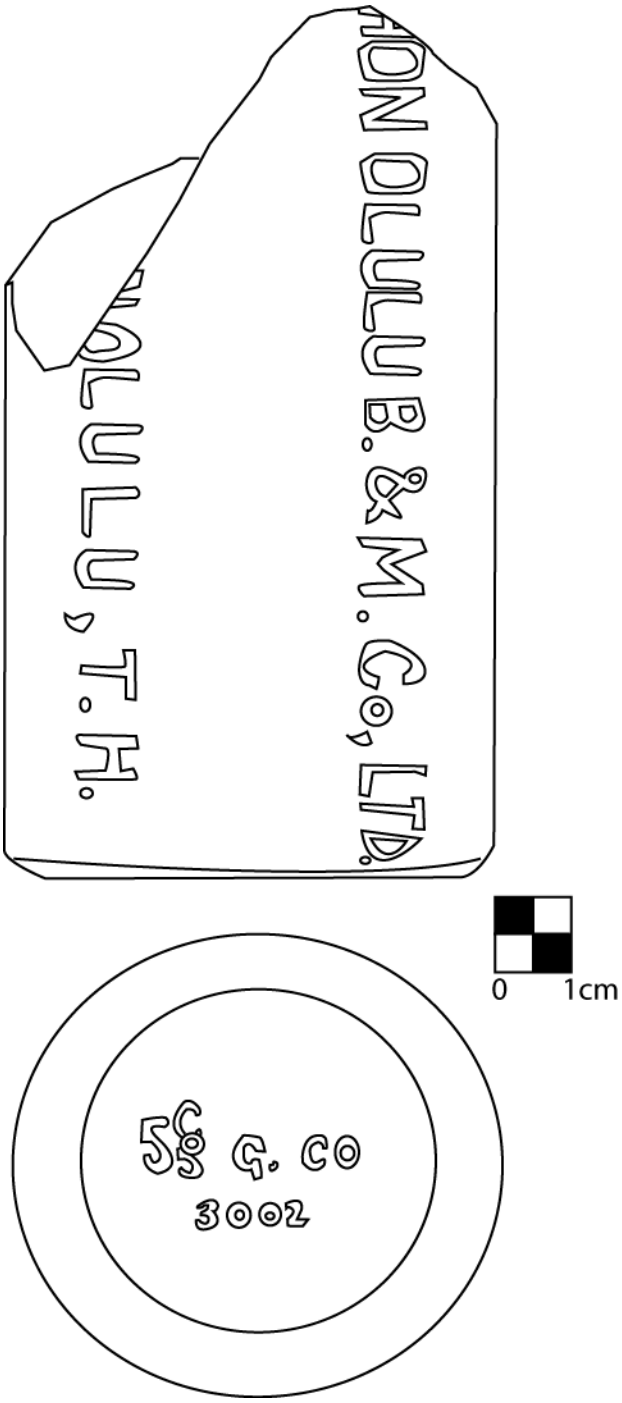


Figure 8.19. Aquamarine bottle found in Kalawao from the Honolulu Beer and Malt Company.

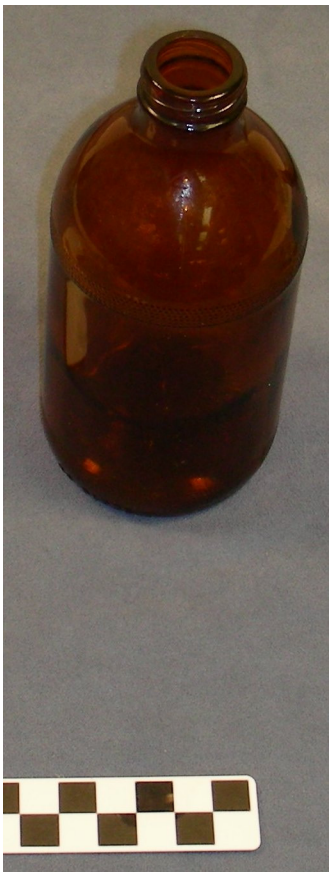


Figure 8.20. Glass bottle of a type most likely associated with Primo beer.

patent medicines was apparently widespread among Kalawao's inmates, who doubtless suffered from many afflictions in addition to the leprosy that was the cause of their exile. Among the diagnostic markings on patent medicine bottles are "Bro. Benjamin Wonder Oil" (Fig. 8.21), which was found in close proximity to the Chinese bamboo ware rice bowl mentioned above. Another smaller patent medicine bottle simply indicates, "MADE IN U.S.A." on the side, with an embossed "N" on the base (Fig. 8.22). One medicine that could be identified with more certainty was Scott's Emulsion of Pure Cod Liver Oil, with Hypophosphates of Lime and Soda, a rectangular aquamarine bottle with a embossed fisherman mark on the exterior base (Fig. 8.23; *Bloomingdale's Illustrated 1886 Catalog*: 146; Fike 1987: 196). Food medicines were an increasingly important part of late-19th century conceptions of nutrition in North America and elsewhere, while patent medicines, often containing alcohol and other narcotics, were central to dealing with illness during a time when medical practice was far from standardized (Armstrong and Armstrong 1991).

Several fairly unique glass artifacts were found that point to the presence of consumption of other kinds of products in the leprosarium at Kalawao. Two of the more remarkable objects come from the series of enclosures to the west of the Kalawao store. One is a short, squat aquamarine ink jar with an octagonal base and round neck and mouth (Fig. 8.24). Hawaii had a high literacy rate in the 19th century, and ink may have been one of the sundries purchased regularly by inmates from the Kalawao store. The second remarkable artifact from this area is a blue glass jar with the inscription "FIN[E] [TAB]LE SAL[T] FROM J.T. MORTON LEADENHALL ST. LONDON" (Fig. 8.25). An 1868 record of J.T. Morton, salt merchant located at 107, 108, & 109 Leadenhall Street (Merchant Shippers of London 1868: 222) pinpoints the geographic origin of this product, though the date of this particular artifact may be slightly later. What is perhaps most interesting about this artifact is that Kalaupapa is known today as one of the best places in the Hawaiian Islands to collect naturally occurring rock salt. That someone would import salt all the way from London shows a growing interest in exotic goods, as well as changing notions of purity and refinement for foods and other consumables during this period. A similar concern for cleanliness is represented in a brown glass bottle neck bearing the inscription "CLOROX", indicating the Clorox bleach company, which was founded in 1913 in Oakland, California (Fig. 8.26). It is possible that Kalawao's status as a medical institution led to higher levels of importation not only of medicines, but cleaning products and other sanitary goods developed within the growing concern for sanitation that originated in Victorian England and North America, and was quickly spread throughout the world by European settlers, doctors, missionaries, and other colonial agents (see Gilbert 1994; Hamel 2002; Newsome 1997; Poovey 1995; Schlereth 1991).

Using Glass to Re-Think Consumption and Abandonment in Kalawao

Where ceramics represent a good that was itself purchased for daily use, glass bottles and jars contained the goods that people would consume on a daily basis. The meaning of glass containers would change when the contents were used up, and they would be used for containing other things, discarded as garbage, or worked as a raw material for cutting tools (see below). The medicines in the settlement in part represent the role of sanitary measures in the colonial and imperial processes of the late 19th century in Hawaii. Alcohol consumption is an important

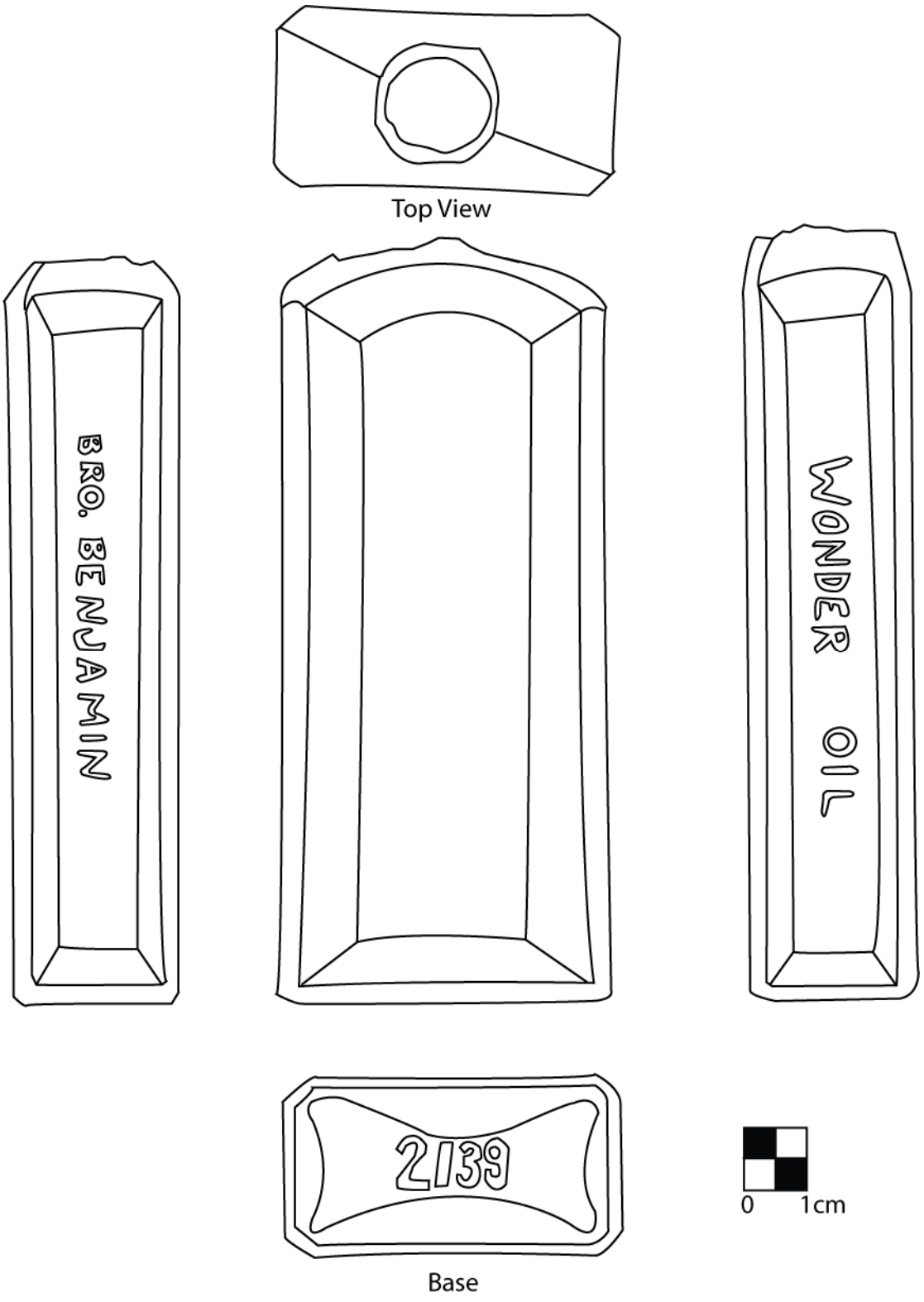


Figure 8.21. Patent medicine bottle containing Bro. Benjamin Wonder Oil.



Figure 8.22. Patent medicine bottle from the U.S.A.

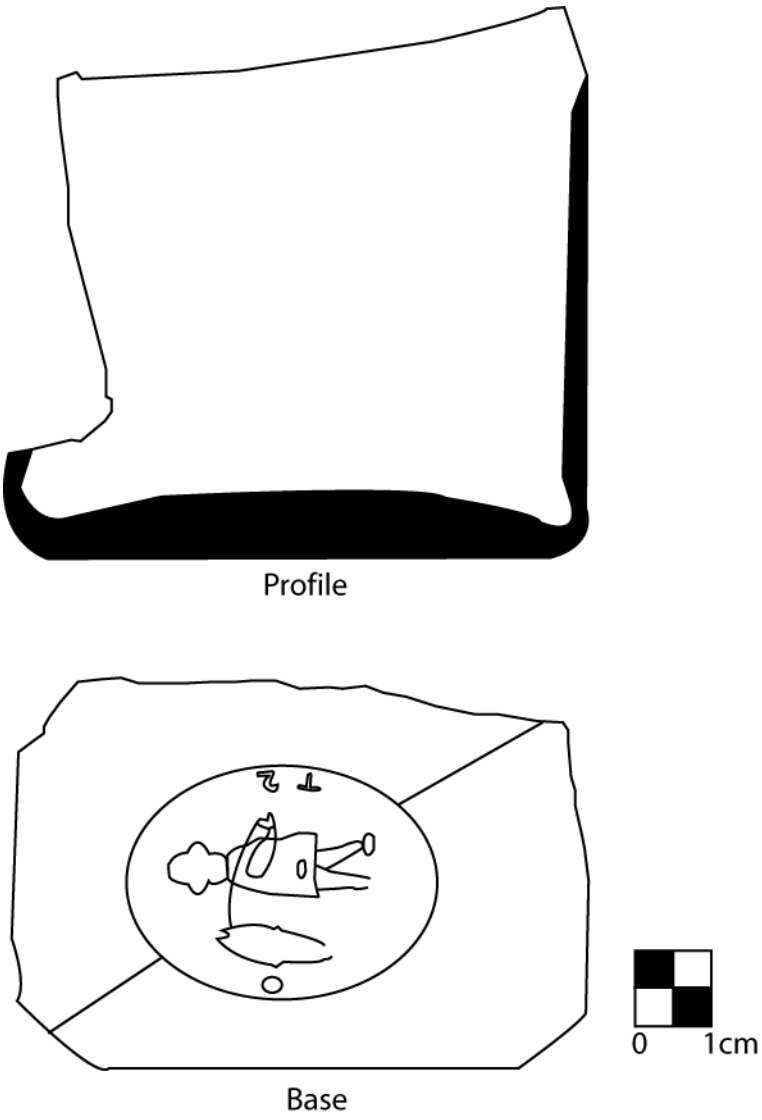


Figure 8.23. Fragment of a bottle of Scott's Emulsion of Pure Cod Liver Oil, with diagnostic mark.



Figure 8.24. Octagonal ink jar.



Figure 8.25. Morton's salt jar.

aspect of colonialist contexts (e.g. Burley 2003; Dietler 1998), and was also characteristic of resistance in the context of total institutions (e.g. Casella 2001). In Kalawao, alcohol was stigmatized as a consumer good early on. Officials in the institution worked to prevent its production, notably the distilling of a liquor called *'okolehao* from the *ti* or *ki* plant (*Cordyline terminalis*) from becoming the primary cottage industry in the fledgling settlement (Greene 1985). It appears that later, with the establishment of the store, industrially produced beers were allowed to enter the settlement, which raises the question of whether it was alcohol consumption itself, or the occupation of Native Hawaiians in clandestine brewing practices that bothered the authorities in the leprosarium. It is also true that beer was viewed differently in the 19th and early 20th century as a nutritional beverage more than an intoxicating one, as opposed to liquor which was considered socially harmful and dangerous (Armstrong and Armstrong 1991), and was explicitly outlawed in Kalawao (Mouritz 1916: 278).

Regardless of the state's attitude to the matter, archaeological evidence shows that alcohol consumption would have played an important role in the social life of the settlement. While alcohol consumption was viewed in a negative light in official reports as well as more recent histories of the settlement, the psychobiological effects of alcohol often contribute to people's social practices. More than simply evidence for "drunkenness", the beer bottles in Kalawao may represent the sharing of alcoholic beverages, which would have been an important means of creating social ties within the settlement's inmate population. Beer may have been an avenue to forming social networks for those who worked to create a community in the leprosarium, as much as it was an avenue to intoxication for those who wished for a chemical form of escape.

Finally, bottle glass in Kalawao has provided material for re-thinking the nature of abandonment of the original settlement. Many of the marks on bottles found in Kalawao indicate an early-20th century date, which is later than is typically assumed for the shift of settlement to Kalaupapa. One possible explanation is that the bottles were left by orphan boys living in Kalawao, who stayed in the Baldwin Home through 1932 (Greene 1985: 216-238). Another possibility is that after the main settlement shifted to Kalaupapa, patients continued to visit the Kalawao side, in order to escape from the hustle and bustle of the community, to visit sites from their own memories or those described to them by the old-timers in Kalaupapa, or simply to explore and gain a sense of adventure in the bounded space to which they were quarantined. It is likely that a combination of both processes were responsible for the accumulation of 20th century bottles in the "abandoned" village, leftovers from people's ramblings in the ruins of the old settlement with a few friends and a favorite beverage.

Bottle Glass Analysis II, Flaked Glass Industries of Kalawao

During analysis of the Kalawao glass assemblage, several clear examples of flaked bottle glass that would have been used for cutting or scraping were identified, as were many artifacts that appeared to have been worked (a more complete analysis of these materials is forthcoming; Flexner and Morgan *under review*). Many archaeological studies of colonialism have found that bottle glass was used as a raw material for tool-making, both in indigenous contexts, such as Australia (Allen 1973; Gibbs and Harrison 2008; Harrison 2002, 2004, 2006), South America (Conte and Romero 2008), and California (Lightfoot et al. 1991; Lightfoot et al. 1998; Shackley 2000; Silliman 1997, 2001b), and in other colonial situations, such as plantations in the

American South (Wilkie 1996). In some cases, traditional tool forms in volcanic glass and obsidian were adapted to bottle glass, and many scholars have tied this to studies of native identity and colonialism. Silliman's (2001a) work at Rancho Petaluma situated lithic knapping activities in terms of practical politics and labor, bringing a practice-oriented approach to the study of indigenous tool technologies in colonial situations. A study of a Bureau of Indian Affairs boarding school in Arizona revealed artifacts of flaked glass and ceramic (Lindauer 1997) that not only represent the identity of the toolmakers, but resistance to an institution designed to crush that identity. This last study is particularly pertinent, as it is set in an institutional context (*sensu* Foucault 1995; Goffman 1962; see Chapter 3). The study of worked glass tools in total institutions, such as the leprosarium at Kalawao, can provide useful interpretive material concerning the daily lives of the inmate population.

Traditional Glass Tools of Hawaii

A brief examination of traditional volcanic glass tools from Hawaii will give a sense of the extent to which worked glass artifacts from Kalawao followed traditional indigenous forms. Volcanic glass tools are a common occurrence on Hawaiian archaeological sites. According to Kirch (1997a: 194), flakes and cores of volcanic glass are, "Probably the most ubiquitous artifacts in Hawaiian archaeology...which have been found in densities as great as 1,350 pieces per cubic meter of cultural deposit." Volcanic glass tools from throughout the Hawaiian Islands are generally produced by bi-polar reduction (Schousboe et al. 1983). One of the first systematic characterizations of volcanic glass tools from Hawaii determined that these tools were used for a variety of cutting and scraping activities, including woodworking, concluding that volcanic glass flakes functioned as a kind of "prehistoric pocketknife" (Barrera and Kirch 1973: 185-186). These artifacts tend to be small (usually a few centimeters in diameter), as volcanic glass nodules in Hawaii tend to be small, the majority do not show evidence for use, and those that do show evidence for utilization tend to be among the larger flakes (Kirch 1985: 195-197).

Weisler's (1990) survey of West Molokaʻi characterized potential geological sources for volcanic glass, and documented several sources for archaeological volcanic glass tools in dikes. More recent work by McCoy (*pers. comm.* 2009) has expanded the number of documented potential geological sources for volcanic glass in cones and dikes on Molokaʻi, though these sources have yet to be tested. The Kalaupapa Peninsula Archaeological Project, which focused on pre-contact archaeology on the peninsula recovered an assemblage of 104 volcanic glass flakes (7.5% of the total lithic assemblage), with a 3.3 to 1 ratio of "waste" flakes to potentially usable tools (McCoy 2006: 389-390). A small number of volcanic glass tools were recovered during field research for ARPK as well (N=9; Table 8.8). Significantly for this study, a volcanic glass flake was recovered in an excavated context with late-19th century materials including a flake of brown bottle glass (Fig. 8.27). This finding suggests that volcanic glass and bottle glass flaking using traditional tool forms may have happened together in the leprosarium at Kalawao, a continuation of traditional Hawaiian practices. However, an analysis of flaked glass tools from throughout the settlement suggest that in general, worked glass was not produced according to traditional forms, so additional interpretation of this assemblage is warranted, especially given the historical context of the assemblage within Hawaii's earliest Hansen's disease settlement.



Figure 8.26. Clorox bleach bottle neck.



Figure 8.27. Amber bottle glass (left) and volcanic glass (right) flakes recovered from the same excavated context.

Flaked Glass in the Leprosarium

During early stages of artifact analysis for ARPK, archaeologists identified bottle glass artifacts that appeared to show evidence for retouch and/or use-wear, notably in the form of conchoidal fracturing along the artifact edge. Recent research by Conte and Romero (2008) has suggested that archaeologists need to be critical in their analyses of "retouch" in worked glass artifacts, specifically suggesting that microscopic analyses are vital to such studies. Such an approach was not possible in Kalaupapa's curatorial facilities, so a strictly macroscopic approach is used here, though future studies of worked glass from the leprosarium at Kalawao may include a microscopic component. Microscopic studies may not always be necessary in situations where contextual information and glass artifacts with clear evidence of flaking suggest the presence of worked glass technologies, and it will be argued that this assemblage represents such a situation.[43] In addition to the standard attributes recorded for all bottle glass artifacts, the macroscopic approach for studying worked glass used here stems from analyses of the location of retouch and/or use-wear on the artifact in relation to bottle anatomy, an approach used in Wilkie's (1996) analysis of worked glass tools from a Louisiana plantation. This includes axes of variability such as the original location of the artifact on a whole bottle (e.g. base, neck, etc.), and whether evidence for retouch or use-wear appeared on the inside or outside of the bottle.

The criteria for determining whether a glass artifact should be interpreted as a possible tool were based on the presence of conchoidal fracturing, ranging from a single conchoidal fracture to intensive flaking and retouch, and the presence of use-wear, especially on the artifacts from ARPK_0055 Op. 3. In some cases, artifacts are simply described as "possibly worked", given that caution must be used in attributing conchoidal fracturing on the surface to retouch and tool use (Conte and Romero 2008). Small flakes of glass recovered during excavation, where all sediment was screened through 1/8" mesh, generally fell into this category, as it is difficult to distinguish retouch flakes from general glass shatter in a midden context (Table 8.9).[44] However, informal experimental archaeology carried out for ARPK with modern glass showed that even brief use in simple activities such as peeling fruit resulted in notable use-wear, even on non-retouched artifacts.[45] In other cases, glass artifacts from the settlement have been clearly retouched, showing evidence for intentional flaking in the creation of a sharp edge. These kinds of flaked glass tools (Fig. 8.28) are scattered throughout Kalawao, though in a fairly low concentration. Worked glass was considered anomalous in ARPK investigations until 2008, when a large assemblage was discovered on a site complex in the research area.

43 Indeed, archaeologists continue to find glass bottles that were clearly used as raw materials for tools (E. Stein, *pers. comm.* 2009).

44 The problem lies with the function of glass objects before flaking, as glass bottles, unlike nodules of volcanic glass, served a purpose other than raw material for tools. All volcanic glass shatter on a site can be interpreted in terms of tool production, while bottle glass shatter may simply be a result of discard.

45 Admittedly, modern glass composition differs from historic glass, but the experimental archaeology was carried out to determine generally whether certain activities, such as peeling fruit, would leave macroscopic use-wear on artifacts.

Kala Catalog #	Field Coll #	Material Type	Object Name Count	Color	Measurements	Description	Site
14758	0003_1_2_59	VOLCANIC GLASS	FLAKE	4 Black	<1cm	Small pieces of volcanic glass	Cistern Area North
18699	0001_Op1_4	VOLCANIC GLASS	FLAKE	1 Black	0.7cm long	Small volcanic glass flake	Bakery Area
19074	PN5_Bag2_2	VOLCANIC GLASS	FLAKE	1 Black	NR	Tiny volcanic glass flake	Bakery Area
19093	PN6_Bag2_1	VOLCANIC GLASS	FLAKE	1 Black	NR	Small volcanic glass flake	Bakery Area
19227	PN19_Bag5_1	VOLCANIC GLASS	FLAKE	1 Black	NR	Small volcanic glass flake	Bakery Area
19365	PN44_Bag4_1	VOLCANIC GLASS	FLAKE	1 Black	NR	Tiny volcanic glass flake	Store Area

Table 8.8. Volcanic glass artifacts from Kalawao.

Kala Cat. #	Field Coll. #	Material	Object Name	Count	Color	Description
19073	PN5_Bag2_1	GLASS	FLAKE	1	Amber	NR
19392	PN47_Bag1_1	GLASS	FLAKE	1	Olive	Black bottle glass (olive), used/worked
19393	PN47_Bag1_2	GLASS	FLAKE	8	Green	Green bottle glass, used/worked
19395	PN47_Bag1_4	GLASS	FLAKE	15	Brown	Brown bottle glass, used/worked
19416	PN50_Bag1_1	GLASS	CORE	1	Green	Green bottle glass core, used/worked
19418	PN50_Bag3_1	GLASS	FLAKE	6	Brown	Brown bottle glass, used/worked
19420	PN50_Bag3_3	GLASS	FLAKE	2	Green	Green bottle glass, used/worked
19429	PN53_Bag3_1	GLASS	BOTTLE	27	Clear aqua	Clear aqua bottle glass, including crown-top bottle neck, possibly used/worked
19433	PN53_Bag3_5	GLASS	BOTTLE	15	Amethyst	Amethyst bottle glass, possibly used/worked
19441	PN54_Bag1_1	GLASS	BOTTLE	60	Clear aqua	Clear aqua bottle glass, including crown-top bottle neck, possibly used/worked
19454	PN55_Bag1_1	GLASS	SCRAPER	1	Green	Green bottle glass scraper, used/worked

Table 8.9. Worked glass artifacts recovered from excavations in Kalawao.

ARPK_0055 Op. 3: An Activity Area

One part of the site complex at ARPK_0055 is a small stone terrace with a scattering of artifacts on the surface, including a diagnostic "CLOROX" bleach bottle neck. During an investigation meant to document the context of this artifact (see ARPK_0055 Op. 3, Chapter 7), another kind of diagnostic artifact was encountered: a clear glass blade with evidence for intensive flaking on one side (Fig. 8.29). Artifacts on and around this terrace clustered heavily to the eastern part of the area, largely off of the stone terrace itself, suggesting a relatively concentrated activity area (Fig. 7.16).

This artifact scatter was highly fragmented, and many of the glass artifacts showed evidence for retouch or use-wear (Fig. 8.30). Of 257 glass artifacts recovered from ARPK_0055 Op. 3, 106 showed no evidence for retouch or use, 95 showed possible evidence, and 56 showed clear evidence of retouch and/or use. Of the 56 definite artifacts, 39 showed evidence for use-wear, one showed evidence for retouch only, and 16 showed evidence for both retouch and use. Other documented bottle scatters, such as those found at ARPK_0026 and ARPK_0054 contained many more complete or nearly complete bottles in the same depositional environment, so the assemblage is interpreted as representing something other than post-depositional processes.46 Furthermore, the interpretation of macroscopic conchoidal fracturing in terms of retouch is bolstered by the presence of at least one clearly flaked bottle glass artifact. Small flakes and shatter were not present in the assemblage from ARPK_0055 Op. 3, though future excavations in the area with fine mesh screens may recover smaller artifacts not generally represented in surface collections. Regardless of whether these glass tools were manufactured in the area, the presence of a high percentage of worked glass artifacts exhibiting use wear (55 out of 56) suggests that the stone terrace at ARPK_0055 Op. 3 is an activity area where worked glass tools were utilized intensively, possibly for processing food. Microscopic analysis of these artifacts could clarify this.

In addition to containing more fragmented glass with evidence of retouch or use-wear when compared with other parts of the ARPK research area, glass artifacts from ARPK_0055 Op. 3 revealed other patterns not visible in the more scattered worked glass assemblage from elsewhere in the research area. One possible pattern is a tendency towards the use of bottle bases and necks, with evidence for retouch or use-wear on what would be the distal end of the tool, leaving the proximal "handle" smooth and unmodified. This pattern is sensible given the progression of Hansen's disease in the human body. *Mycobacterium leprae*, the microorganism that causes leprosy, attacks nerve tissue, resulting in the physical deformities associated with the disease, and more importantly for this study, a loss of feeling in the extremities (Britton and Lockwood 2004; Bullock 1989; Jacobsen and Krahenbuhl 1999), which would make it dangerous to handle small, sharp artifacts such as glass blades. Thus these "base scrapers" and "neck scrapers" may provide evidence of adaptation of glass tool technologies to the disabilities associated with Hansen's disease.

Analysis of retouch in terms of the location of the glass shard on the bottle was used effectively by Wilkie (1996) in her analysis of glass tools from a Louisiana plantation. Included in this study is an analysis of interior versus exterior contact edges, which showed that the exterior was generally used in the leading edge for glass tools. Wilkie (1996: 195) suggests that

46 Archaeologists who have worked in Kalaupapa were contacted to ensure that these artifacts do not represent the activities of modern bottle knappers.



Figure 8.28. Green bottle glass shard with evidence for retouch and use (Image courtesy C. Morgan).



Figure 8.29. Clear glass blade (Image courtesy C. Morgan).

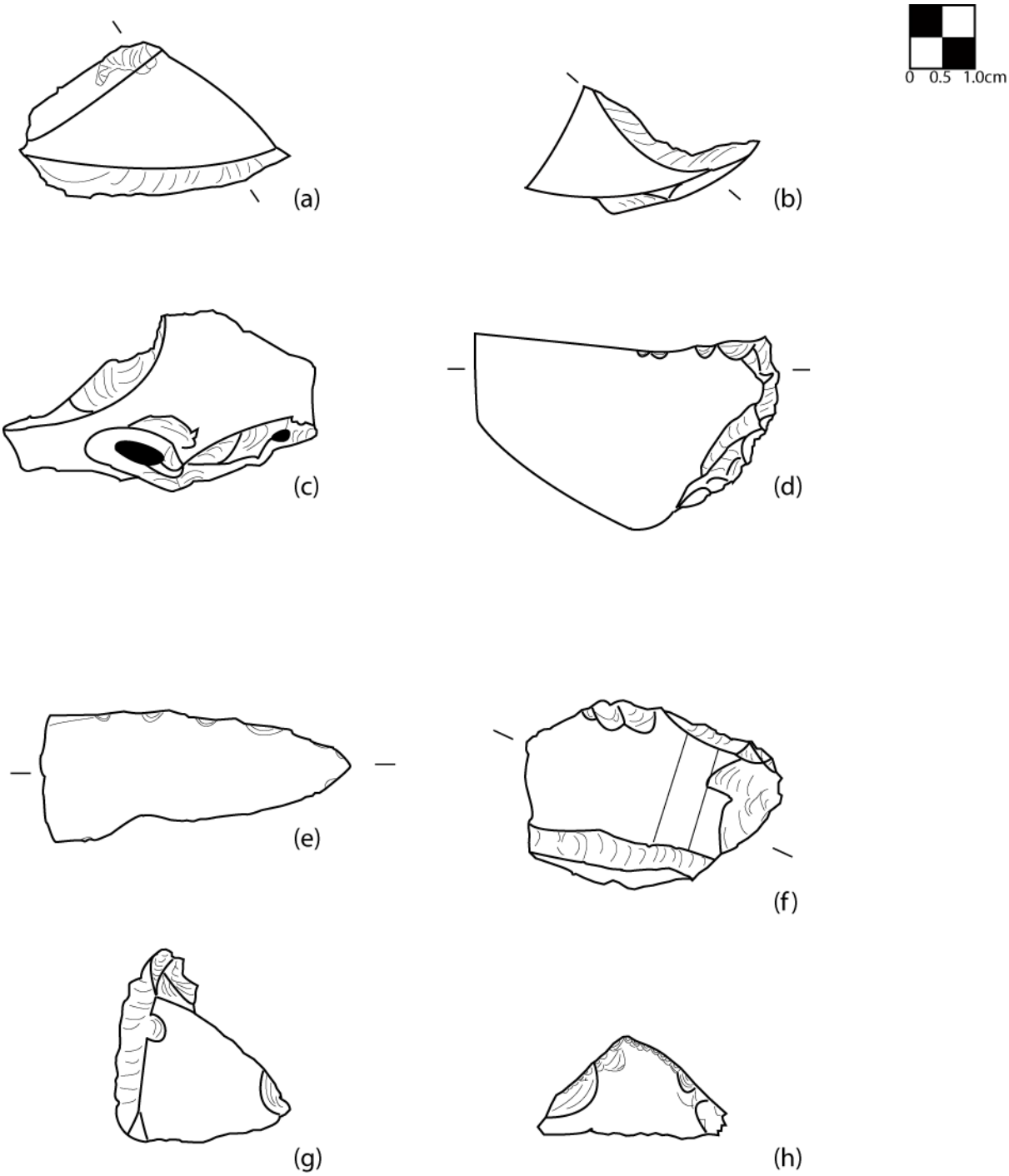


Figure 8.30. Worked bottle glass from Kalawao: (a) Green glass scraper, outside view, (b) Clear glass scraper, inside view, (c) Clear glass scraper, inside view, (d) Clear glass scraper on melted bottle glass, (e) Green glass scraper, outside view, (f) Aquamarine glass scraper, inside view, (g) Clear glass scraper, outside view, (h) Clear glass scraper, inside view. Lines outside of artifacts indicte the orientation of the circumference of the whole bottle, when it could be determined.

this pattern, "may represent a personal preference, as this decision [whether to use the interior or exterior as the leading edge] affects how one grips the tools". Among the 56 definite artifacts, the majority (N=35) showed evidence for retouch and/or use wear on both sides of the shard, while 12 showed evidence for use or retouch on the exterior and 9 for use or retouch on the interior of the shard. There are several possible explanations for this pattern, depending on the activity for which the tools were intended (i.e. scraping or cutting of animal or plant material), the personal preference and level of disease advancement for the tool user, and the personal preference of the tool maker.

Glass Tool Morphology, Innovation, and Disability

Worked glass recovered from Kalawao provides some valuable interpretive material in considering the patterns of daily life for Hawaii's early communities of Hansen's disease exiles. Orthodox histories present the early years of life in the settlement in terms of drunkenness, death, and despair (Greene 1985: 61; Tayman 2006), and improving conditions in the late-19th century are usually attributed to the missionaries working in the settlement (Daws 1973; Stewart 2000; *cf.* Moblo 1997). The worked glass assemblage from Kalawao can be interpreted as representing significant innovation as well as continuity in tool technology driven by Hansen's disease exiles, most of whom were Native Hawaiians. Innovation among this group of industrious exiles is represented by glass tool forms that do not simply mimic traditional Hawaiian volcanic glass forms in a new medium (though such artifacts were encountered in the assemblage). The presence of apparent tool forms such as base and neck scrapers that may relate to disabilities associated with the progress of Hansen's disease provides a valuable insight into the embodied connection of people to the material world, as mediated by the presence of a sensation-altering disease. The creation of these forms is connected to people's adaptation to disabilities (Hubert, ed. 2000), in this case, the loss of sensation in the hands, and thus the danger of using small, sharp tools which could result in deep cuts that might not be noticed by the tool-user.

Hardware of Stone and Metal

Historical accounts of Kalawao based on written documents often implicitly assume the laziness and helplessness of the leprosarium's mostly Native Hawaiian inmate population, focusing on the active, dynamic role of the European and Euro-American missionaries and administrators in improvements to the leprosarium, though anthropologists and social historians increasingly challenge this point of view (Inglis 2004; Moblo 1997). Archaeological data provide some indication of industriousness within the Kalawao community, as was seen in the analysis of flaked glass above. Other relevant artifacts include various tools and construction materials found in the leprosarium. These objects represent the efforts of the exile community in developing and maintaining the appearance of their homes and their bodies.

Basalt Tools: Pounders and Adzes

During surface collections in Kalawao, a total of 39 basalt artifacts were recovered, primarily flakes of fine-grained basalt (Table 8.10). The interpretation of these artifacts is slightly problematic, as they can not necessarily be assigned with certainty to a temporal period. Stone adzes continued to be used through the post-contact period in Hawaii (Bayman 2003), and there is no reason to assume otherwise for ground stone pounders, which are a hallmark of Hawaiian material culture (Hiroa 1954: 27-33). In some cases, though, basalt artifacts found on the surface in Kalawao may simply be remnants of the pre-contact period, especially in the case of hammerstones or flakes that might not be so obvious as artifacts.[47] One artifact from Kalawao that almost certainly dates to the pre-contact period is a fragment of a *papamū* of vesicular basalt (Fig. 8.31) found alongside Damien Road, which would have served as a board for the Hawaiian game *konane*. Basalt artifacts are also often found in Hansen's disease period midden contexts, such as that at ARPK_0053/0054, where a number of basalt flakes and hammerstones were found alongside metal axes, ceramics, and bottle glass (Fig. 8.32). Finally, three stone pounders were found during archaeological research in Kalawao. Two almost certainly represent *poi* pounders (Hiroa 1957: 27-30), used to pound taro corms into the starchy purple staple food beloved by native Hawaiians. Both of these artifacts are broken, one consisting of a handle and the other of only the base, though they are clearly not two pieces of the same artifact, as they were found on different features, and are not of the same basalt. The other pounder found during fieldwork in Kalawao has a much less elongated handle than is typical for *poi* pounders, and may have had a different function, or may simply represent a different style developed locally or idiosyncratically. In any case, lithics appear to have been a part of the material culture of the community in Kalawao, perhaps reflecting a scarcity of metal cutting tools, or simply a preference of the Native Hawaiian inmates, especially in the case of *poi* pounders, which were never completely replaced by metal or other materials.

Personal Adornment, Metal Tools, and Architectural Flourishes

In addition to stone, a number of industrially produced metal objects were recovered in Kalawao. Metal was one of the first foreign materials to be traded in the Hawaiian Islands, as nails were traded across the bow of the ships from Captain Cook's expedition, which stopped off the coast of Kauaʻi in 1778 (Beaglehole 1966: 297). While stone tools continued to be used for certain specific tasks, such as canoe building (Bayman 2003) and poi pounding, metal was rapidly adopted into the Hawaiian toolkit. Metal was the second most common material found in Kalawao, representing 34% (N=3095) of the total recovered artifact assemblage. Metal artifacts in Kalawao take on a variety of forms (Table 8.11), ranging from tools to cooking vessels to items for personal adornment. One of the most remarkable examples of the latter is an iron crucifix (Fig. 8.33) that would have been worn as a pendant. This object is material evidence of the enthusiasm with which Roman Catholicism was embraced by some of Kalawao's exiles, and would have been a clear marker of religious identity for the wearer.

Metal tools recovered from Kalawao include axe heads, such as those found in the mixed

47 Many Kalaupapa patients were active collectors of Hawaiian material culture, and would often pick up artifacts on their trips to Kalawao.



Figure 8.31. *Papamū* fragment recovered in Kalawao. The depressions in the stone would have been used to hold the game pieces for *konane*.



Figure 8.32. Artifacts from 0053/0054 including basalt hammerstones and flakes, as well as metal axe heads, ceramics, and glass.

Object Name	
ADZE	1
BASALT CORE	2
FLAKE	24
HAMMER STONE	5
POI POUNDER HANDLE	1
POUNDER	1
UNMODIFIED	1
UNMODIFIED STONE	1
WATER-WORN STONE	3
Total Result	**39**

Table 8.10. Basalt artifacts from Kalawao.



Figure 8.33. Iron crucifix.



Figure 8.34. Fragment of a metal saw blade.

Object Name	
AXE	2
BOWL	2
BRACKET	3
BRASS RIVET	1
CAN	2
COIL	1
COIN	1
COPPER SHEET	2
CRANK	1
CRUCIFIX	1
CYLINDER	1
D-SHAPE	1
DOOR KNOB	1
DUCT	1
FASTENER	1
FENCE SPIKE	1
FRAGMENTS	1114
HANDLE	4
HINGE	2
HOLED STRIP	1
HOOK	1
KEY	4
METAL PLATE	1
NAIL	1722
OVEN DOOR	1
PEG	2
PIPE	29
POT, COOKING	7
PUMP	1
RIVET	10
ROD	51
SAW	1
SCREW	1
SEWING MACHINE	1
STRAP	3
TOOL	1
VALVE	1
VESSEL	111
VESSEL	1
WATERING CAN HEAD	1
WIRE	2
Total Result	**3095**

Table 8.11. Metal objects.

midden context with basalt tools mentioned above. The area in which these artifacts are found contains several *milo* (*Thespesia populnea*) trees, so it is possible that these artifacts are associated with local woodworking activities. A fragment of a saw blade (Fig. 8.34) was recovered from excavations at ARPK_0060, again suggesting that Kalawao's inmates were working with wood. In addition to tools, various other kinds of metal hardware were recovered. Nails were found in abundance, representing 56% (N=1722) of the overall metal assemblage. Different kinds of architectural elements were found, including metal hinges for doors or gates (Fig. 8.35), and a spike from the top of a metal fence (Fig. 8.36). One of the ceramic doorknobs recovered also had a portion of the metal rod to which it was attached preserved. Several keys were found, representing emerging concerns with personal security and the protection of valuables in the settlement. These keys were found in excavated contexts at ARPK_0001 Op. 1 and ARPK_0060 Op. 1, the two excavated house sites that showed the greatest divergence from traditional Hawaiian patterns, both in architecture and material culture (Chapter 7). It may be that the use of locks is a late development in the Hansen's disease period, or one associated with non-Hawaiian residents of the leprosarium.

One of the most remarkable artifacts recovered in Kalawao was the top of a late 19th or early 20th century metal sewing machine, found in an area with a dense surface midden of Hansen's disease period artifacts behind a mortar wall (Fig. 8.37). The artifact stands about 21 centimeters tall, and has a base 37 centimeters in length and 20 centimeters in width. Many of the moving parts of the machine have preserved, though the metal is rusted and very fragile in places. This artifact raises some interesting ideas about the relationship between myth and historical archaeology in the leprosarium at Kalawao. The image of the medieval "leper"48 in rags, crying at the town gate, "unclean, unclean," can be dramatically contrasted with the sounds of an industrially produced sewing machine, being run by a person with Hansen's disease, maintaining their clothing, which is rationed to them by the state. By this line of reasoning, an ethics of self-maintenance, specifically as it relates to personal appearance, is suggested in the sewing machine. It is probable that the sewing machine represents a charitable impulse, either of the state, or an individual concerned with the plight of the poor exiles of Kalawao. Charity can be seen as an expression of colonial power, a projection of "a firm ideology of patriarchy and paternalism" (Garman and Russo 1999: 122). It is possible that this artifact was found because it was discarded by exiled people with Hansen's disease who, having been rejected by the social body, were unwilling to present themselves as its ideal image in microcosm. Martin Hall (2000: 198) notes that in the modern world, "material culture was a site of ambiguity". In all likelihood, the artifact should be interpreted as representing both self-maintenance and resistance, which is what makes the study of historical archaeology so vital, in revealing the multifaceted roles played by material culture on a daily basis.

Several metal cooking vessels were recovered, including enameled metal bowls and pots (Fig. 8.38), and the large cauldrons found at the Baldwin Home kitchen. Many of the fragments of metal that make up the second largest category of recovered metal artifacts (36%; N=1114) are interpreted as coming from such vessels, though the degree of corrosion makes it difficult to say with certainty. In addition to cooking, evidence for gardening was found in the form of a brass watering can head, which was located alongside the bamboo ware bowl found at ARPK_0042. Metal tools, cooking vessels, and other kinds of hardware all indicate the domestic labor of Kalawao's exiles. Clearly, many of the inmates of the leprosarium in Kalawao did not simply

48 Here I use this term to refer to a social category of exclusion, rather than infection with a specific disease.



Figure 8.35. Metal hinge.



Figure 8.36. Artifacts from ARPK_0055, including a metal spike, possibly from a fence grate at the top.



Figure 8.37. Metal sewing machine.



Figure 8.38. Fragment of a metal cooking pot from Kalawao, interior has white enamel.

waste their time in drunkenness and despair, as so many histories suggest. Rather, there is clear evidence that people worked in building and maintaining houses, doing woodworking, cooking meals, maintaining clothing, and growing crops.

Animals, Transportation, and Food in Kalawao

Zooarchaeology, the study of archaeological faunal remains, is an important aspect of the holistic study of past human beings and their relationship to the environment (Lyman 1994; O'Connor 2000; Reitz and Wing 2008). In studies of later prehistory and historical archaeology, domesticated and commensal fauna become an important part of cultural landscapes throughout the world. During the expansion of European powers from the 15th century onwards, domesticates were a crucial part of the colonial process (Crosby 1986; Reitz 1986, 1992). For historical archaeology, which is largely concerned with archaeologies of post-15th century colonialism throughout the world (Hall and Silliman 2006; Hicks and Beaudry 2006), much zooarchaeological analysis has been concerned with consumer behavior and socio-economic status (Huelsbeck 1989, 1991; Lyman 1987; Pavao-Zuckerman 2007), and the study of foodways in colonial situations (Bowen 1975; Deetz 1996; Landon 1996).

Here, zooarchaeological analyses are focused primarily on the mammals that populated Kalawao's historical landscapes, and the role these organisms may have played in the social life of the settlement. Other faunal resources documented archaeologically in the settlement will also be examined briefly. Among the difficulties noted in histories of Kalawao based on written documents, and in 19th-century written accounts by some of the patients and missionaries themselves (De Veuster 1889; Korn, ed. 1976; Mouritz 1916; see Chapter 5) are periodic food shortages in the settlement, especially shortages of *poi*, a Hawaiian staple food made from *kalo* (taro, *Colocasia esculenta*). Initial plans for the establishment of a self-sufficient colony failed (Greene 1985: 50-55). Apparently included in these plans was the proposed establishment of a self-sustaining herd of cattle (*Bos taurus*) to provide milk and beef. This plan was complicated by widespread reliance among the exiled community at Kalawao upon horses (*Equus caballus*) for mobility, leading eventually to a ban on bringing additional horses in to the settlement, in order to mitigate grazing resource competition between horses and cows (Greene 1985: 182). Archaeological remains close to the main road through the historical settlement at Kalawao include several features that may have been related to horses, including a trough and a possible loading ramp to assist patients with physical disabilities in mounting their horse (Fig. 6.26).

While anecdotes about the role of large mammals in the social life of the Hansen's disease community at Kalawao exist in the historical literature, a more systematic archaeological approach to faunal remains provides some useful insights. A variety of large and small mammal species, as well as fish and shellfish, were potentially important in the settlement at Kalawao, known from documentary evidence, archaeology, and feral or wild populations visible on the peninsula today (Table 8.12). Previous research on the prehistoric archaeology of Kalawao documented higher concentrations of vertebrate faunal remains at men's houses (*mua*) and ritual sites when compared with domestic contexts (McCoy 2006: 391). Analysis of faunal remains from the Kaupikiawa rockshelter indicated a high reliance on marine fauna, with fish and marine invertebrates making up the vast majority of the protein in the diet, though domesticated pig and dog were also documented (Kirch et al. 2003: 17-21). Changes in ‘*opihi* (Hawaiian limpet,

Terrestrial Mammals			
Common Name	Hawaiian Name	Linnaean Classification	Source
Pig	*pua'a*	*Sus scrofa*	H/A/P
Cow	n/a	*Bos taurus*	H/A
Horse	n/a	*Equus caballus*	H/A
Mule	n/a	*E. caballus x E. asinus*	H/P
Donkey	n/a	*Equus africanus asinus*	H
Goat*	n/a	*Capra hircus*	P
Axis Deer*	n/a	*Axis axis*	P
Mongoose*	n/a	*Herpestes javanicus*	P
Rat*	*iole*	*Rattus spp.*	P
Dog*	*n/a*	*Canis familiaris*	P
Cat*	*n/a*	*Felis cattus*	P
Rabbit	n/a	unid. Lagomorph; prob. *Oryctolagus cuniculus*	A
Marine Fauna			
Common Name	Hawaiian Name	Linnaean Classification	Source
Limpet	*opihi*	*Cellana spp.*	A/P
Parrotfish	*uhu*	Fam. *Scaridae*	A/P
See Hawaiian	*pipipi*	*Nerita picea*	A/P
See Hawaiian	*hihiwai*	*Neritina granosa*	A/P
Monk Seal*	*ilio holo I ka uaua*	*Monachus schauinslandi*	P

Table 8.12. Sample of contemporary and historically known faunal species in Kalaupapa. "H" indicates species known from written documents, "A" indicates species represented archaeologically, and "P" indicates species present on Kalaupapa Peninsula today (these species are marked with an asterisk as it is unclear what role, if any, they may have played historically).

Cellana spp.) shell sizes throughout the occupational sequence of Kalaupapa have been related to harvesting practices on Kalaupapa, specifically as a result of depopulation after European contact (McCoy 2008). During the Hansen's disease period, cattle (*Bos taurus*) were one of the most important domesticates, based on both documentary and archaeological evidence, as will be seen below. However, mammals and marine fauna both played an important role in the settlement, as protein sources and for other purposes (Durst and Nakamura 2005: 17-21).

Although the focus of this study is excavated mammal bones and teeth, mammal remains and marine resources including coral and shell were documented during surface investigations of Kalawao's historical archaeology (Table 8.13). A midden deposit documented, but not collected from under a stone wall dating to the Hansen's disease period in Kalawao had various fish and shellfish remains scattered among late-19th century ceramics and glass, including ʻ*opihi* shell, and grinding plates from the mouth of a parrotfish, or *uhu* (family Scaridae) (Fig. 8.39). In addition to ʻ*opihi* and corals, other edible shellfish including cowries (*Cypraea spp.*), *pipipi* (*Nerita picea*), and the fresh or brackish-water shellfish *hihiwai* (*Neritina granosa*) were identified in the field. Marine resources, especially shellfish, must have been a significant food source among Kalawao's exiles not immediately apparent from historical texts.

Mammal bones were also encountered during surface investigations at Kalawao. Many of the bones encountered on the surface represent feral species living on Kalaupapa peninsula today, such as axis deer (*Axis axis*) and feral pig (*Sus scrofa*), and can not be definitively assigned to the Hansen's disease period. A number of cow bones were surface collected. There is no extant population of cattle in Kalaupapa, and butchering patterns suggest that many of these bones were discarded while people were living in Kalawao. Several pieces of transversely-sawed cow long bone (probably femur or humerus) were butchered with metal tools, possibly at Kalawao's historically-known slaughterhouse, and several beef bones showed possible evidence of being split to access the marrow (Table 8.14). Systematic surface collection provided some evidence of the zooarchaeological landscape in Kalawao, though the lack of a comparative collection in the field made the identification of faunal remains difficult at times. Some archaeological skeletal remains found on the surface were clearly related to extant feral mammal populations, and it was unclear to what extent the species represented among the feral mammal populations in Kalawao today would have played a role in the life of the historical settlement. Following archaeological excavations carried out at Hansen's disease period house sites, a formal zooarchaeological analysis was carried out on the excavated faunal assemblage from Kalawao in order to gain further insights into the role of terrestrial mammals and marine fauna in the early community of exiles in Kalawao.

Zooarchaeological Methodology

During analysis of artifacts recovered from excavations in Kalawao, faunal materials were separated and shipped to the Museum of Vertebrate Zoology (MVZ) at the University of California, Berkeley, where a suitable comparative collection is located. Zooarchaeological procedures for this project followed the principles set out by Reitz and Wing (2008) and O'Connor (2000). After being sterilized for temporary accession to the MVZ, the samples were washed, and initial counts and weights were recorded. In addition, mixed faunal materials (e.g. bones and teeth in one bag from one context) were separated for further analyses.

Site Name	Class 4	Object Name	
"Downtown" Kalawao	BONE	BONE FRAGMENT	1
		BONE, UNMODIFIED	5
		FAUNAL BONE	14
		FRAGMENT	1
	CORAL	CORAL, UNMODIFIED	13
	SHELL	PIECES	11
		SHELL	3
Bakery Area	BONE	FRAGMENT	1
	CORAL	PIECE	1
	SHELL	PIECE	1
Baldwin Home	SHELL	SHELL, MODIFIED	1
Cistern Area	BONE	BEEF BONE	9
	SHELL	OPIHI	1
Cistern Area North	ANTLER	UNMODIFIED	1
	BONE	PIECES	13
		TIBIA	1
		UNMODIFIED	1
	CORAL	PIECES	20
	SHELL	PIECES	6
Cistern Area South	BONE	BONE, UNMODIFIED	2
Hospital	BONE	TOOTH	1
	CORAL	PIECES	1
	SHELL	PIECES	3
Kalawao Bakery Area	CORAL	PIECES	9
	SHELL	PIECES	1
		WHOLE SHELL	2
South of Road	ANTLER	ANTLER FRAGMENT	1
	BONE	BONE FRAGMENT	1
		BONE, MODIFIED	1
		BONE, UNMODIFIED	10
		PIECES	2
		VERTEBRA	1
	SHELL	COWRIE SHELL	1
Store Area	BONE	FAUNAL BONE	12
		PIECES	7
	CORAL	CORAL	1
	SHELL	LAND SNAIL	1
		OPIHI	55
		SHELL	3
Total Result			**219**

Table 8.13. Surface collected faunal material, sorted by site location and material type.



Figure 8.39. Midden scatter under stone wall at ARPK_0058.

Field Collection #	Class 4	Object Name	Count	Description
0007_Op1_1	BONE	BEEF BONE	1	End of a long bone from a large mammal, most likely a cow
0007_Op1_21	BONE	BEEF BONE	3	Pieces of cow bone
0007_Op1_22	BONE	BEEF BONE	1	Sawed beef bone
0007_Op1_74	BONE	BEEF BONE	1	Sawed beef bone
0007_Op1_75	BONE	BEEF BONE	1	Beef bone split open to access marrow
0007_Op1_76	BONE	BEEF BONE	1	Cow bone, probably a knee joint
0007_Op1_84	BONE	BEEF BONE	1	Sawed beef bone
0042_1_1_3	BONE	BONE FRAGMENT	1	Fragment of mammal bone. Unclear whether naturally broken or butchered.
0053/0054_1_2_6	BONE	BONE FRAGMENT	1	Possible modified faunal long bone fragment
0040_1_5_1	BONE	BONE, MODIFIED	1	Fragment of long bone shaft, no epiphyses. One end has been machine cut. Most likely bovid (cow).
0055_1_3_2	BONE	FAUNAL BONE	1	Large piece of cow long bone.
0055_1_3_3	BONE	FAUNAL BONE	1	Cow long bone.
0055_1_4_1	BONE	FAUNAL BONE	1	Long bone fragment
0001_Op1_31	BONE	FRAGMENT	1	Tiny fragment of burned bone
0053/0054_1_4_16	BONE	FRAGMENT	1	Bone fragment, probably naturally broken.
0007_1_1_4	BONE	PIECES	9	Four sawed bone pieces, five unmod. (cow?)
0007_1_4_1	BONE	PIECES	2	Sawed cow (?)
0026_1_1_81	BONE	PIECES	1	Sawed cow (?)
0026_1_1_82	BONE	PIECES	1	Sawed cow (?)
0055_Op3_121	BONE	PIECES	5	Various animal bones, one sawed cow bone
0060_Op1_1	BONE	PIECES	2	Fragments of large mammal bone, probably cow

Table 8.14. Modified cattle bones from surface collections in Kalawao.

Shell and coral materials were counted and weighed only. Most of the shell was from modern land snails, the coral samples were worn and unsuitable for Uranium-Thorium (234U/230Th) dating. Mammal bones and teeth underwent more intensive analyses. Bones were size sorted into categories using a geometric progression (O'Connor 2000: 43) and weighed. The assemblage was highly fragmented, so the number of specimens identified to species level or element is small. Identification took place to varying extents as a result. Possibly identifiable fragments were separated, and potentially identifiable large mammal bones were compared with the illustrations and notes in Brown and Gustafson (1979), as well as comparative specimens from the MVZ. When bones could be identified to element, such as long bones (e.g. femur, tibia, fibula, humerus, radius, ulna, ungulate metapodial) or flat bones (e.g. mandible, cranium, scapula, pelvis), this was noted. Mammals were described as "large" (cow, horse), "medium" (pig, dog), and "small" (rabbit, rat), though making further distinctions was generally difficult. When a specimen could be identified to genus and species, this was recorded, as was the element when possible. The easiest bones to identify to species were the large, robust bones of *Bos taurus*. When this identification was tentative or probable but not definite, the recording was marked with an asterisk. Finally, any other relevant phenomena, such as charring, pot polish, butchering marks, or unfused epiphyseal growth were recorded.

Teeth were recorded using a similar protocol, being sorted into size classes, counted, weighed, and identified if possible. Terminology for dentition was drawn from Hillson (1986) and Grant (1982). All the analyses were carried out on loose teeth, which makes identification difficult at times without having a cranial or mandibular location to refer to. Teeth were categorized in general terms as incisors, premolars, or molars (no canines were present in the assemblage). When possible, it was noted whether the tooth was cranial (upper) or mandibular (lower). In addition to the specimens in the MVZ, a cow skull in the Oceanic Archaeology Laboratory was also used for comparison, as it had more comparable stages of tooth wear. Overall, this approach allowed for the quantification of field observations made about the distribution and preservation of faunal materials across the ARPK research area, and provided some insight into foodways, specifically the consumption of beef, in the old leprosarium at Kalawao.

Faunal Analysis Results

For this study, a total of 594 individual specimens, weighing a total of 951.1g were analyzed. The zooarchaeological analysis carried out for this study was limited by the level of fragmentation in the assemblage. Size class analysis reveals that the 72% of bone fragments (293 of 408) fell into category 1 and 2 (or less than 2cm), while teeth had a more even distribution, and generally larger fragments with 71% of teeth (36 of 51) belonging to category 2 and 3 (or between 1 and 4cm, Fig. 8.40). This is simply a reflection of the greater durability of teeth when compared with bones. Because this assemblage is so fragmented, very few specimens could be identified with certainty. For bones, 89% of specimens were unidentified (363 of 408), while for teeth, the rate of identification was slightly better, with just 51% of specimens remaining unidentified (26 of 51). The identified specimens tended to be among the largest specimens in the assemblage, as the 5 identified bone specimens from *Bos Taurus* have a combined weight greater than the 363 unidentified specimens (Table 8.15). Tentative

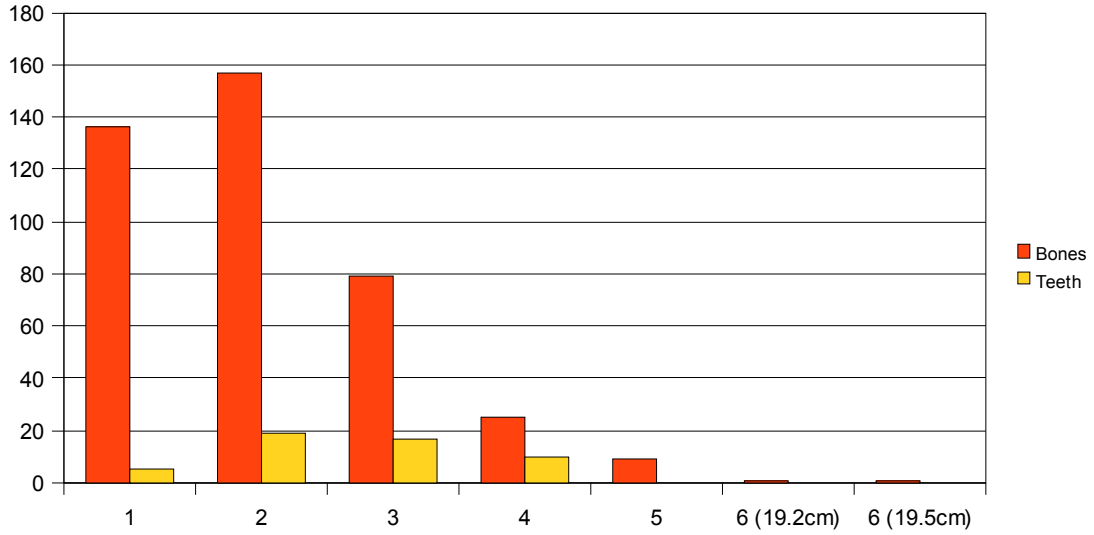


Figure 8.40. Number of mammalian faunal specimens per size class. Classes determined by a geometric progression, thus class 1<1cm, class 2 = 1-2cm, class 3 = 2-4cm, class 4 = 4-8cm, class 5 = 8-16cm, and class 6>16cm.

Bones

Genus	Data	
Bos	Sum - Count	5
	Sum - Weight (g)	286.8
Bos*	Sum - Count	21
	Sum - Weight (g)	130.1
unid.	Sum - Count	363
	Sum - Weight (g)	273.4
unid. Lagomorph	Sum - Count	19
	Sum - Weight (g)	2.1
Total Sum - Count		**408**
Total Sum - Weight (g)		**692.4**

Teeth

Genus	Data	
Bos	Sum - Count	15
	Sum - Weight (g)	179.4
Bos*	Sum - Count	8
	Sum - Weight (g)	43.6
Sus*	Sum - Count	2
	Sum - Weight (g)	0.2
unid.	Sum - Count	26
	Sum - Weight (g)	14.1
Total Sum - Count		**51**
Total Sum - Weight (g)		**237.3**

Table 8.15. Counts and weights of identified bones and teeth by genus. Asterisk indicates a tentative identification, usually because of the fragmentary nature of the specimen. Note the great weight of the identified bone specimens from *Bos*, compared with the weight of unidentified specimens.

identifications were made of *Sus scrofa*, and an unidentified Lagomorph, most likely *Oryctolagus cuniculus*, an invasive species with known populations in the Hawaiian Islands (Flux and Fullagar 1992). The Lagomorph specimens came from a context with loose, dark soil described during excavation as disturbed by root action and possibly animal burrowing.

The elements identified with certainty are all from *Bos taurus* and consist of a right astragalus, a distal end fragment of a left tibia, two shaft fragments from a right metatarsal, and an anterior shaft fragment of a left metatarsal (Fig. 8.41). These specimens were collected from a 1m x 8m trench excavated in a domestic structure designated as ARPK_0055 Op. 2. They were all recovered from what is interpreted as a pebble-paved occupation layer, that has since been obscured by post-depositional processes, primarily root action (Flexner 2009: 24-27). The identified teeth also all came from excavated contexts in ARPK_0055 Op. 2. Almost all of the specimens were from *Bos taurus*, with the exception of two fragments identified as possible incisors from *Sus scrofa*, though these were incomplete fragments of enamel, and the identification was only made because the specimens had a suggestive shape. While it is possible that the identified bones all came from one individual, the *Bos taurus* teeth appear to come from multiple individuals, based on the variable sizes of molar specimens, the presence of deciduous and permanent teeth, and, most clearly, the presence of three cranial p4 specimens. While a formal analysis of tooth wear for the purpose of ageing the specimens was not possible with the small assemblage and limited comparative specimens, most teeth appeared to fit class a-c (no significant wear to very little wear) from a typical tooth-wear chart (Grant 1982: 92), indicating fairly young individuals.

The identified elements, which include the lower parts of the hind legs and loose teeth provide an unclear pattern. In part, this may be related to excavation strategy at ARPK_0055 Op. 2, which consisted of one 1 x 8m trench running north-south in the eastern part of the structure, and a 0.5 x 0.5m test pit in the western part of the structure. It is possible that the loose teeth represent intensive butchering of elements from the head, possibly to access edible portions such as the brain and tongue, though identifiable fragments of mandible or cranium showing evidence for butchery would be necessary to verify this. The lower leg bones may represent the distribution of butchered cuts of meat throughout the settlement from the historically known slaughterhouse (Greene 1985: 163). The two shaft fragments of the right metatarsal appear to result from splitting the long bone to extract the marrow, as was the distal tibia fragment. Additional excavations at this structure could shed further light on these potential patterns, especially if this structure, located off to the side of the main site complex at ARPK_0055 served as a cook house.

While no identified elements were recovered from excavations elsewhere in the ARPK research area, other diagnostic phenomena were recorded in the assemblage (Table 8.16). Several possible butchery marks were recorded, as were bones that showed evidence of cooking practices. For the bone assemblage, attributes relevant to age, cooking or butchering were recorded in 12.75% (52 of 408) of specimens. One specimen, probably a long bone from *Bos taurus*, had a small scrape mark, probably from the use of a tool to remove flesh from the bone. Three specimens showed evidence of breaking the long bone shaft to access the marrow, as noted above. Two specimens showed evidence for unfused epiphyseal growth, though these elements were not identified. If these specimens are from *Bos taurus* it follows the pattern indicated by the teeth from ARPK_0055 Op. 2 that suggests the slaughter and butchery of younger individuals.



Figure 8.41. Identified archaeological bone fragments of *Bos taurus* from the ARPK 2008 assemblage, next to elements from MVZ specimen 114370, clockwise from upper left: right astragalus, distal fragment of left tibia, anterior shaft fragment of left metatarsal, and two shaft fragments from the same right metatarsal.

Relevant Phenomena	Data	
Angular, Probably Chopped	Sum - Count	7
	Sum - Weight (g)	7.1
Charred	Sum - Count	6
	Sum - Weight (g)	4.2
Charred/Pot Polish (Calcified)	Sum - Count	20
	Sum - Weight (g)	15.9
Charred/Pot Polish (Grey), Angular, Probably Chopped	Sum - Count	1
	Sum - Weight (g)	2
Medial half of fragment missing, possibly broken to get marrow?	Sum - Count	1
	Sum - Weight (g)	64.9
None Identified	Sum - Count	356
	Sum - Weight (g)	452.1
One Flat Edge, Possibly Chopped	Sum - Count	1
	Sum - Weight (g)	19.4
Pot Polish (Calcified)	Sum - Count	11
	Sum - Weight (g)	9.3
Scrape mark from removal of flesh (possible)	Sum - Count	1
	Sum - Weight (g)	9.6
Shaft split along long axis (medial), possibly to get marrow.	Sum - Count	2
	Sum - Weight (g)	100.8
Unfused Epipyseal Growth	Sum - Count	2
	Sum - Weight (g)	7.1
Total Sum - Count		**408**
Total Sum - Weight (g)		**692.4**

Table 8.16. Counts and weights of bones with butchery marks, charring, or other relevant phenomena.

Specimens that may indicate cooking practices showed evidence of charring, evidence of pot polish, in which bones were calcined to a grey or white color, or some combination of those. It has been suggested that the heat to which bone was exposed can be related to color and other changes in bone structure, from black and relatively undistorted (lower heat) to white and highly distorted (highest heat), though the process is "imperfectly understood" (O'Connor 2000: 45). Of the bones showing some evidence of burning in the form of charring or pot polish, 76.3% (29 of 38) came from ARPK_0001 Op. 1, a house site with a large stone masonry chimney where large amounts of burned glass and other burned materials were recovered. The remaining charred or calcified bones were equally split between ARPK_0055 Op. 1 (N=5) and ARPK_0055 Op. 2 (N=4). These bones indicate that meat cuts sometimes reached a very high temperature during cooking, resulting in charring and sometimes calcining of the bones. In addition to refuse disposal practices involving burning, this pattern may be related to the use of metal pots (see above), which could reach very high temperatures when placed directly on a cooking fire.

Animals as a Part of the Kalawao Community

Archaeological faunal remains provide useful interpretive material for understanding the everyday lives of past people. For historical archaeology, this has often translated into an interest in foodways, perhaps most powerfully in African American archaeology, where the variety of wild species exploited by enslaved people has been widely documented, as has the prevalence of more highly fragmented faunal remains related to a culinary preference for stews (Deetz 1996; Ferguson 1992; Franklin 2001). Foodways and consumption patterns can point to important aspects of identity and socio-economic status. For the assemblage being considered here, fragmentation was generally attributed to post-depositional processes, especially root action, though there was also clear evidence of chopping that resulted in smaller bone fragments. This unfortunately meant that very few elements were identified during zooarchaeological analysis. However, these analyses did lead to several useful insights about daily life in Kalawao in the past.

The identification of rabbit bone (most likely *Oryctolagus cuniculus*) places this species in Kalawao using strictly archaeological evidence, as there are no known written references to this animal's presence, and it has not been observed by NPS natural resources staff at Kalaupapa (Hughes, *pers. comm.* 2009). Other species such as pig, cow, axis deer, goat, donkey, and mule are well represented historically, and some also have feral populations extant on Kalaupapa today. Fishing and shellfish gathering practices are known historically and archaeologically, and previous archaeological research has documented assemblages much like those noted above from the surface of Kalawao with *uhu*, *ʻopihi*, *pipipi*, and *hihiwai*, among many other species (Durst and Nakamura 2005: 21). I have not come across historical accounts that mention ongoing fishing and shellfish collection activities among Kalawao's exiles, but such activities are clearly represented in Kalawao's archaeological record alongside late-19th century materials.

This analysis dealt primarily with bones of large mammals, and among those that could be identified, elements from *Bos taurus*. It is probable that these bones came from animals brought to Kalaupapa and butchered in the settlement. An 1886 report by R.W. Meyer, superintendent of the settlement, indicated 235 horses, 288 mares, and 74 colts to only 40 cows, 18 steers, 25 heifers, 10 oxen, and one bull (Greene 1985: 163). This prevalence of horses and

relatively small number of cows for the growing settlement (the population of Kalawao ranged from about 600-1000 people in the 1880s and 1890s; see Chapter 5) may indicate that cows were being butchered fairly frequently, after being brought in from elsewhere in the Hawaiian Islands, while horses were kept for longer periods of time for transportation and other purposes by people living in the leprosarium. Archaeological analysis of the beef bones from Kalawao includes long bones that were sawed during butchery, bones that were chopped, possibly for stews, and long bones that may have been split open to access the marrow. If butchering and cooking activities are represented in the excavated contexts from ARPK_0055 Op. 2, then beef clearly played an important role in the foodways of that domestic unit. The presence of charring and calcining on some bones suggests that at times bones were heated to high temperatures, possibly during the cooking process as pieces of meat in a stew came into contact with the hottest part of a metal pot.

Overall, the analysis of faunal material from Kalawao speaks to both the official provisioning program of the leprosarium as a state-run institution, especially in the form of cattle brought in to feed the inmate population, and more informal protein resource procurement activities, such as the gathering of shellfish. Like many of the other archaeological materials from Kalawao, faunal materials show that the early exiled communities were highly resourceful, and adapted quickly to their situation. Domesticated and commensal mammals formed an important part of the Kalawao landscape, as food resources, transportation, draught animals, and companions. The zooarchaeological analysis recorded here helps to add to a holistic picture of the organisms, practices, and exchange relations that existed in Hawaii's first leprosarium.

Conclusions: Material Culture in the Leprosarium

Capitalism would have a transformative effect on Hawaiian landscapes, political economy, and history in the 19th century, from centers such as Honolulu and Lahaina, to hinterlands such as the Anahulu Valley (Kirch 1992; Sahlins 1992). By 1866, when the first exiles arrived at Kalawao, Hawaii was fully entangled in the capitalist world-system, and well on its way to developing an economically dependent position within that system (Kent 1993). What is interesting about the materials recovered from Kalawao (and other late-19th century contexts in Hawaii, for that matter), though, is not simply what these items can tell us about the capitalist economy of the Hawaiian Islands, but about the anthropology of consumption (Douglas and Isherwood 1996) in domestic contexts. Kalawao, of course, is a somewhat unique place to study such things, which makes the interpretation of these artifacts that much richer.

The material world of the leprosarium at Kalawao was connected to extensive global networks that reached from north Moloka‘i to England, China, and the United States among other places, via Honolulu and other parts of the South Pacific. Yet these global goods were interpreted and used in remarkably local fashions, and this pattern is true in other rural areas of the Hawaiian Islands throughout the 19th century. In Kalawao, the institutional context adds another layer of complexity to the interpretation of people's consumptive practices. For people diagnosed and exiled with *mai ho‘oka ‘awale ‘ohana*, the traditional structuring elements of Hawaiian village life, such as rank and kinship, did not exist within the institution, and indeed these aspects of society had been and would continue to be greatly transformed throughout the islands (Osorio 2002; Sahlins 1992). Where tradition did not exist to link people together, objects played a vital role in the formation of a working community. Besides fulfilling utilitarian

roles in providing nutrition, shelter, and other basic necessities, objects played a social role in Kalawao. Sharing a meal served on colorful ceramic dishes, drinking a beer, helping someone to nail a loose board in a drafty house, these everyday activities were the glue that held friendships and alliances together, and allowed people to cope with the imposed isolation of the leprosarium. This is not to say that life in Kalawao was utopian. However, the artifacts recovered from the ruins of the old leprosarium do indicate that life was perhaps not so harsh as many historians have suggested it was, and that it was not only the missionaries who contributed to the material and social improvement of the settlement. Ultimately, what is interesting from an archaeological point of view is the role that these objects themselves played in forming the community, providing the material that made social life possible for the exiles living in the leprosarium.

Chapter 9.

Conclusions:
The Leprosarium as a Community

What did we learn?

In archaeological research design (e.g. Flannery 1976; Redman 1973), the most important question for the start of a project should be, "Why do it?" Unlike mountain climbing, "because it is there" is no longer considered a sufficient answer for expensive, time-consuming modern archaeological research. Contemporary archaeology is concerned with answering analytical research questions with broad anthropological relevance. In beginning this study, a compelling case was made for the historical and theoretical relevance of archaeological research in Kalawao, given the institutional context of the settlement and its high potential for yielding data about settlement architecture and material culture in a bounded and stigmatized community. From a regional perspective, the potential for expanding the research frontiers of late-19th century archaeology in Polynesia added to the project's value. Now, in closing this dissertation on the archaeology of the recent past at Kalawao, it is worth asking the corollary question for the end of a project: "What did we learn?"

The answers to this question may be broken down topically into three categories: *local knowledge*, specific insights into the daily life of the Hansen's disease settlement at Kalawao between 1866 and the 1930s; *regional knowledge*, the ways that people in Polynesia dealt with changes in the lives of their islands; and finally *anthropological knowledge*, an understanding of broader cultural patterns, notably concerning diseases, institutions, and stigma. Some of the knowledge produced by this project crosses these categories. While the discussion below divides things in three ways, much of the information could be made to fit in any or all of the sections. Like much of "history's anthropology" (Dening 1988), the study of daily life in the leprosarium at Kalawao is perhaps best understood in terms of liminality. Kalawao has been characterized as a place "set apart" (Inglis 2004), but it was just as much a place in between: in between prison, village, and hospital; a resurrection of a medieval form in the modern world; a colonial place not meant for colonizers. In a similar vein, my analyses of the ruins of Kalawao produce knowledge that should be understood in a liminal manner: between history, archaeology, and anthropology; between the ancient past and the present; exhibiting processes of "locality– the constitution of the global in the local" (Hall 2000: 197), worldwide processes played out at the human scale of everyday life.

A Historical Institution, An Archaeological Village

Many historians (e.g. Daws 1973; Greene 1985; Stewart 2000; Tayman 2006) have written the history of Kalawao as if the place were a total institution, which makes sense given the written documents that they have drawn upon almost exclusively. Kalawao is a part of a naturally bounded landscape that appears as an obvious place of isolation, and the government's acts, rules, reports, and official correspondence reflect concerns with controlling and ordering a population that was to be removed from society for the sake of mutual protection. Protection

was intended for the Hawaiian population at large against a terrible disease, and from the Kingdom of Hawaii's perspective, protection was given to those afflicted with this disease through benevolent quarantine. Historians also note the extent to which the government failed in its attempt at establishing a successful institution, as Kalawao was neither self-sufficient, nor is it portrayed as a particularly nice place to live. Images of drunkenness and chaos dominate the early years of life in the settlement, and life only improved when missionaries such as the heroic Father Damien emerged to bring stability to Kalawao. While social history and anthropology challenge this orthodox narrative (e.g. Inglis 2004; Moblo 1997, 1998), they are somewhat limited in what they can say about the majority of Kalawao's population because of their reliance on written sources. As was shown, archaeology tells a remarkably different story about Kalawao than is typically drawn from the documentary record. Where history gives us a total institution, archaeology reveals a village. Without the written record, Kalawao might not be recognizable as a unique place, it might be interpreted as a late-19th century Hawaiian village like many others. A purely archaeological approach may not have lent itself to some of the more interesting interpretations laid out in previous chapters. Thus the strength of historical archaeology rests in its ability to unite written information and archaeological data to gain a more holistic view of the past. Without using both, the story that led to this point could not have been so rich as it was.

The interpretation of Kalawao as a historical institution was based on written documents, and has been rehearsed at length. The narratives of historians will continue to provide useful and subtle hints about Hawaii's first Hansen's disease settlement, while archaeology plays a crucial role in constructing a more complete picture of the recent past at Kalawao. The archaeological village was found through a multiscalar analysis of material evidence. The overall spatial layout of the place reflects the underlying Hawaiian settlement pattern left by Kalawao's original inhabitants, who were removed to make way for the Hansen's disease settlement. While people would continue to modify the landscape through the Hansen's disease period (1866-1932), the arrangement of domestic and social spaces would follow the underlying village layout, with the exception of a few large institutional spaces such as the Baldwin Home and the Hospital. The houses of Kalawao were themselves constitutive of village life, as domestic patterns were not arranged around dormitories or blocks of rooms. Rather, people lived in separate domestic units, which were distinguished by variability in architecture and artifact assemblages, but linked by social relationships as a community. House life would have played an important role in the daily interactions of individuals and social groups within the settlement at Kalawao. Finally, the artifacts recovered from surface collections and excavations in Kalawao are a remarkably rich sample of the things people used on a daily basis. Goods brought into the community through official channels, such as the settlement's store, or through clandestine trade or smuggling, were important to the creation and maintenance of social identities and interpersonal connections. Within the village, consumption was a way of coping for many people. In a place full of people who could not travel to the outside world, objects brought the outside world in to the settlement.

A Polynesian Place

The archaeological remains of Kalawao are not simply remarkable for the extent to which they challenge models of the institution, but also for the extent to which they fit with models of *Hawaiian* life in the 19th century. The settlement pattern fits within expectations for

"architectonic transformations" in the Hawaiian archipelago over the course of the 19th century, especially the "proliferation of stone walls" associated with the need to control "marauding cattle herds", and to create physical markers of ownership to bolster land claims during the Māhele (Kirch 1992: 175). Even this landscape, transformed through the entanglement of the Hawaiian Kingdom with global capitalism, has its own underlying pre-contact Hawaiian elements. Notable are the locations of various sacred sites within the core of the Hansen's disease settlement at Kalawao, from prominent *heiau* to more modest household shrines represented by upright stones. In addition, many of the agricultural terraces incorporated into the larger post-contact enclosures probably date to the pre-contact period. In at least one case, Hansen's disease period deposits appear to overlie agricultural soils, pointing to the agricultural basis of life for the majority of Kalawao's history (Kirch, ed. 2002; McCoy 2006).

Archaeological research also recovered evidence for the continued use of Hawaiian domestic architecture through at least the closing years of the 19th century in Kalawao, and perhaps later. The arrangement of household space is a central organizing principle in the social lives of many people (e.g. Bourdieu 1973; Kirch 1996). In Kalawao, the presence of Hawaiian-style thatch houses reflects the importance of material culture to domestic habits, as some people stuck to old ways even in a situation of domicide (Porteus and Smith 2001). This re-creation of home represents a coping strategy of some of the exiles living in Kalawao. Material culture suggests that even where the houses themselves did not reflect Hawaiian traditions, objects continued to be used in a Hawaiian fashion. Archaeology revealed the presence of flaked bottle glass, some of which appears to mimic forms of traditional volcanic glass tools, a slight preference for bowl forms in ceramics, reflecting the consumption of *poi* and stews, continued gathering and consumption of ‘*opihi* and other shellfish and the presence of several pits that appear to be *imu*, earth ovens. Evidence from the objects left behind by Kalawao's inhabitants suggests that tool-making and the cooking and eating of different foods continued to follow deep Hawaiian patterns in the Hansen's disease settlement. These observations follow a more general pattern found in historical archaeology in Polynesia. Even though European colonialism and the incursion of people from North America, Europe, and Asia would have massive impacts on Polynesian cultures from the 18th century onwards (Chapter 2), these places would not cease to be essentially Polynesian. Despite all of the transformations in Hawaiian society, and the personal upheavals experienced by those quarantined at Kalawao, the overall Polynesian pattern of the landscape, certain kinds of domestic architecture, and daily practices of tool production and use, food preparation and consumption would not be erased. Kalawao remained a Hawaiian place.

Infectious Disease, Institutions, and Social Dynamics

On a recent trip through Latin America, during the height of the "swine flu" panic, I was struck by the amount of time and resources different countries had spent on controlling the disease, and more importantly, the people who potentially carried it. The strategies employed by different nation-states ranged from little cards with lists of symptoms to be filled out and given to this or that ministry of health, to thermal cameras in customs revealing individuals with high fever, one of the symptoms of the disease. I am less interested in asking whether the swine flu is

demographically as dangerous as was initially forecasted[49], and more interested in the ways that nation-states deal with infectious diseases (e.g. Briggs and Mantini-Briggs 2003). Control measures for infectious disease are a social as much as a biological phenomenon, especially with diseases spread from person to person, whether dealing with contemporary fears about HIV or this or that flu strain, or historical pandemics such as tuberculosis or leprosy. It is not the disease-causing agent that the state must deal with to prevent epidemics, but the person carrying such an organism. In situations where sufficient danger to the population, widespread panic, or political pressure are exerted, many states turn to quarantine and institutionalization as a mechanism for controlling infectious disease. Yet these kinds of institutions may be established without a full understanding of the disease itself, and without a consideration for the people who will be impacted by quarantine policies. Kalawao represents the outcome of just such a situation, where leprosy, despite the fact that it was much less deadly than influenza or smallpox, was institutionalized, largely because of the stigma already associated with the disease in Western tradition. The point is not to second-guess decisions made nearly a century and a half ago in the Hawaiian Kingdom. Rather, the role of the past is to inform the present, and nations should beware of isolating people without adequate knowledge of the actual danger a group of people with a certain disease poses for the rest of society.

Obviously, one dissertation in archaeology will not prevent governments from making rash decisions, nor will it prevent the continued use of the total institution as a means of social control in the contemporary world. In this case, the archaeology of the recent past at Kalawao provides useful insights into human social dynamics in situations of lifelong incarceration. A key interpretation of the Hansen's disease settlement in Kalawao is that the place was a *community*. The concept of community was an integral part of settlement pattern archaeology (e.g. Willey 1968), and the concept has seen a recent reappraisal as a useful scale of archaeological analysis (Canuto and Yaeger, eds. 2000). McCoy (2006: 317-319) applied the concept to the pre-contact landscape of Kalawao, where communities formed as a mediating element in the relationship between commoners and elites. Because total institutions are often assumed to be antisocial by nature, their social dynamics are not generally defined in terms of communities. The village structure of Kalawao, however, suggests that community is precisely the kind of term we should keep in mind when considering the life of the place. People in Kalawao formed social relationships, established households, traded, and cooked in ways that established an overall pattern of coping through consumption, with individuality maintained on the household scale by the specific goods consumed. The store would have formed a central part of the life of the community, as a place where different individuals and social groups could get materials and interact with each other. The consumption of different foods, beverages, and other goods would have formed a way of materializing social life, a crucial element of community formation.

That a community formed in Kalawao is a challenge to the stigma attached to Hansen's disease, and to some of the histories written about the place. The "disease of the soul" (Brody 1984) was interpreted as an antisocial affliction because of a Western imaginary about leprosy that developed during the Medieval period. In the end, though, the disease did not turn people

49 Indeed, statistical comparison of deaths from swine flu (H1N1) virus as opposed to other strains of influenza is extremely difficult, because of the ways these numbers are calculated (http://www.who.int/csr/disease/swineflu/notes/briefing_20091222/en/index.html), but the media frenzy surrounding this disease almost certainly overestimated its danger and fueled at least some unnecessary panic.

into anything other than what they already were, human beings, albeit sick ones. Archaeological evidence suggests that community formation in the Hansen's disease settlement was not mandated by the managers of the institution, but formed out of the habits of the majority. Patterns of daily life were as important as the rules set by Rudolph Meyer, Father Damien, or the Hawaii Board of Health. People's practices, which accumulated on a daily basis to create, maintain, and transform social life in the institution (Bourdieu 1977; Giddens 1984; Pred 1990 all play variations on this theme) were the real governing principles of community structure. The government controlled who was institutionalized, but the people determined how things worked on an everyday scale. This observation is useful when considering groups of displaced people in the contemporary world, such as those escaping natural disasters, oppression, or warfare in refugee camps. Where institutions are set up with little regard for control of daily behavior beyond preventing crimes and maintaining an appearance of benevolence, it is up to the inmate population (*sensu* Goffman 1962) to create a community within such a situation. In many cases, the habits and dispositions of the people living in an institution will ultimately determine its form, at least where everyday life is concerned. While the state has the power to make rules, the community has the power to make the place.

Future Archaeologies of the Recent Past in Kalawao and Beyond

This study is not the final word on the archaeology of the recent past in Kalawao. Archaeology is only beginning to shed light on the patterns of daily life for individuals diagnosed with Hansen's disease, exiled, and quarantined at Kalawao between 1866 and 1900. Additional household archaeology could clarify patterns of household exchange and economics, demography, and possibly identities. Areal excavations for areas that have already been tested, further testing of unexcavated areas, and wide-scale geophysical prospecting could provide valuable information about subsurface deposits in Kalawao on a more widespread scale than the limited testing program carried out for this project. In addition, further surface survey to the north and west of the ARPK survey area would expand upon the current documentation of the landscape for Kalawao.

Archaeology of the Recent Past at Kalawao has revealed a great deal about the landscapes and houses inhabited by the first Hansen's disease exiles quarantined on the north shore of Molokaʻi from 1866 through the early-20th century. We are now beginning to understand the extent to which traditional Hawaiian patterns of living structured the material life of the settlement during the Hansen's disease period, even after a century of upheaval and transformation in Hawaiian society. The richness and variability of material culture filtering into the settlement is greater than the written record would suggest, and further archival research may shed light onto the avenues, both legitimate and illicit, through which these materials reached Kalawao's exiles. It is hoped that the discoveries made by this project will be incorporated into the long-term management and interpretation of the contemporary landscape at Kalawao. Kalawao is a powerful place, and archaeological remains are a powerful testament to the struggles and dignity of the people exiled to this *ahupuaʻa* over a period of about 35 years. Future interpretive projects, possibly including a small museum exhibit and interpretive trail, may be carried out in close consultation with Kalaupapa's contemporary communities. By studying the ways in which societies reacted to Hansen's disease (i.e. institutional control or

other mechanisms; see Roberts et al., eds. 2002) across time and space, and trying to understand the ways in which people with Hansen's disease dealt with their social situation (resistance, complicity, or the creation of new social organizations such as guilds; see Tabuteau, ed. 2000), we can gain a valuable perspective on the lives of stigmatized individuals in our own society. Being directly confronted with the material reality of places such as Kalawao is one of the most powerful ways for contemporary people to understand these phenomena. These perspectives can have critical impacts on public policy and social relations in a society that is increasingly forced to face the ambiguities and contradictions that permeate the modern world, as manifested in our continued reliance upon the total institution (Goffman 1962) to remove and keep separate those who "don't belong".

Beyond continuing local research in Kalawao, this study suggests the potential for several growing fields within historical archaeology. Expanding the scope of historical archaeology in Oceania, this study provides a glimpse into the possibilities for archaeological research of longer-term colonial entanglements, focusing on the late Hawaiian Kingdom through the period immediately following the annexation of Hawaii by the United States. More research on this period could provide valuable insights into the role that annexation played in the daily lives of Hawaiians, with major implications for the ways that colonial subjects think about the nation-states to which they belong. In addition, the project is framed within a growing frontier in the archaeology of institutions, focusing on a modern medical institution. Studying the spaces and objects associated with daily life in such places is a useful way of going beyond biological afflictions and medical technologies to think about the social lives of hospitals, places of quarantine and places of healing. This work is relevant to the larger discipline of archaeology as a case study of an institution "in between", a liminal community in the modern world. The story of Kalawao is just one local story, but one with certain patterns that have much broader reverberations and echoes across history and into the present day. Future research should clarify some of the patterns suggested in this study, while further expanding the depth and breadth of this line of inquiry, which ultimately contributes to the growth of historical anthropology as a whole.

References Cited

Abbe, C.
1898 *A General Report on the Physiography of Maryland.* Ph. D. Dissertation, Johns Hopkins University.

Alberione dos Reis, Jose.
2005. What Conditions of Existence Sustain a Tension Found in the Use of Written and Material Documents in Archaeology? In *Global Archaeological Theory: Contextual Voices and Contemporary Thoughts*, edited by P. P. Funari, A. Zarankin and E. Stovel. New York: Kluwer Academic/Plenum Publishers.

Akeli, S.
2007 *Leprosy in Samoa 1890 to 1922: Race, Colonial Politics, and Disempowerment.* M.A. Thesis, University of Canterbury.

Allen, H., D. Johns, C. Phillips, K. Day, T. O'Brien and N. Mutunga
2002 Wahi Ngaro (The Lost Portion): Strengthening Relationships Between People and Wetlands in North Taranaki, New Zealand. *World Archaeology* 34(2):315-329.

Allen, J.
1973 The Archaeology of Nineteenth-Century British Imperialism: An Australian Case Study. *World Archaeology* 5(1):44-60.

Allen, J. and R. C. Green
1972 Mendana 1595 and the Fate of the Lost 'Almiranta': An Archaeological Investigation. *Journal of Pacific History* 7:73-91.

Anderson, A.
2002 A Fragile Plenty: Pre-European Maori and the New Zealand Environment. In *Environmental Histories of New Zealand*, edited by E. Pawson and T. Brooking, pp. 19-34. Oxford University Press, Auckland.

Anderson, C.
2003 The politics of convict space: Indian penal settlements and the Andaman Islands. In *Isolation: Places and Practices of Exclusion*, edited by C. Strange and A. Bashford, pp. 40-55. Routledge, London.

Anderson, P.-K. B.
2001 *Houses of the Kama'aina: Historical Anthropology in a Rural Hawaiian Valley.* Ph. D. Dissertation, University of California, Berkeley.

Andren, A. 1998.
Between Artifacts and Texts: Historical Archaeology in Global Perspective. New York: Plenum Press.

Appadurai, A. (editor)
1986 *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge University Press, New York.

Armstrong, D. and E. M. Armstrong
1991 *The Great American Medicine Show: Being an Illustrated History of Hucksters, Healers, Health Evangelists, and Heroes from Plymouth Rock to the Present*. Prentice Hall, New York.

Arnold, R.
1994 *New Zealand's Burning: The Settler's World in the Mid 1880s*. Victoria University Press, Wellington.

Aultman, J., K. Grillo, N. Bon-Harper and J. Galle
2008 DAACS Cataloging Manual: Ceramics. vol. 2010. Thomas Jefferson Foundation. Electronic Resource: http://www.daacs.org/aboutDatabase/pdf/cataloging/Ceramics.pdf (Last Accessed 8 March 2010).

Barrera, W. and P. V. Kirch
1973 Basaltic-glass artifacts from Hawaii: Their dating and prehistoric uses. *Journal of the Polynesian Society* 82:176-187.

Barrère, D. B.
1970 An Historical Sketch of Makaha Valley. In *Makaha Valley Historical Project Interim Report No. 2*, edited by R. C. Green, pp. 3-14. Pacific Anthropological Records No. 10. Department of Anthropology, B.P. Bishop Museum Honolulu.

Barthélémy, F. and M. Martin
2006 Analyse spatiale du pouvoir de vote : application au cas de l'intercommunalité dans le département du Val d'Oise. IDEAS Economic Research website, http://ideas.repec.org/p/ema/worpap/2006-17.html

Barton, C. M., J. Bernabeu, J. E. Aura, O. Garcia, S. Schmich and L. Molina
2004 Long-Term Socioecology and Contingent Landscapes. *Journal of Archaeological Method and Theory* 11(3):253-295.

Bashford, A.
2003 Cultures of confinement: tuberculosis, isolation and the sanatorium. In *Isolation: Places and Practices of Exclusion*, edited by C. Strange and A. Bashford, pp. 133-149. Routledge, London.

Bashford, A. and C. Strange
2003 Isolation and exclusion in the modern world: an introductory essay. In *Isolation: Places and Practices of Exclusion*, edited by C. Strange and A. Bashford, pp. 1-19. Routledge, London.

Baugher, S.
2001 Visible Charity: The Archaeology, Material Culture, and Landscape Design of New York City's Municipal Almshouse Complex, 1736-1797. *International Journal of Historical Archaeology* 5(2):175-202.

Britton, W. J. and D. N. J. Lockwood
2004 Leprosy. *Lancet* 363:1209-1219.

Bayman, J. M.
2003 Stone Adze Economies in Post-Contact Hawai'i. In *Stone Tool Traditions in the Contact Era*, edited by C. R. Cobb, pp. 94-108. University of Alabama Press, Tuscaloosa.

2009 Technological Change and the Archaeology of Emergent Colonialism in the Kingdom of Hawai‘i. *International Journal of Historical Archaeology* 13:127-157.

Beaglehole, J. C.
1966 *The Exploration of the Pacific*. Third Edition ed. Stanford University Press, Palo Alto.

Beaudry, M. C.
1988 Introduction. In *Documentary Archaeology in the New World*, edited by M. C. Beaudry, pp. 1-3. Cambridge University Press, Cambridge.

1998 Farm Journal: First Person, Four Voices. *Historical Archaeology* 32(1):20-33.

Beaudry, M. C., J. Long, H. M. Miller, F. D. Neiman and G. W. Stone
1988 A vessel typology for early Chesapeake ceramics. In *Documentary Archaeology in the New World*, edited by M. C. Beaudry, pp. 51-67. Cambridge University Press, Cambridge.

Beck, W. and M. Somerville
2005 Conversations between disciplines: historical archaeology and oral history at Yarrawarra. *World Archaeology* 37(3):468-483.

Bedford, S.
2004 Tenacity of the traditional: the first hundred years of Maori-European settler contact on the Hauraki Plains, Aotearoa/New Zealand. In *The Archaeology of Contact in Settler Societies*, edited by T. Murray, pp. 144-156. Cambridge University Press.

Bickler, S., B. Baquie and R. Clough
2004 Excavations at Britomart, Auckland. *Archaeology in New Zealand* 47(2):136-152.

Blau, S. and V. Yagodin
2005 Osteoarchaeological Evidence for Leprosy from Western Central Asia. *American Journal of Physical Anthropology* 126:150-158.

Blondiaux, J., J. Dürr, L. Khouchaf and L. E. Eisenberg
2002 Microscopic study and X-ray analysis of two 5th century cases of leprosy: palaeoepidemiological inferences. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological, and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 105-110. Archaeopress, Oxford.

Boegehold, A. L., et al.
1995 The Lawcourts at Athens Sites, Buildings, Equipment, Procedure, and Testimonia. *The Athenian Agora* 28.

Boomert, A. and A. J. Bright
2007 Island Archaeology: In Search of a New Horizon. *Island Studies Journal* 2(1):3-26.

Bourdieu, P.
1973 The Berber House. In *Rules and Meanings*, edited by M. Douglas, pp. 98-110. Penguin, Harmondsworth.

1977 *Outline of a Theory of Practice*. Translated by R. Nice. Cambridge University Press, Cambridge.

Bowen, A.
2006 Excavations at a Chinese Fish Curing Site near Port Albert, Victoria. *Archaeology in Oceania* 41:37-41.

Bowen, J.
1975 Probate Inventories: An Evaluation from the Perspective of Zooarchaeology and Agricultural History at Mott Farm. *Historical Archaeology* 9:11-25.

Brody, S. N.
1984 *The Disease of the Soul: Leprosy in Medieval Literature*. Cornell University Press, Ithaca, New York.

Braudel, F.
1980 *On History*. Translated by S. Matthews. University of Chicago Press, Chicago.

Brigham, W. T.
1908 *The Ancient Hawaiian House*. Memoirs of the Bernice Pauahi Bishop Museum of Polynesian Ethnology and Natural History Vol. II, No. 3. Bishop Museum Press, Honolulu.

Brody, S. N.
1984 *The Disease of the Soul: Leprosy in Medieval Literature*. Cornell University Press, Ithaca, New York.

Broecx, Corneille.
1860 *Miscellanées pour Servir à l'Historie de la Lèpre à Anvers*. Anvers, Belgium: Imprimerie J.-E. Buschmann.

Broodbank, C.
2002 *An Island Archaeology of the Early Cyclades*. Cambridge University Press, Cambridge.

Brooks, A. M.
2005 *An Archaeological Guide to British Ceramics in Australia, 1788-1901*. Australasian Society for Historical Archaeology, Sydney.

2003 Crossing Offa's Dyke: British Ideologies, Welsh Society and Late 18th- and 19th-Century Ceramics in Wales. In *Archaeologies of the British*, edited by S. Lawrence, pp. 113-137. Routledge, London.

Brown, C. L. and C. E. Gustafson
1979 *A Key to Postcranial Skeletal Remains of Cattle/Bison, Elk, and Horse* Reports of Investigations No. 57. Laboratory of Anthropology, Washington State University, Pullman.

Buchli, Victor, and Gavin Lucas.
2001a The absent present: archaeologies of the contemporary past. In *Archaeologies of the Contemporary Past*, edited by V. Buchli and G. Lucas. London: Routledge.

2001b The archaeology of alienation: a late-twentieth century British council house. In *Archaeologies of the Contemporary Past*, edited by V. Buchli and G. Lucas. London: Routledge.

Buchli, Victor, and Gavin Lucas, eds.
2001 *Archaeologies of the Contemporary Past*. London: Routledge.

Buckingham, J.
2002 *Leprosy in Colonial South India: Medicine and Confinement*. Palgrave, Basingstoke.

Bullock, W.
1989 Mycobacterium Leprae (Leprosy). In *Principles and Practices of Infectious Diseases*, edited by G. L. Mandell, J. E. Bennett and R. Dolin, pp. 1406-1413. 3rd ed. Churchill Livingstone Publishers, New York.

Burley, D. V.
2003 Toward the Historical Archaeology of Levuka, a South Pacific Port of Call. *International Journal of Historical Archaeology* 7(4):243-265.

Burns, S. L.
2003 From 'leper villages' to leprosaria: public health, nationalism and the culture of exclusion in Japan. In *Isolation: Places and Practices of Exclusion*, edited by C. Strange and A. Bashford, pp. 104-118. Routledge, London.

Burton, J. F.
1996 *Three Farewells to Manzanar: The Archaeology of Manzanar National Historic Site, California*. National Park Service Western Archaeological and Conservation Center, Tuscon.

Canuto, M. A. and J. Yaeger (editors)
2000 *The Archaeology of Communities: A New World Perspective*. Routledge, London.

Carper, R. L., H. T. McGrath, P. C. Cloyd, L. W. Greene, C. H. Blee and G. F. Somers
1985 *Historic Structure Report, St. Philomena Catholic Church (Father Damien's Church), Kalaupapa National Historical Park, Moloka'i, Hawaii*. Branch of Planning Alaska/Pacific Northwest/Western Team, Department of the Interior, National Park Service, Denver.

Casella, E. C.
1999 *Dangerous Girls and Gentle Ladies: Archaeology and Nineteenth Century Australian Female Convicts*. Ph. D. Dissertation, University of California, Berkeley.

2001 To Watch or Restrain: Female Convict Prisons in 19th-Century Tasmania. *International Journal of Historical Archaeology* 5(1):45-72.

2005 Prisoner of His Majesty: postcoloniality and the archaeology of British penal transportation. *World Archaeology* 37(3):453-467.

2007 *The Archaeology of Institutional Confinement*. University of Florida Press, Gainesville.

Casella, E. C. and C. Fredricksen
2004 Legacy of the 'fatal shore': The heritage and archaeology of confinement in post-colonial Australia. *Journal of Social Archaeology* 4(1):99-125.

Chatan, R.
2003 The Governor's vale levu: Architecture and Hybridity at Nasova House, Levuka, Fiji Islands. *International Journal of Historical Archaeology* 7(4):267-292.

Chatan, R., M. Purser and D. V. Burley
2003 Introductory Remarks. *International Journal of Historical Archaeology* 7(4):239-241.

Clifford, E.
1889 *Father Damien: A Journey from Cashmere to his Home in Hawaii*. MacMillan, London.

Cookson, W. D.
1843 The Malandry Hospital for Lepers. In *A Selection of Papers Relative to the County of Lincoln*, edited by LincolnshireTopographicalSociety. Lincoln: W. and B. Brooke.

Conte, E. and P. V. Kirch (editors)
2004 *Archaeological Investigations in the Mangareva Islands (Gambier Archipelago), French Polynesia*. University of California, Berkeley Archaeological Research Facility, Berkeley.

Conte, I. C. and F. C. Romero
2008 Microwear Analysis of Retouched Glass Fragments from Fortlet Miñana, Azul, Argentina, 1860–1863. *International Journal of Historical Archaeology* 12(3): 248-262.

Cordy, R.
2007 Reconstructing Hawaiian Population at European Contact. In *The Growth and Collapse of Pacific Island Societies: Archaeological and Demographic Perspectives*, edited by P. V. Kirch and J.-L. Rallu. University of Hawaii Press, Honolulu.

Cotter, J. L., R. W. Moss, B. C. Gill and J. Kim
1988 *The Walnut Street Prison Workshop: A Test Study in Historical Archaeology Based on Field Investigations in the Garden Area of the Athenaeum of Philadelphia*. The Athenaeum of Philadelphia.

Coutts, P. J. F.
1976 An Approach to the Investigation of Colonial Settlement Patterns: Whaling in Southern New Zealand. *World Archaeology* 7(3):291-305.

Crane-Kramer, G. M. M.
2002 Was there Medieval diagnostic confusion between leprosy and syphilis? An examination of the skeletal evidence. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 111-119. Archaeopress, Oxford.

Cresswell, T.
2004 *Place: a short introduction*. Blackwell, Oxford.

Crosby, A.
1986 *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*. Cambridge University Press, Cambridge.

Crosby, A.
2002 Archaeology and *vanua* development in Fiji. *World Archaeology* 34(2):363-378.

Crouch, H. E.
2000 *Brother Dutton of Moloka'i*. Damien-Dutton Society for Leprosy Aid, Bellmore, New York.

Crouch, H. E. and S. M. Augustine
1981 *After Damien: Dutton*. Damien-Dutton Society for Leprosy Aid, Bellmore, New York.

Curtis, D. B.
1991 *Historic Pali Trails of Kalaupapa National Historical Park*. National Park Service, United States Dept. of the Interior, Moloka'i.

Daws, G.
1973 *Holy Man: Father Damien of Moloka'i*. Univeristy of Hawaii Press, Honolulu.

1968 *Shoal of Time: A History of the Hawaiian Islands*. University of Hawaii Press, Honolulu.

Deagan, K.
1983 The mestizo minority: archaeological patterns of intermarriage. In *Spanish St. Augustine: The Archaeology of a Colonial Creole Community*, edited by K. Deagan. New York: Academic Press.

1998 Transculturation and Spanish American Ethnogenesis: The Archaeological Legacy of the Quincintenary. In *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, edited by J. G. Cusick, pp. 23-43. vol. Occasional Paper no. 25. Center for Archaeological Investigations, Carbondale.

DeCunzo, L.
1995 Reform, Respite, Ritual: An Archaeology off Institutions. The Magdalen Society of Philadelphia, 1800-1850. *Historical Archaeology* 29(3).

2001 On Reforming the "Fallen" and Beyond: Transforming Continuity at the Magdalen Society of Philadelphia, 1845-1916. *International Journal of Historical Archaeology* 5(1):19-43.

2006 Exploring the Institution: Reform, Confinement, Social Change. In *Historical Archaeology*, edited by M. Hall and S. W. Silliman, pp. 167-189. Blackwell, Oxford.

De Keyzer, W.
2000 L'évolution interne des léproseries à la charnière des XIIe et XIIIe siècles: le cas

de l'évêche de Cambrai. In *Lépreux et sociabilité du Moyen Age aux Temps Modernes*, edited by B. Tabuteau, pp. 13-20. Publications de l'Université de Rouen, Rouen.

De Veuster, P. (editor)
1889 *Life and Letters of Father Damien, The Apostle of the Lepers*. The Catholic Truth Society, London.

Deacon, H.
2003 Patterns of exclusion on Robben Island, 1654-1992. In *Isolation: Places and Practices of Exclusion*, edited by C. Strange and A. Bashford, pp. 153-172. Routledge, London.

Dening, G.
1980 *Islands and Beaches: Discourse on a Silent Land, Marquesas, 1774-1880*. Melbourne University Press, Melbourne.

1988 *History's Anthropology: The Death of William Gooch*. Lanham, MD: University Press of America.

1992 *Mr. Bligh's Bad Language: Passion, Power and Theatre on the Bounty*. Cambridge University Press.

2004 *Beach Crossings: Voyaging Across Times, Cultures, and Self*. University of Pennsylvania Press, Philadelphia.

Dening, G., L. Kame'eleihiwa and A. Anderson
1994 Review Forum: *Anahulu: the anthropology of history in the Kingdom of Hawaii*, with Response by Kirch & Sahlins. *Contemporary Pacific* 6(1):211-224.

Dietler, M.
1998 Consumption, Agency, and Cultural Entanglement: Theoretical Implications of a Mediterranean Colonial Encounter. In *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, edited by J. G. Cusick, pp. 288-315. Occasional Paper no. 25. Center for Archaeological Investigations, Carbondale, Illinois.

Donoghue, H. D., J. Gladykowska-Rzeczycka, A. Marcsik, J. Holton and M. Spigelman
2002 *Mycobacterium leprae* in archaeological samples. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 271-286. Archaeopress, Oxford.

Douglas, M.
1991 Witchcraft and Leprosy: Two Strategies of Exclusion. *Man* 26(4):723-736.

Douglas, M. and B. Isherwood
1996 *The World of Goods: Towards an Anthropology of Consumption*. Routledge, London.

Dovidio, J. F., B. Major and J. Crocker
2000 Stigma: Introduction and Overview. In *The Social Psychology of Stigma*, edited by T. F. Heatherton, R. E. Kleck, M. R. Hebl and J. G. Hull. The Guilford Press, New York.

Dunnell, R. W.
1971 *Systematics in Prehistory*. The Free Press, New York.

Durst, M. and J. M. Nakamura
2005 *Kalawao: Phase II of an Archaeological Inventory Survey of a Portion of Land Within the Ahupua'a of Kalawao, Kalaupapa National Historical Site*. Pacific Island Cluster, National Park Service.

Earle, T. K.
1978 *Economic and Social Organization of a Complex Chiefdom: The Halelea District, Kaua'i, Hawaii* Anthropological Papers No. 63. Museum of Anthropology, University of Michigan, Ann Arbor.

Ebert, D.
2004 Applications of archaeological GIS. *Canadian Journal of Archaeology* 28:319-341.

Edmond, R.
2006 *Leprosy and Empire: A Medical and Cultural History*. Cambridge University Press, Cambridge.

Erskine, N.
1999 Reclaiming the *Bounty*. *Archaeology* 52(3). Electronic Resource: http://www.archaeology.org/9905/etc/bounty.html (Last Accessed February 2008)

Ferguson, L.
1992 *Uncommon Ground: Archaeology and Early African America, 1650-1800*. Smithsonian Institution Press, Washington, D.C.

Field, J. S., P. V. Kirch, K. L. Kawelu and T. N. Ladefoged
2010 Households and Hierarchy: Domestic Modes of Production in Leeward Kohala, Hawai‘i Island. *The Journal of Island and Coastal Archaeology* 5:52-85.

Fike, R. E.
1987 *The Bottle Book: A Comprehensive Guide to Historic, Embossed Medicine Bottles*. The Blackburn Press, Caldwell, New Jersey.

Fitzpatrick, S. M. and J. M. Erlandson
2006 The Archaeology of Islands and Coastlines. *The Journal of Island and Coastal Archaeology* 1(1):1-3.

2007 Highlighting the Significance of Island and Coastal Archaeology. *The Journal of Island and Coastal Archaeology* 2(1):1-3.

Flannery, K. V.
1976 Research Strategy and Formative Mesoamerica. In *The Early Mesoamerican Village*, edited by K. V. Flannery, pp. 1-11. Academic Press, Inc., London.

Flexner, J. L.
2009 Where is Reflexive Map-Making in Archaeological Research? Towards a Place Based Approach. *Archaeological Review from Cambridge* 24(1):7-21.

Flexner, J. L. and C. L. Morgan
under review The Industrious Exiles: An Analysis of Flaked Glass Tools from the Leprosarium at Kalawao, Molokaʻi. In *Hybrid Material Culture: The Archaeology of Syncretism and Ethnogenesis*, edited by J. C. Card. Center for Archaeological Investigations, Carbondale.

Flux, J. E. C. and P. J. Fullagar
1992 World distribution of the Rabbit *Oryctolagus cuniculus* on islands. *Mammal Review* 22(3/4):151-205.

Fontana, Bernard
1965 On the Meaning of Historic Sites Archaeology. *American Antiquity* 31 (1):61-65.

Foucault, M.
1988 *Madness and Civilization: A History of Insanity in the Age of Reason*. Translated by R. Howard. Vintage Books, New York.

1994 *The Birth of the Clinic: An Archaeology of Medical Perception*. Translated by A. M. S. Smith. Vintage Books, New York.

1995 *Discipline & Punish: The Birth of the Prison*. Translated by A. M. S. Smith. Vintage Books, New York.

Franklin, M.
2001 Archaeological Dimensions of Soul Food: Interpreting Race, Culture, and African-American Identity. In *Race and the Archaeology of Identity*, edited by C. E. Orser, pp. 88-107. University of Utah Press, Salt Lake City.

Galipaud, J.C.
2005 Le projet archéologique terrestre 2005. Electronic Resource:

http://www.operationlaperouse2005.com/expe3.htm (Last Accessed February 2008).

Galipaud, J.-C. and A. De Biran
2006 *Naufrages a Vanikoro. Les Rescapés de L'Expédtion Lapérouse à Païou, Nouméa*. IRD Editions, Montpellier.

Garland, A. W. H.
1995 An Archaeological Predictive Model for the Mission Houses Site in Honolulu and its Value. *Hawaiian Archaeology* 4:34-44.

Garman, J. C.
2005 *Detention Castles of Stone and Steel*. University of Tennessee Press, Knoxville.

Garman, J. C. and P. A. Russo
1999 "A Disregard of Every Sentiment of Humanity": The Town Farm and Class Realignment. *Historical Archaeology* 33(1):118-135.

Gaudet, M.
2004 *Carville: Remembering Leprosy in America*. University of Mississippi Press, Jackson.

Gibb, J. G. and A. M. Beisaw (editors)
2009 *The Archaeology of Institutional Life*. University of Alabama Press, Tuscaloosa.

Gibbs, M. and R. Harrison
2008 Dynamics of dispersion revisited? Archaeological context and the study of aboriginal knapped glass artefacts in Australia. *Australian Archaeology* 67:61-68.

Giddens, A.
1984 *The Constitution of Society: Outline of the Theory of Structuration*. University of California Press, Berkeley.

Gilbert, P. K.
2004 *Mapping the Victorian Social Body*. State University of New York Press, Albany.

Gilchrist, R.
1994 *Gender and Material Culture: The archaeology of religious women*. Routledge, London.

1999 *Gender and Archaeology: Contesting the Past*. Routledge, London.

Godden, G. A.
1991 *Encyclopaedia of British Pottery and Porcelain Marks*. Barrie & Jenkins, London.

Goffman, E.
1962 *Asylums: Essays on the Social Situation of Mental Patients and Other Inmates*. Aldine Publishing Company, Chicago.

1963 *Stigma: Notes on the Management of a Spoiled Identity*. Prentice Hall, Englewood Cliffs, N.J.

Goldman, J.
1955 Coins for Use by Patients with Hansen's Disease. *Journal of the History of Medicine* 10(4):430-431.

Goodwin, C. M.
1994 *A Kalaupapa Sweet Potato Farm: Report on Archaeological Data Recovery Operations, Kalaupapa Airport Improvement Project, Kalaupapa, Moloka'i, Hawai'i*. 2 vols. International Archaeological Research Institute, Inc., Honolulu.

Gorman, A.
2007 La Terre et l'Espace: Rockets, Prisons, Protests and Heritage in Australia and French Guiana. *Archaeologies* 3(2):153-168.

Gosden, C.
2004 *Archaeology and Colonialism: Cultural Contact from 5000 BC to the Present*. Cambridge University Press, Cambridge.

Gosden, C. and J. Webb
1994 The Creation of a Papua New Guinean Landscape: Archaeological and Geomorphological Evidence. *Journal of Field Archaeology* 21(1):29-51.

Grant, A.
1982 The Use of Tooth Wear as a Guide to the Age of Domestic Ungulates. In *Ageing and Sexing Animal Bones from Archaeological Sites*, edited by B. Wilson, C. Grigson and S. Payne, pp. 91-108. B.A.R., Oxford.

Graves, M. W. and T. N. Ladefoged
2002 An Introduction to Pacific Landscapes. In *Pacific Landscapes: Archaeological Approaches*, edited by T. N. Ladefoged and M. W. Graves, pp. 1-10. Bearsville Press, for the Easter Island Foundation, Los Osos, California.

Graves, M. W., B. V. O'Connor and T. N. Ladefoged
2002 Tracking Changes in Community-Scaled Organization in Kohala and Kona, Hawai'i Island. In *Pacific Landscapes: Archaeological Approaches*, edited by T. N. Ladefoged and M. W. Graves, pp. 231-254. Bearsville Press, for the Easter Island Foundation, Los Osos, California.

Green, R. C.
1973 The Conquest of the Conquistadors. *World Archaeology* 5(1):14-31.

1980 *Makaha Before 1880 A.D.* Pacific Anthropological Records 31. Department of Anthropology, B.P. Bishop Museum, Honolulu.

Green, R. C. (editor)
1969 *Makaha Valley historical project: Interim report no. 1*. Pacific Anthropological Records No. 4. Department of Anthropology, B.P. Bishop Museum, Honolulu.

Greene, L. W.
1985 *Exile in Paradise: The isolation of Hawai'i's leprosy victims and development of Kalaupapa Settlement, 1865 to present*. Branch of Planning Alaska/Pacific Northwest/Western Team, Department of the Interior, National Park Service, Denver.

Greenwood, R.
1996 *Down By the Station: Los Angeles Chinatown 1880-1933*. Institute of Archaeology, UCLA, Los Angeles.

Guthrie-Smith, H.
1999 (1921) *Tutira: The Story of a New Zealand Sheep Station*. Fourth Edition ed. University of Washington Press, Seattle.

Haas, C. J., A. Zink, U. Szeimies and A. G. Nerlich
2002 Molecular evidence of *Mycobacterium leprae* in historic bone samples from South Germany. In *The Past and Present of Leprosy: Archaeological, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 287-292. Archaeopress, Oxford.

Hägerstrand, T.
1979 Space, time and human conditions. In *Dynamic Allocation of Urban Space*, edited by A. Karlqvist, L. Lundqvist and F. Snickars, pp. 3-12. Saxon House, Farnborough.

Hahn III, T. H. G. and S. Wurtzburg
1991 *Hard Labor: History and Archaeology at the Old Lousiana State Penitentiary, Baton Rouge, Louisiana*. Coastal Environments, Baton Rouge.

Hall, M.
2000 *Archaeology and the Modern World: Colonial Transcripts in South Africa and the Chesapeake*. Routledge, New York.

Hall, M. and S. W. Silliman
2006 Introduction: Archaeology of the Modern World. In *Historical Archaeology*, edited by M. Hall and S. W. Silliman, pp. 1-19. Blackwell, Oxford.

Hamel, J.
2002 Historic sites are too big. *Archaeology in New Zealand* 45(1):33-46.

Hanley, M. L. and O. A. Bushnell
1980 *A Song of Pilgrimage and Exile: The Life and Spirit of Mother Marianne of Moloka'i*. Franciscan Herald Press, Chicago.

Harrington, J. C.
1962 *Search for the Cittie of Raleigh: Archaeological Excavations at Fort Raleigh National Historical Site, North Carolina*. National Park Service, Department of the Interior, Washington D.C.

Harris, E.
1989 *Principles of Archaeological Stratigraphy*. Second ed. Academic Press, London.

Harrison, R.
2002 Archaeology and the colonial encounter: Kimberley spearpoints, cultural identity and masculinity in the north of Australia. *Journal of Social Archaeology* 2(3):352-377.

2004 Contact Archaeology and the landscapes of pastoralism in the north-west of Australia. In *The Archaeology of Contact in Settler Societies*, edited by T. Murray, pp. 109-143. Cambridge University Press, Cambridge.

2006 An Artefact of Colonial Desire? Kimberley Points and the Technologies of Enchantment. *Current Anthropology* 47(1):63-88.

Heizer, R. F. and J. A. Graham (editors)
1967 *A Guide to Field Methods in Archaeology: Approaches to the Anthropology of the Dead*. The National Press, Palo Alto, CA.

Hendon, J. A.
1996 Archaeological Approaches to the Organization of Domestic Labor: Household Practice and Domestic Relations. *Annual Review of Anthropology* 25:45-61.

Hicks, D. and M. C. Beaudry
2006 Introduction: the place of historical archaeology. In *The Cambridge Companion to Historical Archaeology*, edited by D. Hicks and M. C. Beaudry, pp. 1-9. Cambridge University Press, Cambridge.

Hillson, S.
1986 *Teeth*. Cambridge Manuals in Archaeology. Cambridge University Press, Cambridge.

Hiroa, T. R.
1957 *Arts and Crafts of Hawaii*. Bishop Museum Press, Honolulu.

Hodder, I.
1997 ‘Always momentary, fluid, and flexible’: towards a reflexive excavation methodology. *Antiquity* 71:691-700.

Holm, L.
2005 *The Archaeology and the Aina of Mahamenui and Manawainui, Kahikinui, Maui Island.* Ph. D. Dissertation, University of California, Berkeley.

Hommon, R. J.
2008 Watershed: Testing the Limited Land Hypothesis. In *Research Designs for Hawaiian Archaeology: Agriculture, Astronomy, and Architecture*, edited by T. S. Dye, pp. 1-92. Society for Hawaiian Archaeology, Honolulu.

Howard, P.
2007 *Archaeological Surveying and Mapping: Recording and Depicting the Landscape*. Routledge, London.

Huelsbeck, D. R.
1991 Faunal Remains and Consumer Behavior: What Is Being Measured? *Historical Archaeology* 25(2):62-76.

1989 Zooarchaeological Measures Revisited. *Historical Archaeology* 23(1):113-117.

Inglis, K. A.
2004 *"A Land Set Apart": Disease, Displacement, & Death at Makanalua, Moloka'i.* Ph. D. Dissertation, University of Hawaii.

Ingold, T.
1993 The Temporality of the Landscape. *World Archaeology* 25(2):152-174.

2000 *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. Routledge, London.

Jacobson, R. R. and J. L. Krahenbuhl
1999 Leprosy. *Lancet* 353:655-660.

Jankrift, K. P.
2000 Viellir parmi les morts "vivants". La léproserie, hospice pour habitants non lépreux? In *Lépreux et sociabilité du Moyen Age aux Temps Modernes*, edited by B. Tabuteau, pp. 31-38. Publications de l'Université de Rouen, Rouen.

Jeanne, D.
2000 Le groupe des lépreux à Saint-Lazare de Falaise aux XIVe et XVe siècles. In *Lépreux et sociabilité du Moyen Age aux Temps Modernes*, edited by B. Tabuteau, pp. 39-62. Publications de l'Université de Rouen, Rouen.

Johnson-Hanks, J.
2008 Demographic Transitions and Modernity. *Annual Review of Anthropology* 37:301-315.

Jones, R.
1985 Ordering the Landscape. In *Seeing the First Australians*, edited by I. Donaldson and T. Donaldson, pp. 181-209. George Allen & Unwin, Sydney.

1969 Fire-Stick Farming. *Australian Natural History* 16(7):224-228.

Kamakau, S. M.
1976 *The Works of the People of Old: Na Hana a ka Po'e Kahiko*. Translated by M. K. Pukui. Bishop Museum Press, Honolulu.

Kent, N. J.
1993 *Hawaii: Islands Under the Influence*. University of Hawaii Press, Honolulu.

King, J. A.
2006 Household archaeology, identities and biographies. In *The Cambridge Companion to Historical Archaeology*, edited by D. Hicks and M. C. Beaudry, pp. 293-313. Cambridge University Press, Cambridge.

Kirch, P. V.
1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. University of Hawaii Press, Honolulu.

1992 *The Archaeology of History*. Volume 2 of Anahulu: The Anthropology of History in the Kingdom of Hawai'i. University of Chicago Press, Chicago.

1994 *The Wet and the Dry: Irrigation and Agricultural Intensification in Polynesia*. University of Chicago Press, Chicago.

1996 Tikopia social space revisited. In *Oceanic Culture History: Essays in Honour of Roger Green*, edited by J. Davidson, G. Irwin, F. Leach, A. Pawley and D. Brown, pp. 257-274. New Zealand Journal of Archaeology Special Publication, Dunedin.

1997 Microcosmic Histories: Island Perspectives on "Global" Change. *American Anthropologist* 99(1):30-42.

2000 *On the Road of the Winds: An Archaeological History of the Pacific Islands before European Contact*. University of California Press, Berkeley.

2005 From Chiefdom to Archaic State: Social Evolution in Hawaii. Presented at the *Grace Elizabeth Shallit Memorial Lecture Series*, Department of Anthropology, Brigham

Young University.

2007b "Like Shoals of Fish": Archaeology and Population in Pre-Contact Hawai'i. In *The Growth and Collapse of Pacific Island Societies: Archaeological and Demographic Approaches*, edited by P. V. Kirch and J.-L. Rallu, pp. 52-69. University of Hawaii Press, Honolulu.

2007a Paleodemography in Kahikinui, Maui: An Archaeological Approach. In *The Growth and Collapse of Pacific Island Societies: Archaeological and Demographic Approaches*, edited by P. V. Kirch and J.-L. Rallu, pp. 90-107. University of Hawaii Press, Honolulu.

Kirch, P. V. and M. D. McCoy
2007 Reconfiguring the Hawaiian Cultural Sequence: Results of Re-dating the Hālawa Dune Site (MO-A1-3), Moloka‘i Island. *Journal of the Polynesian Society* 116(4):385-406.

Kirch, P. V., S. J. O'Day, J. Coil, M. Morgenstein, K. L. Kawelu and S. Millerstrom
2003 The Kaupikiawa Rockshelter, Kalaupapa Peninsula, Moloka‘i: New Investigations and Reinterpretation of its Significance for Hawaiian Prehistory. *People and Culture in Oceania* 19:1-27.

Kirch, P. V. (editor)
1997 *Nā Mea o Kahikinui: Studies in the Archaeology of Kahikinui, Maui*. Archaeological Research Facility, Berkeley.

2002 *From the 'Cliffs of Keolewa' to the 'Sea of Papaloa': An Archaeological Reconnaissance of Portions of the Kalaupapa National Historical Park, Moloka‘i, Hawaiian Islands*. Archaeological Research Facility, University of California, Berkeley, Berkeley.

Kirch, P. V. and M. Kelly (editors)
1975 *Prehistory and Ecology of a Windward Hawaiian Valley: Halawa Valley, Moloka‘i*. Pacific Anthropological Records No. 24. B.P. Bishop Museum, Honolulu.

Kirch, P. V. and J.-L. Rallu (editors)
2007 *The Growth and Collapse of Pacific Island Societies: Archaeological and Demographic Perspectives*. University of Hawaii Press, Honolulu.

Knowles, A. K. (editor)
2002 *Past Time, Past Place: GIS for History*. ESRI Press, Redlands, California.

Kolb, M. J.
1992 Diachronic Design Changes in *Heiau* Temple Architecture on the Island of Maui, Hawai'i. *Asian Perspectives* 31(1):9-37.

2006 The Origins of Monumental Architecture in Ancient Hawai‘i. *Current Anthropology* 47(4):657-665.

Kolb, M. J. and B. Dixon
2002 Landscapes of War: Rules and Conventions of Conflict in Ancient Hawai'i (and Elsewhere). *American Antiquity* 67(3):514-534.

Korn, A. L. (editor)
1976 *News from Molokaʻi: Letters between Peter Kaeo & Queen Emma 1873-1876*. University of Hawaii Press, Honolulu.

Kowal, A. C.
2007 Autonomous, but Shackled: A Community Model of Slave Life and its Archaeological Testing. *The African Diaspora Archaeology Network Newsletter*.

Kuykendall, R. S.
1965 *The Hawaiian Kingdom* Volume 1: 1778-1854 Foundation and Transformation. University of Hawaii Press, Honolulu.

Kvamme, K. L.
1999 Recent directions and developments in geographic information systems. *Journal of Archaeological Research* 7:153-201.

L'Hour, M. and E. Veyrat
2005 Le projet archéologique sous-marine 2005. Expedition Vanikoro website, http://www.operationlaperouse2005.com/expe4.htm

Ladefoged, T. N.
1991 Hawaiian architectural transformations during the early historic era. *Asian Perspectives* 30(1):57-69.

1995 GIS-Based Image Enhancement of Conductivity and Magnetic Susceptibility Data from Ureturituri Pa and Fort Resolution, New Zealand. *American Antiquity* 60(3):471-481.

1998 Spatial similarities and change in Hawaiian architecture: the expression of ritual offering and kapu in luakini heiau, residential complexes, and houses. *Asian Perspectives* 37(1):59-74.

Ladefoged, T. N. and M. Graves
2006 The Formation of Hawaiian Territories. In *Archaeology of Oceania: Australia and the Pacific Islands*, edited by I. Lilley, pp. 259-283. Blackwell, Oxford.

Ladefoged, T. N., M. W. Graves and M. D. McCoy
2003 Archaeological evidence for agricultural development in Kohala, island of Hawaii. *Journal of Archaeological Science* 30:923-940.

Ladefoged, T. N., P. V. Kirch, S. M. Gon, O. A. Chadwick, A. S. Hartshorn and P. M. Vitousek
2009 Opportunities and constraints for intensive agriculture in the Hawaiian archipelago prior to European contact. *Journal of Archaeological Science* 36:2374-2383.

Ladefoged, T. N., G. F. Somers and M. M. Lane-Hamasaki
1987 *A Settlement Pattern Analysis of a Portion of Hawaii Volcanoes National Park*. Western Archeological and Conservation Center, Tuscon, Arizona.

Landon, D. B.
1996 Feeding Colonial Boston: A Zooarchaeological Study. *Historical Archaeology* 30(1).

Lape, P. V.
2003 A highway and a crossroads: Island Southeast Asia and culture contact archaeology. *Archaeology in Oceania* 38:102-109.

Lee, F. and J. R. Magilton
1989 The Cemetery of the Hospital of St James and St Mary Magdalene, Chichester - A Case Study. *World Archaeology* 21(2):273-282.

Leone, M.
1995 A Historical Archaeology of Capitalism. *American Anthropologist* 97(2):251-268.

Leone, M. P. and P. B. Potter
1988 Introduction: Issues in Historical Archaeology. In *The Recovery of Meaning: Historical Archaeology in the Eastern United States*, edited by M. P. Leone and P. B. Potter, pp. 1-22. Smithsonian Institution, Washington, D.C.

Lewis, M. E.
2002 Infant and childhood leprosy: present and past. In *The Past and Present of Leprosy: Archaeological, historical, palaeoepidemiological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 163-170. Archaeopress, Oxford.

Lightfoot, K. G.
1995 Culture Contact Studies: Redefining the Relationship between Prehistoric and Historical Archaeology. *American Antiquity* 60(2):199-217.

2005 *Indians, Missionaries, and Merchants: The Legacy of Colonial Encounters on the California Frontiers*. University of California Press, Berkeley.

Lightfoot, K. G. and A. Martinez
1997 Interethnic Relationships in the Native Alaskan Neighborhood: Consumption Practices, Cultural Innovations, and the Construction of Household Identities. In *The Native Alaskan Village: a Multiethnic Community at Colony Ross. Volume 2 of The Archaeology and Ethnohistory of Fort Ross, California.*, edited by K. G. Lightfoot, A. M. Schiff and T. A. Wake, pp. 1-16. University of California Archaeological Research Facility, Berkeley.

Lightfoot, K. G., A. Martinez and A. M. Schiff
1998 Daily Practice and Material Culture in Pluralistic Social Settings: An Archaeological Study of Culture Change and Persistence from Fort Ross, California. *American Antiquity* 63(2):199-222.

Lightfoot, K. G., T. A. Wake and A. M. Schiff
1991 *The Archaeology and Ethonhistory of Fort Ross, California. Volume 1, Introduction*. University of California Archaeological Research Facility, Berkeley.

Lindauer, O.
1997 *Not for School, But for Life: Lessons from the Historical Archaeology of the Phoenix Indian School*. Arizona State University Department of Anthropology, Tempe.

2009 Individual Struggles and Institutional Goals: Small Voices from the Phoenix Indian School Track Site. In *The Archaeology of Institutional Life*, edited by J. G. Gibb and A. M. Beisaw, pp. 86-102. University of Alabama Press, Tuscaloosa.

Litts, E.
1988 *The Collector's Encyclopedia of Geisha Girl Porcelain*. Collector Books, Padukah, KY.

Lucas, G.
2006 Historical archaeology and time. In *The Cambridge Companion to Historical Archaeology*, edited by D. Hicks and M. C. Beaudry, pp. 34-47. Cambridge University Press, Cambridge.

2005 *The Archaeology of Time*. Routledge, London.

Lyman, R. L.
1994 *Vertebrate Taphonomy*. Cambridge Manuals in Archaeology. Cambridge University Press, Cambridge.

1987 On Zoological Measures of Socioeconomic Position and Cost-Efficient Meat Purchases. *Historical Archaeology* 21(1):58-66.

Macdonald, G. A., A. T. Abbott and F. L. Peterson
1983 *Volcanoes in the Sea: The Geology of Hawaii*. University of Hawaii Press,

Honolulu.

Magilton, J. R.
2000 The hospital of St James and St Mary Magdalene, Chichester, and other leper houses. In *Lépreux et sociabilité du Moyen Age aux Temps Modernes*, edited by B. Tabuteau, pp. 81-92. L'Université de Rouen, Rouen.

Majewski, T. and M. J. O'Brien
1987 The Use and Misuse of Nineteenth-Century English and American Ceramics in Archaeological Analysis. *Advances in Archaeological Method and Theory* 11:97-209.

Malo, D.
1951 *Hawaiian Antiquities: Mo'olelo Hawai'i*. Translated by N. B. Emerson. Bishop Museum Press, Honolulu.

Mark, S.
2002 Alexander the Great, Seafaring, and the Spread of Leprosy. *Journal of the History of Medicine and Allied Sciences* 57:285-311.

Marshall, Y.
2002 What is community archaeology? *World Archaeology* 34(2):211-219.

Mawani, R.
2003 Legal geographies of Aboriginal segregation in British Columbia: the making and unmaking of the Songhees reserve, 1850-1911. In *Isolation: Places and Practices of Exclusion*, edited by C. Strange and A. Bashford. Routledge, London.

McCraw, J.
2005 Whitelaw turbines on the goldfields. *Archaeology in New Zealand* 48(1):61-69.

McCoy, M. D.
2005a The Development of the Kalaupapa Field System, Molokaʻi Island, Hawai'i. *Journal of the Polynesian Society* 114:339-358.

2005b *The Lands of Hina: an Archaeological Overview and Assessment of Kalaupapa National Historical Park, Molokaʻi*. Pacific Cooperative Studies Unit, University of Hawai'i at Manoa.

2006 *Landscape, Social Memory, and Society: An Ethnohistoric-Archaeological Study of Three Hawaiian Communities.* Ph. D. Dissertation, University of California, Berkeley.

2007 Revised Late Holocene Culture History for Molokaʻi Island, Hawaiʻi.

Radiocarbon 49(3):1273-1322.

2008 Hawaiian Limpet Harvesting in Historical Perspective: A Review of Modern and Archaeological Data on *Cellana spp.* from the Kalaupapa Peninsula, Moloka‘i Island. *Pacific Science* 62(1):21-38.

McCoy, M. D. and T. N. Ladefoged
2009 New Developments in the Use of Spatial Technology in Archaeology. *Journal of Archaeological Research* 17:263-295.

McGlone, M. S. and J. M. Wilmshurst
1999 Dating initial Maori environmental impact in New Zealand *Quarternary International* 59:5-16.

McGlone, M. S., J. M. Wilmshurst and H. Leach
2005 An ecological and historical review of bracken (*Pteridium esculentum*) in New Zealand, and its cultural significance. *New Zealand Journal of Ecology* 29(2):165-184.

McGuire, R. H.
2006 Marxism and capitalism in historical archaeology. In *The Cambridge Companion to Historical Archaeology*, edited by D. Hicks and M. C. Beaudry. Cambridge University Press, Cambridge.

Merchant Shippers of London
1868 *The Merchant Shippers of London, Liverpool, Manchester, Birmingham, Bristol, and Hull: A Comprehensive List of Merchant Shippers with their Respective Trading Ports and a Classification of their Exports*. S. Straker & Sons, London.

Meyer, M., T. N. Ladefoged and P. M. Vitousek
2007 Soil phosphorus and agricultural development in the leeward Kohala field system, Island of Hawaii. *Pacific Science* 61:347-353.

Middleton, A.
2003 Maori and European landscapes at Te Puna, Bay of Islands, New Zealand, 1805-1850. *Archaeology in Oceania* 38:110-124.

2007a Mission Station as Trading Post: The Economy of the Church Missionary Society. *New Zealand Journal of Archaeology* 28(2006):51-81.

2007b Silent Voices, Hidden Lives: Archaeology, Class and Gender in the CMS Missions, Bay of Islands, New Zealand, 1814-1845. *International Journal of Historical Archaeology* 11(1):1-31.

2008 *Te Puna - A New Zealand Mission Station: Historical Archaeology in New Zealand*. Springer, New York.

Miller, G.
1984 Marketing Ceramics in North America: An Introduction. *Winterhur Portfolio* 19(1):1-5.

Millerstrom, S.
2006 Ritual and Domestic Architecture, Sacred Places, and Images: Archaeology in the Marquesas Archipelago, French Polynesia. In *Archaeology of Oceania: Australia and the Pacific Islands*, edited by I. Lilley, pp. 284-301. Blackwell, Oxford.

Mills, P.
1996 *Transformations of a Structure: The Archaeology and Ethnohistory of a Russian Fort in a Hawaiian Chiefdom, Waimea, Kaua'i.* Ph. D. Dissertation, University of California, Berkeley.

2002 *Hawai'i's Russian Adventure: A New Look at Old History*. University of Hawaii Press, Honolulu.

2003 Neo in Oceania: Foreign Vessels Owned by Hawaiian Chiefs Before 1830. *The Journal of Pacific History* 38(1):53-67.

2007 *Keanakolu: An Archaeological Perspective of Hawaiian Ranching and the Pacific Hide and Tallow Trade*. Department of Land and Natural Resources.

Mitchell, P. D.
2000 The Evolution of Social Attitudes to the Medical Care of those with Leprosy within the Crusader States. In *Lépreux et sociabilité du Moyen Age aux Temps Modernes*, edited by B. Tabuteau, pp. 21-30. Publications de l'Université de Rouen, Rouen.

2002 The myth of the spread of leprosy with the crusades. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 171-178. Archaeopress, Oxford.

Moblo, P.
1996 *Defamation by disease: Leprosy, myth and ideology in nineteenth century Hawai'i.* Ph. D. Dissertation, University of Hawaii.

1997 Blessed Damien of Molokaʻi: The Critical Analysis of Contemporary Myth. *Ethnohistory* 44(4):691-726.

1998 Institutionalising the Leper: Partisan Politics and the Evolution of Stigma in Post-Monarchy Hawai'i. *Journal of the Polynesian Society* 107(3):229-262.

1999 Ethnic Intercession: Leadership at Kalaupapa Leprosy Colony, 1871-1887. *Pacific Studies* 22(2):27-69.

2007 Review of *The Colony: The Harrowing True Story of the Exiles of Moloka'i*. *Bulletin of the History of Medicine* 81(4):89-90.

Molto, J. E.
2002 Leprosy in Roman period skeletons from Kellis 2, Dakhleh, Egypt. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 179-192. Archaeopress, Oxford.

Moore, H. L.
2000 Ethics and Ontology: Why Agents and Agency Matters. In *Agency in Archaeology*, edited by M. A. Dobres and J. E. Robb, pp. 259-263. Routledge, London.

Moran, M. T.
2007 *Colonizing Leprosy: Imperialism and the Politics of Public Health in the United States*. University of North Carolina Press, Chapel Hill.

Morgan, P. D.
1998 *Slave Counterpoint: Black Culture in the Eighteenth-Century Chesapeake & Lowcountry*. University of North Carolina Press, Chapel Hill.

Mouritz, A. A. S. M.
1916 *"The Path of the Destroyer": A History of Leprosy in the Hawaiian Islands and Thirty Years Research Into the Means by which it has been Spread*. Honolulu Star-Bulletin, Ltd., Honolulu.

Mrozowski, S. A.
2006 Environments of History: Biological Dimensions of Historical Archaeology. In *Historical Archaeology*, edited by M. Hall and S. W. Silliman, pp. 23-41. Blackwell, Oxford.

Mrozowski, S. A., E. L. Bell, M. C. Beaudry, D. B. Landon and G. K. Kelso
1989 Living on the Boott: Health and Well being in a Boardinghouse Population. *World Archaeology* 21(2):298-319.

Murray, T.
2004a The archaeology of contact in settler societies. In *The Archaeology of Contact in Settler Societies*, edited by T. Murray, pp. 1-18. Cambridge University Press, Cambridge.

2004b In the footsteps of George Dutton: developing a contact archaeology of temperate Aboriginal Australia. In *The Archaeology of Contact in Settler Societies*, edited by T. Murray, pp. 200-225. Cambridge University Press.

Murray, T. (editor)

2004 *The Archaeology of Contact in Settler Societies*. Cambridge University Press, Cambridge.

Musharbash, Y.
2007 Boredom, Time, and Modernity: An Example from Aboriginal Australia. *American Anthropologist* 109(2):307-317.

Nakaso, D.
2009 Kalaupapa's citizens enthusiastic as they honor their new saint. *Honolulu Advertiser*, Honolulu. Available online: http://www.honoluluadvertiser.com/apps/pbcs.dll/article?AID=/200910120200/NEWS01/910120350 (Last Accessed 12 Oct. 2009).

New South Wales Legislative Assembly
1893 *Leprosy in New South Wales: Report for 1892 on administration of the Leprosy Act; and certain information respecting the prevalence of the disease in the Australian Colonies*. Charles Potter, Sydney.

Newsome, D.
1997 *The Victorian World Picture*. Rutgers University Press, New Brunswick, New Jersey.

Niiya, B. (editor)
1993 *Japanese American History: An A-to-Z Reference from 1868 to the Present*. Facts on File, New York.

Nobles, C. H.
2000 Gazing upon the Invisible: Women and Children at the Old Baton Rouge Penitentiary. *American Antiquity* 65(1):5-14.

Noel Hume, I.
2001 *If These Pots Could Talk: Collecting 2,000 Years of British Household Pottery*. Chipstone Foundation, Milwaukee.

O'Connor, T.
2000 *The Archaeology of Animal Bones*. Texas A&M University Press, College Station.

Orser, C. E.
1996 *A Historical Archaeology of the Modern World*. Plenum Press, New York.

Orser, C. E. (editor)
1996 *Images of the Recent Past: Readings in Historical Archaeology*. Altamira Press, Lanham, MD.

Osorio, J. K. K.
2002 *Dismembering Lahui: A History of the Hawaiian Nation to 1887*. University of

Hawaii Press, Honolulu.

Parkes, D. and N. Thrift
1978 Putting Time in its Place. In *Making Sense of Time*, edited by T. Carlstein, D. Parkes and N. Thrift, pp. 119-129. John Wiley and Sons, New York.

Pauls, E. P.
2006 The Place of Space: Architecture, Landscape, and Social Life. In *Historical Archaeology*, edited by M. Hall and S. W. Silliman. Blackwell, Oxford.

Pavao-Zuckerman, B. and V. M. LaMotta
2007 Missionization and Economic Change in the Pimería Alta: The Zooarchaeology of San Agustín de Tucson. *International Journal of Historical Archaeology* 11:241-268.

Pearson, R.
1995 A Brief Report on Test Excavations at the Hawaiian Mission, Honolulu. *Hawaiian Archaeology* 4:27-33.

Pena, E. S.
2001 The Role of Wampum Production at the Albany Almshouse. *International Journal of Historical Archaeology* 5(2):155-174.

Petchey, P.
2001 Buchanan's tramway and GPS: an experiment in using hand-held GPS for surveying extensive archaeological sites. *Archaeology in New Zealand* 44(1):26-36.

2004 Richard Pearse's southern sojourn: Historical & archaeological features relating to Richard Pearse's residency in Milton, Otago, 1911-1912. *Archaeology in New Zealand* 47(3):178-189.

Piddock, S.
2001 “An Irregular and Inconvenient Pile of Buildings”: The Destitute Asylum of Adelaide, South Australia and the English Workhouse. *International Journal of Historical Archaeology* 5(1):73-95.

2007 *A Space of Their Own: The Archaeology of Nineteenth Century Lunatic Asylums in Britain, South Australia, and Tasmania*. Springer, New York.

Poovey, M.
1995 *Making a Social Body: British Cultural Formation, 1830-1864*. University of Chicago Press, Chicago.

Porteus, J. D. and S. E. Smith
2001 *Domicide: the Global Destruction of Home*. McGill-Queen's University Press, Montreal.

Praetzellis, A.
1993 The Limits of Arbitrary Excavation. In *Practices of Archaeological Stratigraphy*, edited by E. Harris and M. Brown III, pp. 68-86. Academic Press, New York.

Praetzellis, A. and M. Praetzellis
1998 A Connecticut Merchant in Chinadom: A Play in One Act. *Historical Archaeology* 32(1):86-93.

Pratt, J.
2003 The disappearance of the prison: an episode in the 'civilising process'. In *Isolation: Places and Practices of Exclusion*, edited by C. Strange and A. Bashford, pp. 23-39. Routledge, London.

Pred, A.
1984 Place as historically contingent process: structuration and the time-geography of becoming places. *Annals of the Association of American Geographers* 74(2):279-297.

1990 *Making Histories and Constructing Human Geographies*. Westview Press, Inc., Boulder, Colorado.

Prickett, N.
2005 The Taranaki archaeological landscape - past, present and future. *Archaeology in New Zealand* 48(1):45-60.

Purser, M.
2003 The View From the Verandah: Levuka Bungalows and the Transformation of Settler Identities in Later Colonialism. *International Journal of Historical Archaeology* 7(4):293-314.

Rainbird, P.
2004 *The Archaeology of Micronesia*. Cambridge University Press, Cambridge.

Rathje, W.
2001 Integrated archaeology: a garbage paradigm. In *Archaeologies of the Contemporary Past*, edited by V. Buchli and G. Lucas, pp. 63-76. Routledge, London.

Redman, C.
1973 Multistage Fieldwork and Analytical Techniques. *American Antiquity* 38:61-79.

Reeves, W. P.
1987 (1898) *The Long White Cloud*. Penguin Books, Auckland.

Reitz, E. J.
1986 Vertebrate fauna from locus 39, Puerto Real, Haiti. *Journal of Field Archaeology* 13(3):317-328.

1992 The Spanish Colonial Experience and Domestic Animals. *Historical Archaeology* 26(1):84-91.

Reitz, E. J. and E. S. Wing
2008 *Zooarchaeology*. Cambridge Manuals in Archaeology. Cambridge University Press, Cambridge.

Renfrew, C. and P. Bahn
2000 *Archaeology: Theories, Methods, and Practice*. Third ed. Thames & Hudson, New York.

Roberts, C. A.
2002 The antiquity of leprosy in Britain: the skeletal evidence. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 213-222. Archaeopress, Oxford.

Roberts, C. A. and K. Manchester
1995 *The Archaeology of Disease*. Cornell University Press, Ithaca, New York.

Roberts, C. A., M. E. Lewis and K. Manchester (editors)
2002 *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*. 1054. Archaeopress, Oxford.

Rosenadahl, P. H.
1994 Aboriginal Hawaiian structural remains and settlement patterns in the upland agricultural zone at Lapakahi, island of Hawai`i. *Hawaiian Archaeology* 3:14-70.

Ryder, N.
1964 Notes on the Concept of a Population. *American Journal of Sociology* 69(5):447-463.

Sahlins, M.
1987 *Islands of History*. The University of Chicago Press, Chicago.

1992 *Historical Ethnography*. Volume 1 of Anahulu: The Anthropology of History in the Kingdom of Hawai'i. University of Chicago Press, Chicago.

1995 *How "Natives" Think, About Captain Cook, For Example*. The University of Chicago Press, Chicago.

2004 *Apologies to Thucydides: Understanding History as Culture and Vice Versa*. University of Chicago Press, Chicago.

Salmond, A.
1991 *Two Worlds: first meetings between Maori and Europeans 1642-1772*. University of Hawaii Press, Honolulu.

Sand, C., J. Bolé and A. Ouetcho
2005 Historical Archaeology in Island Melanesia: First Research on the Convict Settlements of New Caledonia. *New Zealand Journal of Archaeology* 27:145-161.

Sauer, E. W.
2004 The Disunited Subject: Human History's Split into 'History' and 'Archaeology'. In *Archaeology and Ancient History: Breaking down the Boundaries*, edited by E. W. Sauer, pp. 17-45. Routledge, New York.

Sauvy, A.
1969 *General Theory of Population*. Basic Books, New York.

Schelberg, A.
2000 Regional leper guilds - an early modern form of social organization in rural areas: sociability among lepers in German principalities in 16th and 17th century leper regulations. In *Lépreux et sociabilité du Moyen Age aux Temps Modernes*, edited by B. Tabuteau, pp. 73-80. Publications de l'Université de Rouen, Rouen.

Schlereth, T. J.
1991 *Victorian America: Transformations in Everyday Life, 1876-1915*. Harper Collins Publishers, New York.

Schmitt, R. C.
1971 New Estimates of the Pre-Censal Population of Hawaii. *Journal of the Polynesian Society* 80(2):237-243.

Schousboe, R., M. Riford and P. V. Kirch
1983 Volcanic-glass flaked stone artifacts. In *Archaeological Investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawai'i: An Interdisciplinary Study of an Environmental Transect*, edited by J. T. Clark and P. V. Kirch, pp. 348-370. vol. Departmental Report Series 83-1. B.P. Bishop Museum, Honolulu.

Schultz, M. and C. A. Roberts
2002 Diagnosis of leprosy in skeletons from an English later Medieval hospital using histological analysis. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 89-104. Archaeopress, Oxford.

Shackley, M. S.
2000 The Stone Tool Technology of Ishi and the Yana of North Central California: Inferences for Hunter-Gatherer Cultural Identity in Historic California. *American*

Anthropologist 102(4):693-712.

Sherratt, A. C.
1996 "Settlement patterns" or "landscape studies": cycles of reason and romance. *Archaeological Dialogues* 3(2):140-159.

Silliman, S. W.
1997 European Origins and Native Destinations: Historical Artifacts from the Native Alaskan Village and Fort Ross Beach Sites. In *The Native Alaskan Neighborhood: A Multiethnic Community at Colony Ross*, edited by K. G. Lightfoot, A. M. Schiff and T. A. Wake, pp. 136-178. vol. The Archaeology and Ethnohistory of Fort Ross, Volume 2. University of California Archaeological Research Facility, Berkeley.

2001a Agency, practical politics and the archaeology of culture contact. *Journal of Social Archaeology* 1(2):190-209.

2001b Theoretical Perspectives on Labor and Colonialism: Reconsidering the California Missions. *Journal of Anthropological Archaeology* 20:379-407.

Singleton, T.
1998 Cultural Interaction and African American Identity in Plantation Archaeology. In *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, edited by J. G. Cusick, pp. 172-190. vol. Occasional Paper no. 25. Center for Archaeological Investigations, Carbondale, Illinois.

Smith, I.
2007 Metal Pa Kahawai - a post-contact fishing lure form in northern New Zealand. In *Vastly Ingenious: The Archaeology of Pacific Material Culture, in Honour of Janet M. Davidson*, edited by A. Anderson, K. Green and F. Leach, pp. 69-78. Otago University Press, Dunedin.

Somers, G. F.
1985 *Kalaupapa, More than a Leprosy Settlement: Archeology at Kalaupapa National Historical Park*. National Park Service, Tuscon.

Spencer-Wood, S. M.
2001 Introduction and Historical Context to the Archaeology of Seventeenth and Eighteenth Century Almshouses. *International Journal of Historical Archaeology* 5(2):115-122.

Spenneman, D. H. R.
2002 19th Century observations on contact sites in Suwarrow Atoll, Northern Cook Islands. *Archaeology in New Zealand* 45(4):297-308.

Spierenburg, P.
1987 From Amsterdam to Auburn: An Explanation for the Rise of the Prison in Seventeenth-Century Holland and Nineteenth-Century America. *Journal of Social History* 20(3):439-462.

Spigelman, M. and H. D. Donoghue
2002 The study of ancient DNA answers a palaeopathological question. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 293-296. Archaeopress, Oxford.

Spriggs, M. and P. V. Kirch
1992 *'Auwai, Kanawai* and *Waiwai*: Irrigation in Kawailoa-Uka. In *Anahulu: The Anthropology of History in the Kingdom of Hawaii*, edited by P. V. Kirch and M. Sahlins, pp. 118-164. vol. Volume 2: The archaeology of history. University of Chicago Press, Chicago.

Stambaugh, J. E.
1988 *The Ancient Roman City*. Johns Hopkins University Press, Baltimore.

Stannard, D. E.
1989 *Before the Horror: The Population of Hawai'i on the Eve of Western Contact*. Social Science Research Institute, University of Hawaii, Honolulu.

Stewart, R.
2000 *Leper Priest of Moloka'i*. University of Hawaii Press, Honolulu.

Stodart, P.
2002 Two wandering Pa in Porirua. *Archaeology in New Zealand* 45(1):25-32.

Stokes, E.
2002 Contesting Resources: Maori, Pakeha, and a Tenurial Revolution. In *Environmental Histories of New Zealand*, edited by E. Pawson and T. Brooking, pp. 35-51. Oxford University Press, Auckland.

Sutton, M.-J.
2003 Re-examining total institutions: a case study from Queensland. *Archaeology in Oceania* 38:78-88.

Sweeney, M.
1992 Settlement Pattern Change in Hawai'i: Testing a Model for the Cultural Response to Population Collapse. *Asian Perspectives* 31(1):39-56.

Symonds, J. and E. C. Casella
2006 Historical archaeology and industrialisation. In *The Cambridge Companion to*

Historical Archaeology, edited by D. Hicks and M. C. Beaudry. Cambridge University Press, Cambridge.

Tabuteau, B.
2000 Introduction. In *Lépreux et sociabilité du Moyen Age aux Temps Modernes*, edited by B. Tabuteau, pp. 7-12. Publications de l'Université de Rouen, Rouen.

Tabuteau, B. (editor)
2000 *Lépreux et sociabilité du Moyen Age aux Temps Modernes*. Publications de l'Université de Rouen, Rouen.

Tayman, J.
2006 *The Colony: The Harrowing True Story of the Exiles of Moloka'i*. Lisa Drew/Scribner, New York.

Terrell, J. E.
1998 30,000 Years of Culture Contact in the Southwest Pacific. In *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, edited by J. G. Cusick, pp. 191-219. vol. Occasional Paper no. 25. Center for Archaeological Investigations, Carbondale, Illinois.

Thévenin, E.
2000 La léproserie Saint-Ladre de Reims: un espace de festivités. In *Lépreux et sociabilité du Moyen Age aux Temps Modernes*, edited by B. Tabuteau, pp. 63-72. Publications de l'Université de Rouen, Rouen.

Thomas, D. H. and R. L. Kelly
2007 *Archaeology: Down to Earth*. Thomson Wadsworth, Belmont, CA.

Thomas, N.
1991 *Entangled Objects: Exchange, Material Culture, and Colonialism in the Pacific*. Harvard University Press, Cambridge, Mass.

Trembly, D. L.
2002 Perspectives on the history of leprosy in the Pacific. In *The Past and Present of Leprosy: Archaeological, historical, palaeopathological and clinical approaches*, edited by C. A. Roberts, M. E. Lewis and K. Manchester, pp. 233-238. Archaeopress, Oxford.

Tringham, R.
1995 Archaeological Houses, Households, Housework, and the Home. In *The Home: Words, Interpretations, Meanings, and Environments*, edited by D. N. Benjamin, pp. 79-107. Aldershot, Avebury.

Tuan, Y. F.
1978 Space, Time, Place: a humanistic frame. In *Making Sense of Time*, edited by T. Carlstein, D. Parkes and N. Thrift. John Wiley & Sons, New York.

Tuggle, H. D. and M. J. Tomonari-Tuggle
1980 Prehistoric Agriculture in Kohala, Hawaii. *Journal of Field Archaeology* 7(3):297-312.

Turner, M., K. Hill and R. Clough
2005 Chinese artefacts from a site at Wakefield St., Auckland. *Archaeology in New Zealand* 48(3):260-278.

Trotter, M. and B. McCullough
2003 Archaeological excavation of a Quarantine station hut site on Quail Island, Lyttleton Harbour. *Archaeology in New Zealand* 46(3):142-150.

Vaggioli, D. F.
2000 *History of New Zealand and its Inhabitants*. Translated by J. Crockett. University of Otago Press, Dunedin.

van Dommelen, P.
2006 Colonial Matters: Material Culture and Postcolonial Theory in Colonial Situations. In *Handbook of Material Culture*, edited by C. Tilley, W. Keane, S. Kuechler, M. Rowlands and P. Spyer, pp. 104-124. Sage Publications, London.

Van Gilder, C.
2005 *Families on the land: Archaeology and identity in Kahikinui, Maui.* Ph. D. Dissertation, University of California, Berkeley.

Veth, P. and S. O'Connor
2005 Archaeology, claimant connection to sites, and native title: employment of successful categories of data with specific comments on glass artefacts. *Australian Aboriginal Studies* 1:2-15.

Vorsino, M.
2009a Damien sainted in soaring ceremony. In *Honolulu Advertiser*, Honolulu. Available online: http://www.honoluluadvertiser.com/apps/pbcs.dll/article?AID=/200910110200/NEWS01/910110392 (Last accessed 12 Oct. 2009).

2009b Hawaii pilgrims celebrate as Damien finally gets his due. In *Honolulu Advertiser*, Honolulu. Available online: http://www.honoluluadvertiser.com/article/20091012/NEWS01/910120351/Hawaii%20pilgrims%20celebrate%20as%20Damien%20finally%20gets%20his%20due?GID=eUOEcrZrAxEQEGdEGScHAYXs3hpuQyzjJEhJ0+dNVgs%3D (Last accessed 12 Oct. 2009).

Walker, R.
1990 *Ka Whawhai Tonu Matou: Struggle Without End*. Penguin Books, Auckland.

Wallerstein, I.
1974 *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. Academic Press, New York.

Walter, R.
1998 *Anai'o: the archaeology of a fourteenth century Polynesian community in the Cook Islands*. New Zealand Archaeological Association, Auckland.

Walter, R. and A. Anderson
2002 *The Archaeology of Niue Island, West Polynesia*. Bishop Museum Bulletin in Anthropology 10 ed. Bishop Museum Press, Honolulu.

Watts, S.
1997 *Epidemics and History: Disease, Power and Imperialism*. Yale University Press, New Haven.

Weisler, M. I.
1990 Sources and sourcing of volcanic glass in Hawaii: Implications for exchange studies *Archaeology in Oceania* 25:16-23.

Weisler, M. I. and P. V. Kirch
1985 The structure of settlement space in a Polynesian chiefdom: Kawela, Molokaʻi, Hawaiian Islands. *New Zealand Journal of Archaeology* 7:129-158.

Wheeler, M.
2004 *Archaeology from the Earth*. Munshiram Manoharlal Publishers Pvt. Ltd., New Delhi.

White, C.
2009 *An Uncertain Cure: Living with Leprosy in Brazil*. Rutgers University Press, New Brunswick, NJ.

White, G. G. and T. F. King
2007 *The Archaeological Survey Manual*. Left Coast Press, Walnut Creek.

Wilk, R. and W. Rathje
1982 Household Archaeology. *American Behavioral Scientist* 25(6):617-639.

Wilkie, L.
1996 Glass-Knapping at a Louisiana Plantation: African-American Tools? *Historical Archaeology* 30(4):37-49.

2001 Black sharecroppers and white frat boys: living communities and the appropriation of their archaeological pasts. In *Archaeologies of the Contemporary Past*, edited by V. Buchli and G. Lucas, pp. 108-118. Routledge, London.

2005 Inessential archaeologies: problems of exclusion in Americanist archaeological thought. *World Archaeology* 37(3):337-351.

2006 Documentary Archaeology. In *The Cambridge Companion to Historical Archaeology*, edited by D. Hicks and M. C. Beaudry, pp. 13-33. Cambridge University Press, Cambridge.

2009 *The Lost Boys of Zeta Psi: A Historical Archaeology of Masculinity at a University Fraternity*. University of California Press, Berkeley.

Wilkie, L. and P. Farnsworth
2005 *Sampling Many Pots: An Archaeology Of Memory And Tradition At A Bahamian Plantation*. University Press of Florida, Gainesville.

Willey, G. R.
1968 Settlement Archaeology: An Appraisal. In *Settlement Archaeology*, edited by K.C. Chang, pp. 208-226. National Press Books, Palo Alto.

Willey, G. R. and J. A. Sabloff
1980 *A History of American Archaeology*. Second ed. W.H. Freeman and Company, New York.

Williamson, C.
2004 Contact archaeology and the writing of aboriginal history. In *The Archaeology of Contact in Settler Societies*, edited by T. Murray, pp. 176-199. Cambridge University Press, Cambridge.

Webster, J.
1999 Resisting Traditions: Ceramics, Identity, and Consumer Choice in the Outer Hebrides from 1800 to the Present. *International Journal of Historical Archaeology* 3(1):53-73.

Wolf, E. R.
1997 *Europe and the People Without History*. Second Edition ed. University of California Press, Berkeley.

Wylie, J.
2006 Waiu Pa: 'Keep Out: Historic Place'. *Archaeology in New Zealand* 49(2):120-130.

Yaeger, J. and M. A. Canuto
2000 Introducing an archaeology of communities. In *The Archaeology of Communities: A New World Perspective*, edited by M. A. Canuto and J. Yaeger, pp. 1-15. Routledge,

London.

Yen, D. E.
1973 Ethnobotany from the Voyages of Mendana and Quiros in the Pacific. *World Archaeology* 5(1):32-43.

Zias, J.
1989 Lust and Leprosy: Confusion or Correlation? *Bulletin of the American Schools of Oriental Research* 275:27-31.

Appendix 1. Survey Form

Archaeology of the Recent Past at Kalawao

Field Season 2006

Feature Recording Form

Feature Code_____
Field Tech(s)._____
Date_____

Architecture Code

1-Single Architectural Component
2-Feature (2+ components)
3-Compound structure (e.g. complex Heiau)
4-Site Complex (2+ features)

Basic Site Type

00-Not Determined
01-Stone Mound
02-Stone cairn (ahu)
03-Upright Stone
04-Modified outcrop
05-Single course alignment
06-Free-standing wall
07-Terrace (single)
08-Multiple Terrace Complex_____
09-Shelter (any shape)
10-Enclosure (any shape)
11-Platform(s)_____
12-Wall or shelter adjoining terrace
13-Rockshelter or overhang shelter
14-Lave tube or lava bubble
15-Petroglyph
16-Trail: foot trail (no stepping stones)
17-Trail: stepping stones
18-Trail: curbstone edged
19-Isolated hearth (stone outlined)
20-Well (stone-lined)
21-Irrigation ditch (stone lined)
22-Midden and/or lithic scatter without architecture
23-Sand dune site
24-Fishpond
25-Holua slide
26-Abrader or adze grinding depression
27-Other:_____

Stone Structure Form

01-Terrace: stone-faced/earth filled
02-Terrace: stone-faced/stone filled
03-Platform: stone-faced
04-Shelter: C/U-shaped
05-Shelter: L/J-shaped
06-Enclosure: square
07-Enclosure: rectangular
08-Enclosure: circular
09-Enclusure: U-shaped
10-Free-standing wall: stacked
11-Free-standing wall: core-filled
12-Other:_____

GPS Points

Yes / No
Date_____
Time_____

_____

_____

_____

Probable Function

0-Not determined
1-Residential/habitation
2-Agricultural
3-Ritual/ceremonial
4-Burial
5-Boundary marker/land division
6-Other:_____

Space cells

0-Not Applicable
1-Number_____
Arrangement:_____
_____
_____
_____

Wall Construction

0-Not applicable
1-Single course_____
2-Stacked (2+courses)
3-Core-filled_____
4-Piled or heaped_____
5-Incorporating natural outcrop_____
7-Cupboards/Niches: no yes
_____
____
6-Not determined_____

Wall Stone Size

0-Not applicable
1-Pebbles(0.4 – 6.4cm)_____%
2-Cobbles(6.4 -25.6cm)_____%
3-Boulders(>25.6cm)_____%

Dimensions

Exterior Length_____

Exterior Width_____

Interior Length_____

Interior Width_____

Minimum Wall Height_____

Maximum Wall Height_____

Average Wall Height_____

Describe Facings

_____
_____

Interior Surface

00-Not applicable
01-Paved
02-Soil
03-Rubble
04-Soil and rubble
05-Paved and rubble
06-Paved and soil
07-Not determined (heavy vegetation)

Paving

0-Absent
1-A'a clinker paved
2-'Ili'Ili paved
3-A'a and waterworn
4-Large waterworn stone/cobbles
5-Not determined (heavy vegetation)

Pavement Stone Size

0-Not applicable
1-Pebbles(0.4 – 6.4cm)_____%
2-Cobbles(6.4 -25.6cm)_____%
3-Boulders(>25.6cm)_____%

Door/Entryway

0-Absent
1-Present_____

Hearths/Pits

0-Absent
1-Hearths_____
2-Pits_____

Uprights

0-Not present
1-Stones_____

Presence of coral

0-No
1-Branch
2-Other

Presence of Artifacts (Describe)

0-None
1-Indigenous

_____
_____
_____

2-Historic

_____
_____
_____

3-Both Historic and Indigenous

_____
_____
_____

Surface Midden

0-Not determined (heavy vegetation
1-None
2-Light Midden interior exterior
3-Substantial interior exterior
4-Heavy interior exterior

Surface Lithics

0-Not determined (heavy vegetation
1-None
2-Light Midden interior exterior
3-Substantial interior exterior
4-Heavy interior exterior

State of Preservation

0-Poor
1-Fair
2-Good
3-Excellent

Topographic Setting

1-Ridge Crest
2-Ridge/steep slope
3-Base of ridge
4-Swale
5-Pahoehoe slope
6-Weathered A'a slope
7-Other_____

Physiographic Zone

1-Coastal Plain
2-Taluvial Slope
3-Crater
4-Beach
5-Valley
6-Other_____

Altimeter Elevation_____

Surface Collection yes no

_____
_____

_____
_____

_____
_____

Excavation Data yes no

_____
_____

_____
_____

_____
_____

Notes/Description

Reminders: Verbal description of structure; Directions to site, including relation to notable landmarks and other features; Assessment of probable age(s) e.g. historic, prehistoric, modern, nineteenth century, etc.; Relationship to other features (e.g. part of complex?); Description of unique architectural components (pits, hearths, etc.); Potential for buried deposits; Topography, vegetation (and clearing thereof), visibility; Recommendation for future work (surface collection, excavation, etc.); Comments on site condition.

Sketch Map

Reminders: Maps should include Scale; North Arrow (Magnetic and Declinated True North); Key

Appendix 2: Excavation Form

ARCHAEOLOGY OF THE RECENT PAST AT KALAWAO 2008 EXCAVATION CONTEXT FORM

Provenience Number:_____

Feature:_____ Operation:_____ Unit:_____ Context:_____

Unit Size:_____ Depths: Datum / Surface Datum Location:_____

Screened: Dry / Wet Screen Size:_____

GPS Data: UTM Zone___ Easting_____ Northing_____ Error +/-

_____

Excavators:_____Date:_____

Started at: Natural Layer Arbitrary Level Feature Other_____

Ended at: Natural Layer Arbitrary Level Feature Other_____

Stratigraphic Relationships:

Underlies_____

Overlies_____

Abuts_____

Cuts_____

Cut By_____

Other (explain):

_____

Soil Description (Include Munsell Color and Texture, Mottling, and Inclusions):

_____

_____

Photographs (Number, Direction, Format, and Subject):_____

_____

_____

Drawings (indicate section or plan view):_____

_____

Artifacts (Bag #):

Sequence:_____

(1)_____

(2)_____

(3)_____

(4)_____

(5)_____

(6)_____

(7)_____

(8)_____

(9)_____

(10)_____

Verbal Description of the Context and its Place in the Depositional

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Soil Samples Taken (Volume and Type):

(1)_____ (2)_____

(3)_____ (4)_____

Please Provide a Plan-View Illustration at an appropriate scale (1:10 is preferred), with a key, on the back of this form. For features, you may want to provide multiple illustrations, including a profile of the excavated feature. You may also use the back of this page to continue your Verbal Description, if necessary. The Verbal Description should include, but should not be limited to: Description of soil/sediment, Artifacts and other inclusions, Relationship to other excavated contexts, Probable age of deposit, Relationship to other excavated units, if applicable, and Initial Interpretation of the context within the history of the site/feature.

Appendix 3: List of Context Field Descriptions

PN: 1 ARPK_0001 Op. 1 TU 1 Context A
Dark greyish-brown topsoil layer, containing abundant glass and metal, probably associated with the historic-period chimney approx. 1.5m North of the unit. Some of the glass was melted, may have fallen in the fire and was then cleaned out with the hearth. Metal was both nails/spikes and flat; may be a combination of construction material and cookware (kettles/pots). Charcoal was present, but fell apart during screening and couldn't be collected. Most of the shell appears to be from the first 5cm of the level.

PN: 2 ARPK_0001 Op. 1 TU 1 Context B
Context B underlies Context A, and is a relatively compact, friable, peddy 10YR 4/2 dark greyish brown silt loam. The deposit had a few (<1%) cobble inclusions (vesicular basalt) and pockets of gravel, esp. in the SW quadrant. Large cobble inclusions towards the SE corner resulted in a somewhat uneven surface in this quadrant at closing. In the NE corner, a pocket of nails and other metal was noted (see plan); these nails were collected separately. Gravel pockets near the west end of the unit gave way to a more continuous deposit which we think may be a builder's trench; we caught a good chunk of it and its NE corner (see plan). The gravel context will be context C, the deposit outside it, a smooth, mottled silt loam.

PN: 3 ARPK_0001 Op. 1 TU 1 Context C
Gravel rich dark greyish brown context below the topsoil/midden layer. The context was difficult to define precisely because there was no soil color distinction, so it was excavated on the presence of dense concentrations of pebbles. The feature appears to slope in to the south and west, but again, hard to say for sure. There may be some size-sorting, with more smaller pebbles as you go down. May be a gravel dump of some sort, or a small pavement. Very few artifacts, especially compared with the layer above, so maybe it was swept? One other possibility given its placement and orientation to the chimney, is that this is a sketchy outline of a builders trench for a wall leading out from the chimney. *Actually, abuts and is the same layer as context D.*

PN: 4 ARPK_0001 Op. 1 TU 1 Context D
Context D, which initially appeared to be a relatively smooth, compact layer with few pebble inclusions in the end turned out to be, for the first 1-2 cm, the remnants of Context B; The remaining 15cm excavated beneath this was a gravelly fill similar to Context C, consisting of a friable 10YR 4/2 silt loam with ~20% inclusions of sub-rounded pebbles. In pockets, the deposit has finer inclusions of small gravel/coarse sand/grit. This mixed nature of the fill suggests that it is a) a massive construction fill (less likely) or b) the accumulated taluvium that makes up the matrix of this soil. Few artifacts (<1 per 5-gal. bucket) suggest that this is not a cultural layer, and the small (<2cm) artifacts were moved downward through post-dep. processes.

PN: 5 ARPK_0001 Op. 1 TU 2 Context A
This context is the surface of the area in front of the chimney. The layer is approx. 2-5cm thick, smooth and flat in areas, with few stone inclusions. The sediment is quite smooth to the touch, and may represent a silting over of the site after abandonment; compaction may be due to

trampling or the passing of heavy machinery (i.e. bulldozer, mower). Context A peels off the next context in flat chunks, the next level being a very gritty silt loam, more pebbly toward the NW corner. Charcoal has been recovered in large chunks, mostly from the SW corner. The majority of artifacts, which includes bottle glass, melted glass, nails and other metal (incl. copper), ceramics (some decorated) and obsidian, seem to be coming up at the interface between these two layers, though a number were on or just below the surface. Other notable finds include a piece of flaked bottle glass, and burned and unburned kukui nut shell, and enameled metal.

PN: 6 ARPK_0001 Op. 1 TU 2 Context B
Dark greyish brown fill/topsoil layer containing some artifacts towards the top (ca. 5-10cmbd), but with artifacts decreasing in frequency as the soil transitions gradually (diffuse boundary) to a new layer. The artifacts are almost completely historic (glass, metal, ceramic), with some charcoal and some kukui nut (unburned kukui nut not collected). This layer may contain sediment that accumulated over the use-life of the chimney structure, followed by a transition to a previous occupation, or features dating to the construction phase of this site. There was a concentration of pebbles in the NW corner which was partly excavated with Context B while determining its extent, and if it was a legitimate feature (we think it is), so the one artifact from that sediment was bagged separately. As the color change wasn't clear, it may be a function of moisture content in the soil.

PN: 7 ARPK_0001 Op. 1 TU 2 Context C
Context C was a highly compacted, dense feature with more clay content. Excavation revealed that it was not stratigraphically distinct, and overlies a more brown clay layer. Thus this can be interpreted as a natural clay pocket in the surrounding loam matrix, perhaps an intrusion into E. It contained no artifacts and should probably not be interpreted in terms of cultural activity.

PN: 8 ARPK_0001 Op. 1 TU 2 Context D
This context contained a loose, dark brown matrix with high pebble content (ca. 40%). Upon excavation, the pebbles go from easily removed to more difficult to remove, and the particle size goes from smaller pebbles to larger pebbles and cobbles as you go down. The context is flanked by two large cobbles (one of which was removed during excavation), and there is a large, flat cobble at the bottom. One possible explanation is that this feature represents a posthole if this site was built as a post-on-pier structure. However, the lack of artifacts suggests that this could also be natural, so additional excavation must reveal similar features to accept this as a valid interpretation. It's also worth noting that pebbly pockets appear elsewhere on this site, though not to such a depth.

PN: 9 ARPK_0001 Op. 1 TU 2 Context E
This context continued the soil descriptions and characteristics from context D, albeit with a higher percentage of large pebbles and small cobbles. Elevated quantities of charcoal were encountered and sustained within this context. A potential area of differentiation was observed near the middle of the unit, but tarp moisture was concluded to be the cause. The provenienced charcoal was suspended in soil, observed in relation to numerous, smaller pieces of carbonized organics. No historic presence in the context's materials suggests that the stratigraphic layer predates the proximate chimney. Initial interpretation follows that this context is non-historical,

but possibly indicating earlier land-usage (e.g. for agricultural purposes) through the presence of charcoal.

PN: 10 ARPK_0001 Op. 1 TU 2 Context F
This context saw a gradual transition from the possible agricultural deposit in E to a compact, dark brown clay deposit (probably subsoil). There was charcoal in the first few cm, but then by the bottom there were no artifacts. There is a rockier deposit to the north in this unit, unclear what its nature is. May be natural; not a clear feature. The presence of large cobbles/small boulders may suggest architectural stone; we will see what other units in this area reveal.

PN: 11 ARPK_0001 Op. 1 TU 3 Context A
1x1 meter square located NE of units 1 & 2 – topsoil with grass, kukui nut, stone – very intruded by roots on the northern extent, excavated to expose large stones throughout the unit – initially thought to be bedrock, but as indicated on the map, there was mortar present on one of the stones, and artifacts continue throughout. Screened with 1/8" screen, yielded a large number and variety of artifacts. Smaller stones present to the western extent of the unit. Metal dominates artifact assemblage, mostly nails – significantly less glass than present in TU 1 and TU 2, and no bubbly/melted glass. Other notable finds include cut and burned large mammal bone, coral, and a mystery object – red, flaky, looks like metal. Small scatter of rocks <10cm on W extent all at a single level.

PN: 12 ARPK_0001 Op. 1 TU 3 Context B
Context B is a silt loam that fills the SE corner of TU 3 and is defined by rocks to the N and W, which appear to be stacked walls (see plan on reverse, esp. levels). Context B seems to have fewer artifacts than CTX A, though we did find a cluster of charcoal which we plotted just beneath one of the wall stones. The base of CTX B was defined by a layer of pebbles that appears to be a rough paving, which is hard to follow across the excavated area, possibly due to root intrusions. Additionally, there are pieces of burned kukui in this layer of pebbles.

PN: 13 ARPK_0001 Op. 1 TU 3 Context C
Context C is thought to be a layer outside of the corner of a wall (Context E), and primarily composed of glass fragments and small <10cm rocks that appear to respect a single surface level. This context was excavated to a surface, one that corresponds with a course of the foundation stones. Several possibly identifiable metal fragments and a glass bottom were also found within this context. Root disturbance remains a factor throughout and some glass fragments were obviously displaced by this action, being in close proximity to the roots or directly abutting them.

PN: 14 ARPK_0001 Op. 1 TU 3 Context D
Context D high quantity of glass, bones, metal, larger artifacts than in units 1 & 2. Soil structure consistent, appeared to reach bottom of foundation structure, structure appears to sit on same soil – no clear stratigraphic change, removed less soil from western extent of unit than east. No firm idea of age outside of historic artifacts present. Artifact density decreased at depth of foundation stones.

PN: 15 ARPK_0001 Op. 1 TU 3 Context E
Possible foundation stones, one course. Thought to contain a pebble floor, but very ambiguous. Primarily inside TU 3, does not extend to the east or to the south into TU 4. One piece of *'a'a* stone has a patch of mortar on it – perhaps the only indication that the formation is cultural and not natural. Soil sample & artifacts taken while cleaning for photo & drawing.

PN: 16 ARPK_0001 Op. 1 TU 3 Context F
Pebble paving surface contained by wall feature E. ~4cm deep (18cmbd). Contained flat glass & metal. Floor surface - ? Remains to be seen if it is actually an interior area.

PN: 17 ARPK_0001 Op. 1 TU 3 Context G
NO DESCRIPTION – CONTEXT NEVER EXCAVATED, EXCAVATION HALTED AT CLOSE OF D/E/F

PN: 18 ARPK_0001 Op. 1 TU 4 Context A
Context A was excavated to determine the extent of the possibly architectural remains in test unit 3. These did not continue into test unit 4. Artifacts were concentrated in the western extent of the unit, dwindling toward the east. A small lamination of pebbles was also present in the western extent. Unit was heavily intruded by roots. No aligning rock in test unit 4. Concentrations of artifacts dwindled at depth.

PN: 19 ARPK_0001 Op. 1 TU 4 Context B
Soil/sediment throughout this context remained fairly consistent, with various quantities of small volcanic pebble inclusions. Artifacts suspended in the sediment were numerous, but noticeably decreased in quantity toward the bottom of the unit (~18cmbd). Artifacts are predominantly historic in origin (glass, metal), but several materials noted in this unit could result from prehistoric [*sic.*] presence in the locality (volcanic glass, coral). Accordingly, the possible range of the deposit would span from prehistoric to historic times.

PN: 20 ARPK_0060 Op. 1 TU 1 Context A
This context was for a unit chosen through random sampling just outside of ARPK_0060's entrance path. No artifacts were found, and the unit was heavily disturbed by the roots of a nearby Java Plum tree, so it was closed after 10cm.

PN: 21 ARPK_0060 Op. 1 TU 2 Context A
Sterile soil with lots of roots and small lava pebbles. Unit closed after 10cm. Soil was friable and slightly moist.

PN: 22 ARPK_0060 Op. 1 TU 3 Context A
Fewer big roots than TU 1&2, soil density was the same. Fewer pebbles as well. Two pieces of

glass and shell were present in the north east part of the unit. [Topsoil, probably some deposit associated with this house, e.g. artifacts falling through the cracks of the floor.-JLF]

PN: 23 ARPK_0060 Op. 1 TU 3 Context B
Increasing small pebbles <5cm and artifact density increasing as well. Fewer roots at depth. Soil change at approximately 12cmbd, was not apparent until viewed in section. Large metal fragments at 15-20cmbd.

PN: 24 ARPK_0060 Op. 1 TU 3 Context C
Soil is becoming more firm at depth & artifacts dwindling. Still fairly heavy root disturbance. Roots are decaying at this depth.

PN: 25 ARPK_0060 Op. 1 TU 3 Context D
Unit came down to dark clay soil and decaying *'a'a* lava rock. Rock was almost spongy and damp. While a single bone fragment was found in the top of the context, it may be root drag, and there were no other artifacts found. We have determined this to be sterile substrate and finished this sequence.

PN: 26 ARPK_0060 Op. 1 TU 4 Context A
Opening context for this test unit located next to a large cluster of phoenix palms. Very dark greyish brown loose sediment that has been highly disturbed by root action, with a notable increase in pebble frequency beginning around 8-9cmbd. Contains a scattering of flat glass from the northern and eastern portion of the unit, as if from a broken window, which would make sense if this unit is to be taken as abutting the southern exterior wall of this structure.

PN: 27 ARPK_0060 Op. 1 TU 4 Context B
Context B is interpreted as a possible pebble-paved layer in the back of ARPK_0060. The context started with a light pebble concentration that quickly became a very dense concentration, with about 30-40% pebbles in the very dark greyish brown matrix in some places, and about 25% pebbles throughout. The pebble concentration then ended abruptly around 14cmbd, hence the interpretation that this is a layer of gravel, probably a paving. The layer contained glass and metal, and one possible basalt flake, and is probably associated with the occupation of this house.

PN: 28 ARPK_0060 Op. 1 TU 4 Context C
Context C saw the transition from deposits associated with the house site to sterile. The level contained no artifacts and ended at the [10YR2/2] Very Dark Brown compact clay that also marked sterile in TU 3. No artifacts, notably fewer rocks than in B, though the soil is still rocky and disturbed by roots. The unit was closed at C, profiles drawn and the unit backfilled.

PN: 29 ARPK_0055 Op. 1 TU 1 Context A
Very loose, dark, rocky soil on an interior terrace of ARPK_0055, containing a high concentration of historic artifacts, especially when compared with TU 2 from Op. 1, and units of similar size on ARPK_0060. There was apparently a large ant hill in this area, and there is a lot

of root disturbance, which may explain why the soil is so loose. There are no architectural features to speak of, but this deposit definitely contains a portion of the domestic assemblage from a house in this area.

PN: 30 ARPK_0055 Op. 1 TU 1 Context B
Context B is a continuation of the loose, dark soil excavated in A. Artifact frequency decreases at depth, as does the frequency of rocks (though the two are not necessarily linked). More historic household trash, perhaps this is a midden layer? A very large root is encountered at the northern part of the unit (~6cm in diameter), while a change to more compact soil may be visible in the southern part of the unit.

PN: 31 ARPK_0055 Op. 1 TU 1 Context C
This context was a continuation of the dark, loose soil excavated in A and B, though with a notable drop in the frequency of historic artifacts. There were large chunks of charcoal (1-2cm in diameter), and probably bird bone, as well as some burned medium mammal bone. The context was closed at a layer change to a lighter, more compact soil, though the interface has been fairly disturbed by root action, and possibly animal burrowing, as there was also rodent bone in this context.

PN: 32 ARPK_0055 Op. 1 TU 1 Context D
Context D was a more compact dark greyish brown (if relatively light when compared with contexts A-C) clay soil with some small charcoal inclusions, mostly concentrated towards the top and the more disturbed eastern portion of the unit. The layer ended on a much more rocky soil that does not have charcoal inclusions. This may be a small layer of agricultural soil dating to before the historical occupation of this area, or a fill layer gradually transitioning to rocky subsoil. The unit will be closed at this point, though we may return to this area as it is a promising location for a 19th century house site.

PN: 33 ARPK_0055 Op. 1 TU 2 Context A
Very loose top soil heavily intruded by roots – primarily small roots. Very rocky at the bottom of the level, representing a stratigraphic change. Only two small glass shards found – both hand picked, and nothing in the screen.

PN: 34 ARPK_0055 Op. 1 TU 2 Context B
Very rocky and filled with roots – rocks vary in size with no appearance of intentional deposit. Possible terracing/leveling deposit, but more likely natural. Came down to degraded rock/bedrock – only artifacts were at beginning of level and could be root drag.

PN: 35 ARPK_0055 Op. 2 TU 1 Context A
Opening layer was full of organic material and roots, coming down to what seems like a rock surface with pebbles <5cm along a level with artifacts sitting on top of it. This was especially true with several fragments of cow bone on top of the surface.

PN: 36 ARPK_0055 Op. 2 TU 1 Context B
Layer consisted of very rocky stratum of 80% pebbles <5cm, artifacts primarily at higher levels, coming down to a much lighter, less friable sub-stratum with gray decaying lava rock fragments. Layer was heavily intruded by roots.

PN: 37 ARPK_0055 Op. 2 TU 2 Context A
Dark, loose organic-rich soil with heavy root intrusion from small roots. Becomes rocky at the lower part of the context. The first 5cm or so had only land snail shell, then historic artifacts (glass, metal, ceramic) were found as the soil became rocky. This may be evidence for a gravel surface, as documented in ARPK_0055 Op. 2 TU 1 at a similar level, or in ARPK_0060 Op. 1 TU 4 possibly. Thus in this context we may have evidence for a rocky paved surface which was regularly swept, leaving only very small artifacts behind.

PN: 38 ARPK_0055 Op. 2 TU 2 Context B
This context consisted of a deposit gradually transitioning to sterile, rocky subsoil. Two nail fragments were found in the top 2cm of the context, and then a third fell in from higher on the profile (this was not kept). Other than that, there are no artifacts or other evidence of cultural activity in this level, and the unit is closed at this point.

PN: 39 ARPK_0055 Op. 2 TU 3 Context A
Topsoil layer of TU 3, the northernmost unit of the 1x8m trench through ARPK_0055 Op. 2. The sediment of this context goes from having almost no rocks and no artifacts, to many rocks and many artifacts about 5cm below the surface. Below the surface the rocky layer was exposed, just as in TU 1 from this operation. Also like TU 1, there is bone from a large mammal (pig?) on the surface of the interface between contexts A and B. Several large cobbles, interpreted as wall fall from the rock wall that establishes the southern boundary of this unit were removed during excavation. In addition, several stones from a probable buried course of the aforementioned wall were exposed during excavation. This layer is heavily intruded by large roots from a nearby Java Plum. It can be interpreted as a mix of sediment accumulated since site abandonment, and some of the artifacts left on the surface when this place was abandoned.

PN: 40 ARPK_0055 Op. 2 TU 4 Context A
Topsoil layer in the interior of the structure at Op. 2, composed of the northern half of the structure (4m mark of the trench) through the interior wall to the north. Some root intrusion, though not so much as TU 3, and as elsewhere in this site, a rocky layer is exposed a few cm below the surface. This unit does not contain as many artifacts as the exterior unit 3, so perhaps we are dealing with a swept surface. The concentration at the close of this layer is variable, but with no discernible pattern, and variability is probably simply a result of root disturbance of the layer interface.

PN: 41 ARPK_0055 Op. 2 TU 5 Context A
Topsoil layer. Like the other ones in this trench, dark, loose, root disturbed soil with very few artifacts at the surface, artifact frequency increases at interface with rocky layer below. In

addition, basal stones of this well appear to rest on this rocky layer (though I am still trying to distinguish basal stones from buried wall fall). The large stone encountered in the north profile of TU 2 turned out to be quite large, and lays flat in the unit, extending some 30cm to the north of TU2, though what this rock means is unclear at this time. Deposit was excavated from the 4m mark south to the northern end of the southern wall of this structure.

PN: 42 ARPK_0055 Op. 2 TU 6 Context A
Thin, dark topsoil layer outside of the south wall of the structure at ARPK_0055 Op. 2. In the southern part of the unit, overlies the rockier soil with artifacts as elsewhere. In the northern part of the unit, overlies a buried deposit of basalt cobbles abutting the basal stones (or what are believed to be basal stones) of the southern face of the aforementioned wall. These two deposits will be excavated separately as B and C.

PN: 43 ARPK_0055 Op. 2 TU 3 Context B
This context was one of the most productive in terms of artifacts among all the contexts excavated this season. It contained remarkable concentrations of glass and metal, as well as a coin which is badly corroded but bears a legible date of 1893. Unfortunately, the boundaries of this context are unclear because of intrusion by the large (ca. 5cm in diameter) roots of a nearby Java Plum tree. The context did contain large amounts of charcoal and faunal remains (large mammal bones and teeth). The context was closed around 30cm below datum, where the frequency of artifacts and stones decreases noticeably. Excavation of this unit will be stopped at this point, as we are confident that no intact deposits underlie this level, and the continuing root intrusion would be responsible for any artifacts we might find. We are also well below the base of the structure's northern wall.

PN: 44 ARPK_0055 Op. 2 TU 4 Context B
Rocky, artifact rich layer excavated to a depth of 40cm below datum 4/5. Contained abundant historic artifacts, with larger artifacts in the north and east of the unit, closer to the walls of the structure at ARPK_0055 Op. 2. Notable is the presence of a large amount of faunal material, including some long bones that appear to have been split to get access to the marrow. It is possible that we are looking at kitchen refuse that was discarded in this portion of the structure.

PN: 45 ARPK_0055 Op. 2 TU 5 Context B
Rocky, dark layer containing many artifacts, mostly concentrated in the upper part of the layer. Artifact concentration decreases at depth, and there may be a diffuse/gradual layer change to a lighter, less rocky soil in the southern part of the unit.

PN: 46 ARPK_0055 Op. 2 TU 6 Context B
This context consisted of a deposit of stone cobbles abutting the south face of the south wall of the structure at ARPK_0055 Op. 2. In the center the context was at its highest, containing 2-3 layers of cobbles, as if these stones had been piled against the wall after its construction. Contained within this deposit of cobbles were some large pieces of faunal bone, as well as the incisor of a large mammal, such as a pig or possibly a cow or horse. The deposit overlies the rocky, artifact rich layer found across the trench. It ended roughly level with the bottom of the basal stones for the wall face.

PN: 47 ARPK_0055 Op. 2 TU 6 Context C
Very rocky, very artifact rich layer below the topsoil and the cobble deposit. Dark brown soil with lots of small pebbles, as wall as large amounts of small bottle glass fragments, metal, and some larger pieces of faunal bone. This deposit appears to continue underneath the basal stones of the wall, so it may be a leveling deposit from the construction of this structure that then accumulated various bits of household garbage over time. While excavation was stopped at an arbitrary level, it appears that the soil below may be less rocky, at least at this surface. Several pieces of glass are visible in the closing plan. It will be interesting to see how this deposit fits in with the deposits inside and north of the structure.

PN: 48 ARPK_0055 Op. 2 TU 4 Context C
The remainder of the rocky layer in TU 4 was excavated for this context, revealing the lighter, less rocky, more compact/clay subsoil known from TU 2. Fewer artifacts were found at this depth, and none are found in the clay below. There was a small root hole in the northwest corner of the unit, near the south face of the north wall of the structure, which is very shallow, amorphous, and was excavated with this context, being a part of the overall root-disturbed interface between the rocky fill and subsoil. It appears that this context, along with B, represents the habitation layer for this site, associated with the stone structure visible on the surface.

PN: 49 ARPK_0055 Op. 2 TU 5 Context C
End of the rocky cultural layer, transitioning to subsoil. Removed the large stone north of TU 2, underneath was heavy root disturbance, a few artifacts. Probably this stone was part of the wall and fell into the structure early after abandonment. Subsoil may be slightly higher in the south of the unit, was probably exposed some at the close of CTX. B. This unit is slightly more root disturbed than TU 4, but otherwise shows the same depositional sequence.

PN: 50 ARPK_0055 Op. 2 TU 6 Context D
Context located just outside and below the south face of the south wall of the structure at ARPK_0055 Op. 2. Contained the remainder of the rocky cultural layer and the beginning of the lighter, less rocky subsoil. The rocky layer had significant artifact presence, including the ubiquitous glass and metal, one piece of green bottle glass that appears to be a glass "core" used for expedient flake tools, and small amount of faunal material. Below this there are no artifacts, and the soil changes. Overall, this structure appears to be a hastily build, briefly occupied house lived in during the period we are concerned with (1866-1900). This concludes our excavations here.

PN: 51 ARPK_0001 Op. 1 TU 5 Context A
This context was excavated to remove the leaf litter, and to expose the stone paving in the southwest quadrant of the unit. It contained very few artifacts, and consisted primarily of grass that had grown up in between the paving stones.

PN: 52 ARPK_0001 Op. 1 TU 5 Context B
Stone paving consisting of small, flat boulders and rounded cobbles, 1 course deep. This paving

extends from this unit to the south, reaching to within 1m or so of the chimney's north wall. It is possible that an entrance to this structure was located in this vicinity. The paving does not extend to the east or north, making it an unlikely candidate for a wall footing.

PN: 53 ARPK_0001 Op. 1 TU 5 Context C
Sediment located to the north and east of the stone paving. About 60m north along the east profile, a large amount of bottle glass was encountered ca. 32cm below datum. This will be collected separately, will be excavated as Context D. End of context coincident with the bottom of the stones of the paving, perhaps this is the old occupation surface? Some of the bottle glass was removed from Context D before we realized what was there, but it was collected separately and will be kept with D. The rest of the unit is pretty base, so it is convincing as a separate deposit.

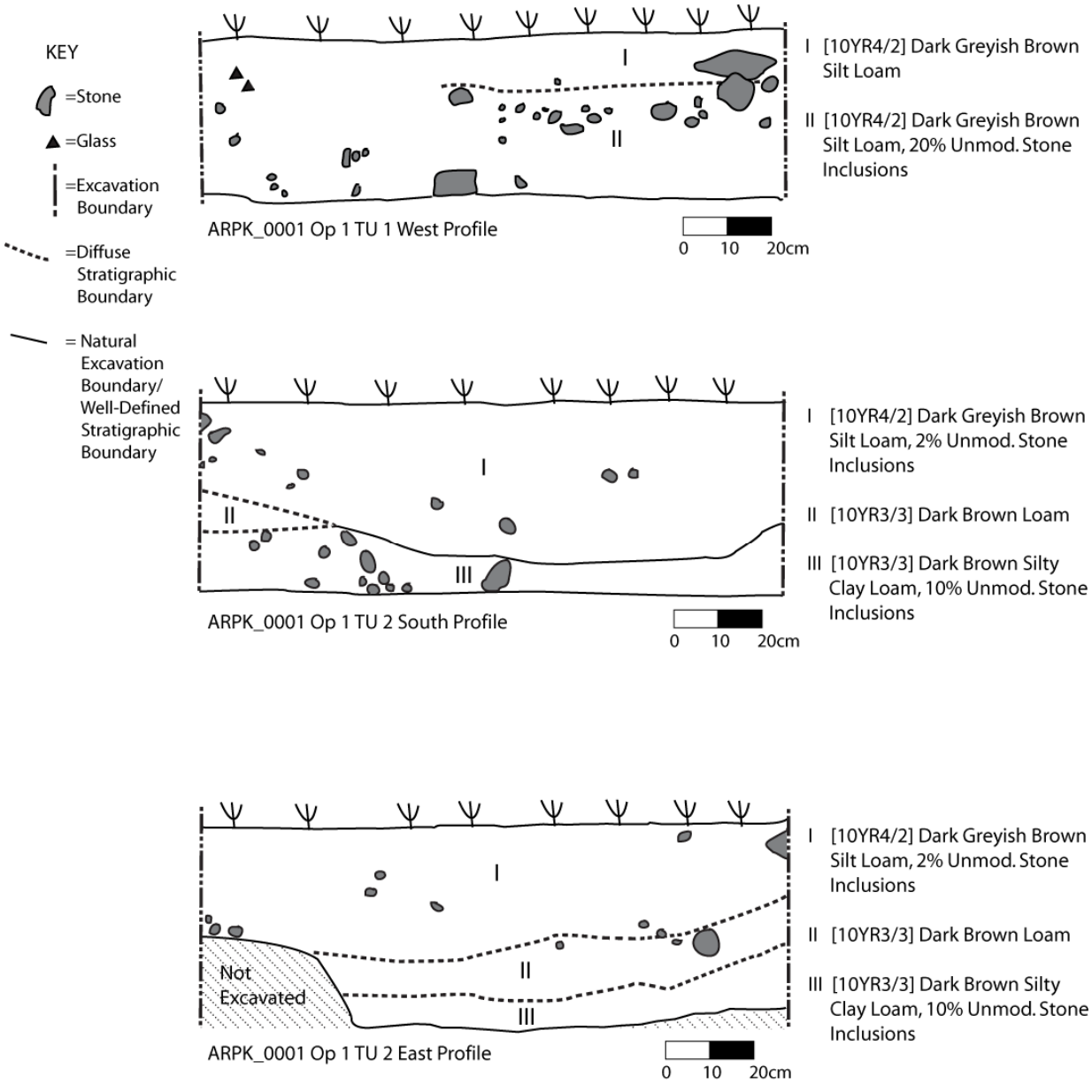
PN: 54 ARPK_0001 Op. 1 TU 5 Context D
Cache of bottle glass and other artifacts in the eastern part of the unit, which is very shallow and appears random, simply a concentration of artifacts, perhaps swept out the door of the nearby structure. Artifacts continue into the eastern profile, which was slightly damaged removing this context, as sediment loosened when artifacts were removed. All of the sediment from this context (approx. 1.5L) was kept for wet screening/flotation, as this deposit has excellent potential to yield telling information concerning the daily lives of the nearby household.

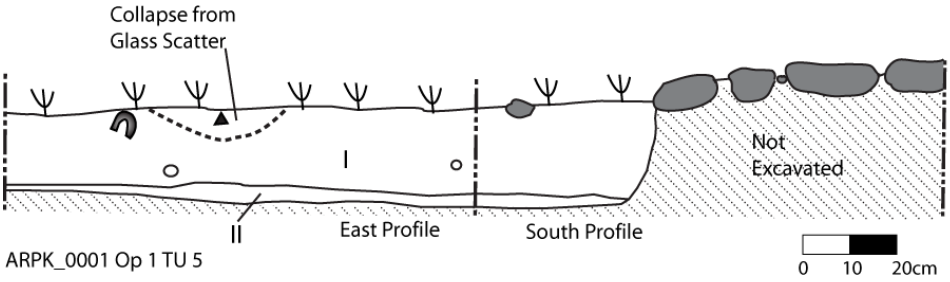
PN: 55 ARPK_0001 Op. 1 TU 5 Context E
Artifact rich sediment below the artifact cache and the level of the bottom of the paving. Included some notable metal finds, including a piece of a metal strip with a hole, presumably for a nail or screw, and a piece of metal coiled around itself, possibly worn as a bead. There were also a few potential lithic flakes, though this needs to be confirmed in the lab. Artifact density drops off at depth, and we may be nearing sterile.

PN: 56 ARPK_0001 Op. 1 TU 5 Context F
The remainder of the cultural layer was excavated as Context F, revealing a mottled clay subsoil underneath. A few artifacts were found at the top of the layer, then nothing for several cm above the subsoil. Excavation will be closed at this point.

Appendix 4. Profile Illustrations

Below are stratigraphic profile illustrations produced during test excavations of Kalawao house sites. Note that the profile of ARPK_0055 Op 2 TU 3/4/5/6 appears in Chapter 7, and is not reproduced in this appendix.

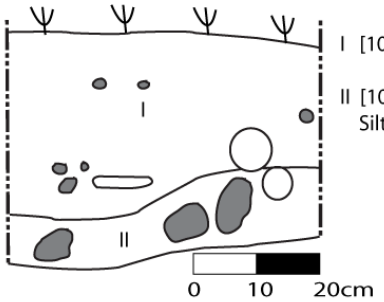




ARPK_0001 Op 1 TU 5

I [10YR3/2-4/2] Very Dark Greyish Brown Silty Clay Loam

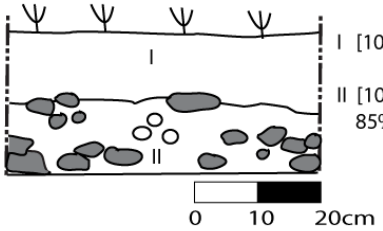
II [10YR 3/2] Very Dark Greyish Brown Silty Clay Loam (60%), [7.5YR5/4] Brown Silty Clay (40%)



ARPK_0055 Op 1 TU 1 West Profile

I [10YR2/2] Very Dark Brown Loam

II [10YR3/2] Very Dark Greyish Brown Silty Clay



ARPK_0055 Op 1 TU 2 North Profile

I [10YR2/2] Very Dark Brown Clay Loam

II [10YR3/4] Dark Yellowish Brown Clay, 85% Unmod. Stone Inclusions

KEY

=Stone

=Root

=Glass

=Metal U

=Excavation Boundary

=Diffuse Stratigraphic Boundary

= Natural Excavation Boundary/ Well-Defined Stratigraphic Boundary

KEY

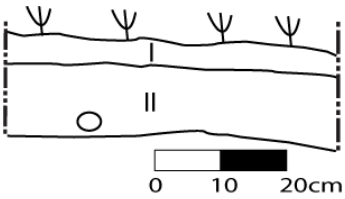
=Stone

=Root

=Excavation Boundary

=Diffuse Stratigraphic Boundary

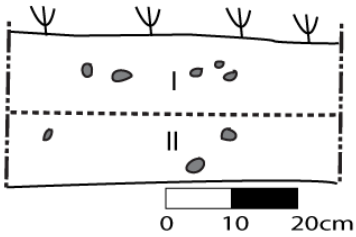
= Natural Excavation Boundary/ Well-Defined Stratigraphic Boundary



I [10YR2/2] Very Dark Brown Clay Loam

II [10YR2/2] Very Dark Brown Clay Loam, 85% Unmod. Stone Inclusions

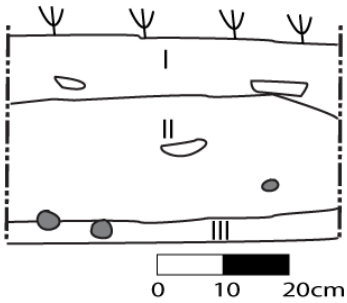
ARPK_0055 Op 2 TU 1 North Profile



I [10YR2/2] Very Dark Brown Loam

II [10YR3/2] Very Dark Greyish Brown Silty Clay Loam

ARPK_0055 Op 2 TU 2 West Profile

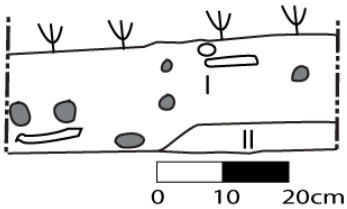


I [10YR3/2] Very Dark Greyish Brown Loam

II [10YR3/3] Dark Brown Loam

III [10YR2/2] Very Dark Brown Clay

ARPK_0060 Op 1 TU 3 East Profile



I [10YR3/2] Very Dark Greyish Brown Silty Clay Loam, 15% Unmod. Stone Inclusions

II [10YR2/2] Very Dark Brown Silty Clay Loam

ARPK_0060 Op 1 TU 4 East Profile