HOUSEHOLD ARCHITECTURE AND RELIGIOUS PROSCRIPTION IN PRE-CONTACT HAWAI‘I

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ABSTRACT

In ancient Hawai‘i, elites employed ideology as a way of acquiring and stabilising political and economic power. Material evidence of this is found in the numerous temples throughout the islands and in the formalised rules for constructing elite households. Ethnohistoric literature describes Hawaiian households as a collection of buildings with specific functional purposes. By segregating these activity areas, people were seen to observe kapu, a Polynesian ideological concept which, in Hawai‘i, includes restrictions around gender and eating practices. This adherence was particularly vital to the elite as failure to observe kapu could pollute mana, the divine source of authority and power. However, it is unclear how kapu shaped the daily lives of non-elite Hawaiian society. This thesis addresses this problem by employing a high-detail GPS survey and assessment of pre-contact households in a coastal section of Manukā, Ka‘ū district, Hawai‘i Island. A number of attributes were identified from ethnohistoric accounts which would reflect the practice of religious orthodoxy in the home. The results suggest that kapu, and Hawaiian religion more generally, was practiced in remarkably similar ways across the social ranks. Future research in this area will have important implications for how archaeologists view the kapu system, and will provide an avenue for research which has cultural significance for Hawaiian communities today.
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1.0 INTRODUCTION

1.1 THE HAWAIIAN ARCHAIC STATE

Anthropologists have long been fascinated by the way humans structure their communities. The earliest typological models of these social groups posited that key events pushed the transition from one type of society to the next in a unilinear social evolution from egalitarian social structures to highly stratified “civilisation” (White 1959). These models have been replaced by a more rigorous approach that divides groups into categories based on sets of traits that are cross-culturally found to co-occur (Fried 1967; Sahlins 1958; Service 1962). Today, anthropologists focus on the mechanisms of social change—understanding how and why social complexity increases or decreases over time (Bell 1992; Earle 1991a, 1997; Mann 1986; Mann 2012; Pauketat 2001; Price & Feinman 2010).

Until recently, Hawai‘i was awkwardly classified as either the most highly stratified example of a chiefdom type society (Sahlins 1958:47) or an emerging archaic state (Hommon 1976, 1986). Research now provides strong evidence that Hawai‘i had many of the traits of a state level society on the eve of European contact (Hommon 2013; Kirch 2010). In doing so, this research is also challenging the long standing assumptions about the essential characteristics of state level societies such as having a nucleated settlement pattern or a centralised administrative centre (Hommon 2013:2).

From the perspective of the political economy (Earle 1991a, 1997), the increase in elite control over Hawai‘i’s economic, military and ideological systems led to the fundamental shift from ancestral Polynesian society, to the highly complex Hawaiian state. The development of economic control in Hawai‘i has been widely studied by archaeologists (e.g., Field et al. 2010; Field et al. 2011a; Ladefoged & Graves 2008; Ladefoged et al. 2009; Vitousek et al. 2004), who note rich ethnohistoric records of a structured system of land division is also evidence of a high level of economic control (Earle 1991b:80; Field et al. 2011b), accounts of large armies which are rife in oral and written histories (Earle 1997:131-7; Kirch 2010:69-72; Kolb & Dixon 2002) and ideological control through the divine authority of the elite (Kirch 2010:220; Kirch & Sharp 2005; Kolb 1994a; Kolb 1994b; McCoy 2008).
Ideologies are thoughts, behaviours and beliefs which create inequalities among social groups that are able to persist through time (Bell 1992:193; Earle 1997:149; Miller & Tilley 1984:14). In order for ideas to be shared and reproduced in the archaeological record, they must be materialised in a form which promotes a common experience of the ideas (DeMarrais et al. 1996:17). One of the most obvious ways ideological control was manifest was in the construction of large temples (*heiau*) (Kirch 1990, 2004; Kirch & Sharp 2005; Kolb 1994a; Kolb 1994b; Kolb & Radewagen 1997; McCoy 2008; McCoy et al. 2011). These temples were focal points of ritual activity and sacrifice (Valeri 1985:173) and were often explicit demonstrations of the wealth and power of the elite who commissioned them. The temple Pu'ukoholā (Figure 1.1), for example was constructed by Kamehameha I in 1792 to consecrate his conquest of the Hawaiian archipelago (Kolb & Dixon 2002:518). It is believed thousands of people were brought in to construct the massive temple (Cordy 2000:336) in an obvious display of Kamehameha’s power. After the unification of the islands of Hawai‘i, Maui, Moloka‘i and O‘ahu, Kamehameha I had the major temples across the islands dedicated to his war god (Kamakau 1961:188) in an act which “ritually solidified” his control over the archipelago (Kolb & Dixon 2002:518).

Ethnohistories also describe a more subtle form of ideological control manifest in Hawai‘i called the *kapu* system (Handy & Pukui 1958; Kamakau 1961, 1964; Malo 1951). The *kapu* system was a set of religious restrictions that ordered almost every aspect of daily life (Kirch 2010:38). The term *kapu* refers to ideas, people, places and objects that are sacred, forbidden or restricted (Kirch & Green 2001:239; Pukui & Elbert 1986:132) and was used to restrict people from certain activities, locations, food and other objects (Handy & Pukui 1958:9-11; Malo 1951:27-9). Through these restrictions, certain groups of people, such as women and commoners, become marked as inferior to other groups, such as men and elite (Valeri 1985:128).
1.2 RESEARCH PROBLEM

Given the importance of the kapu system to structuring the Hawaiian political economy, it is necessary to understand how the ideological system was applied in practice. Much of the previous research on ideological systems in Hawai‘i and elsewhere focus largely on the role of the elite in creating and sustaining political power as they manifest ideology in materially obvious ways (DeMarrais et al. 1996:17). What this means is that studying the role of elite only provides us with information on the strategy to gain political power – the intention of the elite to promote specific thoughts and values. Practice theory suggests that social change is the cumulative result of people’s actions and that while these actions may be influenced or guided by shared social “structures” such as ideology, people are free to make their own decision, to accept, reject or challenge a whole or part of the structure (Bell 1992:192; Ortner 1984:154-5; Pauketat 2001:79-81). In other words, promoting a certain belief will do little for an elite’s political position unless people act in accordance with that belief. Thus, it is in the actions or practice of the people that we see the elite ideological strategies come to fruition.
Hawai‘i provides us with a unique opportunity to investigate how ideological ideas and values were incorporated into the wider society. Unlike the overt materialisation of ideology through public displays, such as temples (heiau), the practice of kapu can be seen in ethnohistoric descriptions of the traditional Hawaiian household (kauhale) (Handy & Pukui 1958:7-13; Kamakau 1976:96; Malo 1951:27-9, 122). Weisler and Kirch (1985:141) describe the traditional Hawaiian household (kauhale), as “a cluster of separate houses and shelters, each structure restricted to certain household members and used for specific functions.” The segregation of household structures and their functions allows the inhabitants to physically separate activities and objects that are kapu from ordinary or non-sacred (noa) (Ladefoged 1991:67; Sweeney 1992:31). The formality of house construction, however, is associated most closely with elite (ali‘i) households (Clark 1986:202; Cordy 1981:74; Kirch 1985:252; Malo 1951:122) and it is unclear to what extent commoner (maka‘āinana) households reflected the religious ideological system and how it influenced their daily lives. Thus, this research aims to investigate the question “how pervasive was the kapu system in daily life?” through an analysis of how kapu and other religious ideals are reflected within the households of commoners (maka‘āinana) and elite (ali‘i).

1.3 OVERVIEW OF METHODOLOGY AND ANALYSIS

While discussions of kapu and religious life in ancient Hawaii have focused on the in-depth analyses of ethnohistoric documents (Beckwith 1970; Shore 1989; Valeri 1985), one of the goals of this study is to develop an explicit methodology to track the material expressions of religious orthodoxy at the level of individual households. This builds on a suite of previous studies that have noted adherence to the orthodox principles of kapu in domestic architecture (Kirch 1985; Kirch et al. 2010; Van Gilder & Kirch 1997; Weisler & Kirch 1985). This required a high-detail survey of domestic architecture that took advantage of the digital data model built in to survey grade GPS (i.e., points, lines, or polygons) in such a way that would be sensitive to the types of elements that the builders of these households may have chosen specifically to reflect an adherence to principles of orthodox religious beliefs. Therefore, I carried out a survey in a coastal segment of Manukā Ahupua‘a, Hawai‘i Island where previous research had shown intact house foundations could be found (Figure 1.2). From the survey data, five residential complexes were identified and subsequent analysis was used to rank households relative to one another based on the extent of architectural investment in each household complex. From
the ethnohistoric traditions I identified attributes of household organisation and architecture which were likely to reflect aspects of the *kapu* system. The presence or absence of these traits within the residential complexes at Manukā was used to infer whether *kapu* was practiced within each household. Further, I looked at how religious architecture and features were incorporated at the household level to assess whether there were obvious quantitative differences in the investment of religion between the complexes.

The results of this study show that virtually all pre-contact era households, regardless of the rank they were, commoner (*maka‘āinana*) or elite (*ali‘i*), reflect ideological notions of the *kapu* system, suggesting that it was a pervasive ideological system across social ranks. Further, those same households all incorporate religious architecture in features within residential complex, but there is variation in the ways they are expressed. From the perspective of practice theory, the evidence that commoner households (*maka‘āinana*) incorporate elements of Hawai‘i’s religious ideological system implies that they are as much agents of social change as the elite (*ali‘i*) who wield overt forms of ideological control.

Figure 1.2 Map of Hawaiian Islands showing location of Manukā survey area
1.4 **OUTLINE OF THE THESIS**

The background chapter, Chapter 2, is presented in four sections. The first section outlines the major theoretical perspectives used in this thesis: political economy theory and practice theory, and illustrates a number of ways in which archaeologists have addressed ideological strategies for control. Section two provides an overview of the Hawaiian political economy at European contact. The next section describes the *kapu* system and its importance to Hawaiian social structure. In the last section the ethnohistoric descriptions of the traditional Hawaiian household (*kauhale*) are summarised and compared to historic and archaeological evidence for residential complexes.

In Chapter 3, the survey region in Manukā Ahupua‘a, Hawai‘i island is described. The chapter starts with an overview of the environment of Manukā. This is followed by an account of the history of settlement in the region from initial settlement in the pre-contact period to the recent past. Lastly the archaeological investigations within Manukā are described, with special focus on the coastal area around Manukā Bay.

Chapter 4 describes the method employed in this research. This chapter starts with a description of the survey methodology which defines the major units of analysis of this thesis: components, buildings, features and complexes. The next section describes how this methodology was implemented in the field including a GPS survey and post-processing of survey data. The final section outlines three analyses: how complexes were ranked using investment in architecture to measure status, what household attributes would tell us about adherence to the *kapu* system, and how investment in religious architecture and features were measured.

The results, presented in Chapter 5, include a formal description of what was found on survey and the analyses of architecture. First an overview of the survey is given, focusing on the pre-contact remains identified at Manukā. This includes a description of the buildings and features within each complex. A more detailed description of all remains can be found in the Appendix 2. The second section of this chapter focuses on the interpretive analysis of the residential complexes interpreted from the survey data. The complexes are ranked into three relative status groups: higher, middle and lower. Each of these three groups has attributes which reflect ideological restriction of the *kapu* system. Lastly, each of the groups also shows investment in religious architecture and features, although the higher ranked complex has the greatest investment by far.
In Chapter 6, the results are discussed in three sections. The first section addresses the primary research question of whether *kapu* is reflected in Hawaiian households across ranks. The results are interpreted in light of other observations from the survey and compared to the previous research on Hawaiian households. The second section addresses the investment in religious architecture and features within households. The trends are discussed in light of social responsibilities of different social groups and an interesting variation in house building is described. Lastly the methodological limitations and theoretical implications of this thesis are considered, including some lines for future research. The conclusion, Chapter 7, briefly summarises the main arguments and results of the thesis.
2.0 BACKGROUND

The traditional religion of the Hawaiian Islands is a vast topic (Beckwith 1970; Kamakau 1991; Sahlins 1981; Shore 1989; Valeri 1985). This study focuses specifically on material evidence of the system of religious orthodox practices called the kapu system. The purpose of this work is to provide a more in-depth understanding of how subtle forms of controlling processes operated in the past. Thus, I begin with an overview of the major theoretical perspectives which influence this research. Political economy theory is a way to understand the motivations of different social groups and the strategies employed to create economic, military and ideological power, while practice theory provides the mechanics to understand how the ideological process works. Several case studies illustrate ways that ideology has been studied archaeologically. In the following section, the political economy is explored by drawing on accounts of ethnohistorians, early foreign visitors and anthropological and archaeological research. It provides an overview of the Hawaiian archaic state at the time of European contact and the divine authority of the Hawaiian elite. Following this is a more detailed look at the kapu system and why it was an essential aspect of Hawaiian society. In the last section, ethnohistoric accounts of the tradition Hawaiian households are summarised and compared to archaeological evidence of pre-contact settlements.

2.1 OVERVIEW OF THEORETICAL PERSPECTIVE

One of the dominant themes of world archaeology has been an interest in the development of social complexity (Earle 1997:1) and in particular, state formation (Feinman 2004:1). In complex societies, people are organised around a stratified social system, where groups of people have different rights, responsibilities, and access to wealth and resources (Baines & Yoffee 1998:234; Bottero 2005:5; Price & Feinman 2010:2). One of the major analytical tools for explaining how these social inequalities develop and persist through time is political economy theory (Earle 1991a, 1997; Feinman 2004:1; Hirth 1996:204; Mann 2012).

2.1.1 POLITICAL ECONOMY

Political economy theory has its origin in the uptake of Marxist thought among anthropologists in the 1960s and 1970s (Ortner 1984:138) and proposes that the authority
and power of leaders to create and sustain social stratification derives from strategic control of the economy, military and ideology (Earle 1991a, 1997; Mann 2012). Earle distinguishes three concepts which we can use to describe relationships of inequality in a political economy perspective—authority, power and control (Earle 1997:3-4). Authority derives from the inherent capabilities of a person or their social position that allows, or requires them, to lead. People generally follow authority without overt coercion (Earle 1997:3; Mann 2012:8). In contrast, power derives from a person’s ability to master the process of creating an unequal relationship among people. People follow, but it often requires overt displays of strength or wealth to compel obedience (Earle 1997:3; Mann 2012:7). Authority and power are not exclusive concepts; they reinforce each other to create and legitimise social status (Earle 1997:3). Lastly, control is one’s ability to harness three main power sources and restrict others from accessing them (Earle 1997:4).

2.1.1.1 Economic control

Although economy, military and ideology are all important sources of power, political economists generally agree that control over the economy underpins the development of social complexity (Earle 1997:7; Feinman 2004:1; Hirth 1996; Lucero 2003:524; Stanish 2004:10). The economy is the system by which goods, labour and wealth are produced, exchanged, distributed and consumed (Feinman 2004:3; Hirth 1996:207,209). It provides the opportunities for people to promote or restrict certain aspects of this system, such as land ownership or food production, to create lasting inequalities over others (Earle 1997:7; Stanish 2004:10). One of the primary aims of economic control is to produce more goods than the economy would normally consume. The surplus goods produced can then be reinvested in other aspects of the economy or invested in military or ideological strategies (Earle 1997:203; Lucero 2003:524).

Control of subsistence and wealth economies provides different avenues for social power within a political economy (D'Altroy & Earle 1985:188). Subsistence economies are based primarily on the production and exchange of staple goods. Staple goods are those with intrinsic value, such as food, clothing or housing, and are necessary for general wellbeing (D'Altroy & Earle 1985:188; Earle 1997:67,70). Economic control in subsistence economies usually takes the form of some sort of tax or “gift” of staple produce to the appropriate political entity, and must be grounded in some form of formal property system (D'Altroy & Earle 1985:188; Earle 1997:70-7). Wealth economies are based on the
production and exchange of “special” objects, goods or money with a symbolic rather than intrinsic value (D'Altroy & Earle 1985:188; Earle 1997:73). In wealth economies, elites control specific aspects of the production or distribution systems of special goods, such as supporting craft specialists who produce these items, or dominating trade routes that restrict their exchange (Earle 1997:73). Staple surplus could be reinvested in projects that will further promote economic control such to supplying labour for the construction of irrigation projects or invested in military or ideological power (Earle 1997:71), while wealth economies are important for creating a symbolic, material basis for social hierarchy (Figure 2.1)(Baines & Yoffee 1998:212; Earle 1997:73).

2.1.1.2 Military control

An elite’s ability to integrate economic control with the other major power sources, such as military power, is a deciding factor in their political success (Earle 1991a:8-9, 1997:4; Mann 2012:28). Military power derives from the command of an army, defined as a group of full- or part-time specialists whose role is to “conquer, defend, police and intimidate.”(Earle 1997:105) An army is supported by economic surplus, and can be used to conquer polities or regions - creating trade networks, supplying land and coerced labour for other military, economic or ideological projects (Earle 1997:105,110; Mann 2012:26). Elites who command an army could offer defence and security to people, often in direct exchange for good or services, and be used to intimidate and quell revolts or resistance (Earle 1997:105) (Mann 2012:28). To understand what gives elites the right to rule over armies or appropriate economic resources and what inspires people to die for their countries or superiors, we must look to the third source of power, ideology.

2.1.1.3 Ideological control

Ideological power derives from “beliefs, ideas, values, truths and lies, dogmas and doctrines” that are shared by social groups (Earle 1997:142; see also Bell 1992:192; Burke 2006; Eagleton 1991; Miller & Tilley 1984:13-4). Ideology guides the thoughts and actions of people thus promotion of specific ideological values of the elite can be used to legitimise and facilitate elite control over other sources of power (DeMarrais et al. 1996:16; Earle 1997:149; McAnany 2004; Miller & Tilley 1984:14). As a grossly simplified example from modern society, the common stereotype of women as emotionally unstable encourages employers to take on greater numbers of men, thus ensuring them a
greater access to wealth, through employment, than women. Ideology is also supported by an economic base. Economic surplus can be used to support ritual specialists, the production of symbolic goods or labour for construction of monuments, each of which can promote specific ideological values (DeMarrais et al. 1996:17; Lucero 2003:524).

Ideology is often communicated through religion; however, they are not the same (Bell 1992:187; Earle 1997:144). While they both incorporate beliefs, ideas and values, ideology consists of those notions that are strategically employed to create and legitimise social inequality (Bell 1992:193; Earle 1997:149; Miller & Tilley 1984:14), while religion consists of those notions which have to do with a higher power or supernatural force (Renfrew 2007:113). Religion does not necessarily promote social inequality over others, yet ideological notions are often nested within religious values (Bell 1992:187; Earle 1997:144). It is no coincidence that in many archaic states, the supreme ruler is both head

Figure 2.1 Relationships between the sources of power in a political economy, (From Earle 1997:Figure 6.1)
of the political system and the religious system, a position legitimised by complex religious ideologies (Marcus & Feinman 1998:6).

2.1.1.4 Strategies and Power

These three sources of power, economy, military and ideology, strategically integrated, provide the structures which create and maintain social inequalities (Earle 1997:207; Mann 2012:28). The Mantaro Wanka of Peru (500-1534 AD), for example, derived their power primarily from military might which was legitimised by a simple ideological system. The military was not used to expand their economic base or elaborate their ideology leading to a history characterised by small, relatively unstable polities (Earle 1997:194-6). Political stability was achieved when the Incans conquered the Wanka, solidified their economic base in the region through intensification of agriculture and manipulated the indigenous ideological structure to emphasise wealth items that could only be provided through the Incan state (Earle 1997:189,196). The Inca integrated military, economy and ideology more efficiently in order to sustain the social stratification and political stability in the region (Earle 1997:196).

To understand states in prehistory, archaeologists identify evidence of the economic, military and ideological strategies by looking at the material remains. Economic strategies are fairly straightforward to identify directly from archaeological evidence. For example, the intensification and expansion of agricultural systems can be identified archaeologically through the spatial analysis of wall boundaries (Ladefoged & Graves 2008) and the development of property systems can be identified through settlement pattern analysis (Dixon et al. 1999). A range of techniques are also available to document strategies involving the production and exchange of wealth goods (McAnany 2004; Stanish 2004). Military strategies too can be identified archaeologically and understood through remains of weapons or defensive structures or skeletal evidence of trauma (Kolb & Dixon 2002:514).

Ideology is more difficult to identify in archaeology; it is inherently non-material and an initially intangible source of power (DeMarrais et al. 1996:16). Found in the morals and virtues of religious thought (Earle 1997:144) or as a subtle background in oral traditions and cosmogony myths (Moore 1996:218), ideology uses both obvious and subconscious meanings to influence the ways humans think about the world (Eagleton 1991:222-3). Archaeology is incapable of identifying ideological strategies without a
bridging theory that tells us how peoples’ thoughts, beliefs etc., are reflected in archaeologically visible ways. Theorists and archaeologists alike have turned to practice theory to bridge that gap (Burke 2006:133; Lucero 2003:525; McGuire & Bernbeck 2011:169,173; Miller & Tilley 1984:13; Moore 1996:12).

2.1.2 PRACTICE THEORY

Bourdieu’s (1977) “Theory of Practice” emerged from the growing dissatisfaction with structural theories in the 1960s. By the early 1970s, a number of well-known theorists were criticizing the structuralist view that social structures determined human action and the course of history (Ortner 1984:144). Theorists such as Pierre Bourdieu, Clifford Geertz, Anthony Giddens, Sherry Ortner, and Marshall Sahlins called for the consideration of independent human actors, all capable of interpreting and shaping the world around them (Ortner 1984:144-5).

Structuralism, however, remains an integral component of practice theory. For practice theorists, the world is ordered by structures - cognitive schemes about the world and how it works (Ortner 1984:148). Structures are learnt and reproduced through doxa and habitus. Doxa refers to the self-evident beliefs or logics of a social group which are “beyond question,” while habitus denotes the behaviours, skills and habits shared by a social group, which are not actively learned but internalised through routine (Bourdieu 1977:168, 78-9). In other words, the ideas that shape the way we see the world are reflected in the things we do and thus ideological structures are manifest in the material world.

Where practice theory differs from structural theories, is that, while habitus and doxa guide human thought and action, they do not preclude logic and reason. Individuals have agency, the capability for individual thoughts, goals, wants and beliefs, which allows them to work within the structures, consciously or not, to achieve goals and ultimately, elicit social change (Ortner 1984:154-5; Pauketat 2001:79). Practices are the human actions that result from the interplay between societal structure and human agency (Pauketat 2001:80). This means that not only is ideology materialised, it is continually reproduced, interpreted and manipulated through people’s actions. Practice has real, intentional or unintentional consequences in society that can change the way people think about the world and thus change the structure governing societies; “all people enact, embody, or re-present traditions in ways that continuously alter those traditions.” (Pauketat
It is through the accumulation of these alterations in practice that social change occurs and history is created (Pauketat 2001:81).

Practice theory allows us to understand ideological strategies that create inequalities by distinguishing ideological structures in society, an agent’s motivation and their action. The elite are agents who promote specific ideological interpretations that benefit certain social groups and encumber others, leading to the lasting inequalities at the heart of social complexity (Bell 1992:192; DeMarrais et al. 1996:16; Earle 1997:143). Those who experience this may be convinced to believe or accept, or reject the messages communicated (Miller & Tilley 1984:14). For this reason, the effective appropriation of ideology occurs when ideas promoted build upon existing ideological structures (Eagleton 1991:15). On the other hand, all people have agency and are capable of promoting ideologies and inspire actions that actively resist control (Bell 1992:192; DeMarrais et al. 1996:16).

People communicate their ideological notions through the practice of materialisation, “the transformation of ideas, values, stories, myths, and the like, into a physical reality” (DeMarrais et al. 1996:16). In order to be incorporated into the structure of society, ideologies must be materialised in ways that create a shared experience, specifically, through “ceremonial events, symbolic objects, public monuments and writing systems” (DeMarrais et al. 1996:17). As a result, those with economic backing are able to propagate their ideology more successfully than those who do not, and restrict the ideological power of others by restricting access to economic resources (DeMarrais et al. 1996:17). Consequently, archaeologists have found the most obvious examples of ideological strategies within the public arena and reflecting the dominant ideologies of the elite.

2.1.3 IDEOLOGICAL STRATEGIES IN PRACTICE

In practice, these ceremonial events, symbolic objects, public monuments and writing systems do not occur in isolation but as part of wider strategies to create and legitimise social hierarchies. Ceremonial events, for example, often include the use of symbolic objects and occur at public monuments. Archaeologists and historians, however, have generally attempted to identify specific strategies of ideological control. Here I will discuss several such strategies used by elite to materialise dominant ideologies: monumental architecture of the Thy chiefdom in Denmark and Chimu state in Peru, high
culture in the archaic states of Egypt and Mesopotamia, and sumptuary laws of the Tudors and in the Southern Low Counties, what is now present day Belgium. While these are not the only strategies employed in each of these locations, they provide an idea of the multitude of ways in which ideologies can be materialised to create, alter and reinforce social order.

2.1.3.1 Monumental architecture

Monumental architecture is perhaps the most well-known example of how elites make statements to a wide audience about their power and wealth and hence, their authority to rule (DeMarrais et al. 1996:18; Kolb 1994a). Monumental architecture itself, however, also represents a locus for ideological materialisation through the performance of ritual ceremonies and a means of “organizing and materializing social relationships and boundaries” reinforcing hierarchical access to physical spaces and resources (DeMarrais et al. 1996:19).

Monumental architecture from the Thy chiefdom of Denmark for example shows an ideological shift associated with emerging chiefly linages. The early megalithic burial mounds were a locus for public ceremonies and acted as “homes for the dead” where multiple individuals shared the same burial thus promoting a shared community identity connection to the landscape (DeMarrais et al. 1996:20; see also Hodder 1990). Subsequently, burials incorporated single individuals, and burials were grouped together in what appears to represent family linages (DeMarrais et al. 1996:21). This shift from emphasising community identity to family lineage represents an ideological strategy to promote inheritance of authority and power of the emerging elite along family lines. Not only did this connect specific families with local land and resources via their material connection to the landscape through burials, but it also helped to sustain these inequalities over generations (DeMarrais et al. 1996:21).

In the next example, an analysis of the architecture of Chan Chan, the capital city of the Chimu state (900-1470AD) and peripheral Chimu cities in Northern Peru (Moore 1996:68), identified spatial patterns which correlated with dominant themes in cosmogony myths (Moore 1996:218-9). These myths naturalised the stratification of social classes; for example noble males, noble females and all common people were born from three different eggs (Moore 1996:175-6). They also repeated themes of physical separation of individuals behind built walls which implied a special status upon the segregated
individual (Moore 1996:179). These themes were materialised not only in the large royal compounds surrounded by high walls which segregating the nobles from the rest of society, but also in patterns of access within compounds found across the Chimu state (Moore 1996:181, 219). Multiple routes navigated access to specific areas within the compound and not only prohibited movement but routes made their way through specific architectural elements such as ramps, plazas and specifically oriented rooms which shaped the encounters of lord and subject (Moore 1996:219).

2.1.3.2 High Culture

Another strategy that archaeologists have identified as ideological control is high culture (Brumfiel 2000:131). High culture is defined as “the production and consumption of aesthetic items under the control, and for the benefit, of the inner elite of a civilisation, including the ruler and the gods.” (Baines & Yoffee 1998:235). These aesthetic items have symbolic meanings, which communicate “spiritual, moral and intellectual content” of the elite and serve to legitimise and normalise the social order, yet can only be fully “understood” by few elite (Baines & Yoffee 1998:236,238). Baines and Yoffee (1998:240) suggest that, rather than being a separate culture, high culture represents a materialisation of ideology by elite that is lacking in common culture. As a consequence, archaeologists have come to think of high culture as self-legitimising and unconcerned with non-elite (Brumfiel 2000:132). High culture is primarily reflected in distributions of distinctly symbolic material culture and writing, however, ceremonies and monumental architecture play important roles (Baines & Yoffee 1998:236; Brumfiel 2000:132-3).

Baines and Yoffee (1998) cite examples of the high culture in states of Egypt and Mesopotamia, which inculcate the upper class with ideologies that reinforce the hierarchical structures amongst elite and unify diverse groups into the working social order. In Egypt, high cultural representations in stone relief carving were loaded with symbolism promoting the ultimate authority of the gods and the king (Baines & Yoffee 1998:244). Prior to, and throughout the early dynastic period (2950-2575 BC) (Baines & Yoffee 1998:202) the most exquisite examples of these carvings became increasingly restricted to certain segments of the elite through the inclusion of specialist writing forms and seclusion of works in temples or tombs (Baines & Yoffee 1998:244-5). This restriction served to promote hierarchical structures within elite, culminating in the concentration of
ideological and economic power within a small number of inner elite in the early Old Kingdom Period (2575-2150 BC) (Baines & Yoffee 1998:202,245).

In Mesopotamia during the second – third millennium BC, high culture was strongly associated with writing systems as a way of re-creating and describing and standardising aspects of Mesopotamian culture (Baines & Yoffee 1998:246). It was the inner elite who could sponsor scribes who “reproduced the texts that delineated the hierarchies composing the word and defined the critical roles of rulers and gods.” (Baines & Yoffee 1998:248). Throughout the course of Mesopotamian history, the writing system was used to legitimise new political regimes through the installation of new administrative languages and manipulation of scribal schools, for example, to promote specific, heroic, ancestries of the new kings (Baines & Yoffee 1998:248). This manipulation of high culture unified the elite from old and new political regimes which stabilised the political system.

2.1.3.3 Sumptuary Laws

Similar to high culture, sumptuary laws are another way elites could control ideology for social power. Sumptuary laws restrict the consumption of goods, especially clothing and food, to certain classes or social groups (Buylaert et al. 2011; Hooper 1915). This generally serves to reinforce or alter social order through physical representation of social identities (Buylaert et al. 2011:401). This strategy is primarily enacted through written laws or oral decree. Consequently, much of the work on sumptuary laws has been done by historians. However, like high culture, sumptuary laws create patterns of consumption which are reflected in the material culture and thus are able to be explored archaeologically.

In 1510, Tudor king, Henry VIII passed a law which restricted the use of fabric types and colours to certain social groups based on class and wealth (Hooper 1915:433). Foreign wool, sable fur, and silver and gold colours were restricted for lords only, while other foreign cloths and colours were restricted to knights and other upper class citizens (Hooper 1915:433-4). Lowest class citizens were forbidden to wear cloth costing more than two shillings per yard (Hooper 1915:433). These sumptuary laws both enforced ideological structures of class society by physically distinguishing the different social classes and enforcing strictly elite access to foreign goods and wealth. It also had the effect of promoting the local economy as most citizens would have to buy local cloth (Hooper 1915:434).
In the 14 and 15\textsuperscript{th} century Southern Low Countries, in what is now present day Belgium, the fact that families in major towns were often much wealthier than the local nobility (Buylaert \textit{et al.} 2011:394) suggests that noble status was supported by an ideological system, quite independent of economic status. While the noble class were responsible for aiding the governance of the state, they were a relatively autonomous class in that the distinction of an individual as noble ultimately rested in their social acceptance by noble peers (Buylaert \textit{et al.} 2011:398-9). Around the 15\textsuperscript{th} century, the noble class became under the increasing control of the state who employed sumptuary laws in an attempt to control who could become a noble, and promote a shared social identity through material culture which reflected social hierarchy (Buylaert \textit{et al.} 2011:400-3). Interestingly however, the first law introduced sought to differentiate within nobility itself and not between the nobility and the wealthy and powerful, non-noble, upper class (Buylaert \textit{et al.} 2011:400-3).

2.1.4 CONCLUDING REMARKS

From these examples it seems clear that there are many different strategies employed by elites, which use ideology to establish and manipulate social order. In Thy chiefdom, changes from communal to familial mortuary monuments served to legitimise the rise of elite families, and in the Chimu state walls and passages within ceremonial compounds reinforced the divine status of the elite. In Egypt, restrictions of aesthetic sculptures facilitated an increasing hierarchy of wealth within the elite class and in Mesopotamia, writing systems manipulated the high culture of elites to stabilise social order in times of political transitions. Lastly, the sumptuary laws of the Tudors visually recreated social hierarchy through styles of dress while in Southern Low Counties, sumptuary laws served to establish a hierarchy within the noble class itself. These strategies not only legitimised control of elite over commoners, which could be argued for all of these examples, but also established control over other elite, consolidating social power within smaller groups of elite, exemplified by the Egyptian and Southern Low Counties examples.

These studies focused on the ways elite promote their ideologies through materialisation. This highlights a point made by Baines and Yoffee (1998:138) and Brumfiel (2000:132) that ideology, at least in the form of high culture, is often little concerned with non-elite. This top-down approach to looking at ideological strategies
avoids the problem of how ideological structures were actually received and incorporated into the wider society. Since ideological strategies must be materialised in ways that create a shared experience to be effective (DeMarrais et al. 1996:17), we should be able to see how these structures are incorporated into the society, not just promoted. In the examples above we can see this for the upper classes, but it begs the question, how far down the social hierarchy were dominant ideologies reproduced? Similarly, since human practice incorporates both agency and structure, if the majority of people are not reproducing the ideological structure of the elite, what structures are they reproducing?

Investigating these questions requires a slight shift in tactic from the previous examples. Rather than focus on the evidence for the implementation of strategies employed by elite, this thesis employs a bottom up approach by identifying the evidence for the end result of ideological strategies, the self-sustaining reproduction of ideology through the actions of people who share it. Consequently, this thesis also focuses on private as opposed to public spheres of life. High culture and sumptuary laws both represent materialisation of ideology not only through physical displays of high culture or wealth in public places but also in consumption patterns within the home. Naturally, we also see ideology materialised not only in architecture of public monuments but also within more private buildings of the elite, such as palaces or estates. This is hinted at in Moore’s (1996) study of the Chimú royal compounds. Not only were royal compounds segregated by large surrounding walls which restricted access to commoners, but architecture continued to shape social interactions in more private spaces within those walls. Whether commoner households are structured by the same principles is yet to be seen.

Hawai’i’s elite houses are well known to exhibit materialisation of an ideological structure called the kapu system which reinforced the social order by legitimising the divine nature of the elite (Hommon 2013:141-2). Certainly, this suggests the kapu system mimics the “high cultures” of the examples described above. However, without a thorough study of the way common people build their homes, we have no clear notion if this was the case, or if the ideological structures that shape their everyday life filtered down through all classes. To explore this further, we need to look for things from a bottom up perspective aimed at material evidence of people’s private lives.
2.2 HAWAIIAN POLITICAL ECONOMY

Before delving into the specific of Hawai‘i’s *kapu* system and its materialisation within the home, it is necessary to review some key aspects of the Hawaiian political economy at the time of European contact. This section briefly outlines Hawai‘i’s political structure, economy and the divine authority of the elite to provide the context for understanding why the *kapu* system as a fundamental part of Hawaiian life. It begins with a consideration of Hawai‘i as an archaic state.

2.2.1 HAWAI‘I AS AN ARCHIAC STATE

The Hawaiian archipelago is a chain of volcanic high islands at the northern apex of the Polynesian triangle (Figure 2.2 and Figure 2.3). The islands were first settled around 1000-1200 AD from Central East Polynesia (Figure 2.2) (Mulrooney *et al.* 2011; see also Wilmshurst *et al.* 2011). Evidence from archaeology (Collerson & Weisler 2007; Kirch 1985:66), linguistics (Kirch & Green 2001:80), DNA of commensal rat (Matisoo-Smith *et al.* 1998) and Hawaiian oral traditions (Kirch 2010:85-6) point to arrival of settlers from the Marquesas and a period of voyaging with sustained contact with groups from the Society Islands. Around this time oral histories report a number of introductions into the Hawaiian religion; ritual drums, sacrifice, cult of Kū (Kirch 2010:86). From about 1400 AD, two-way long distance voyaging stopped, and the polities developed in isolation from the rest of Polynesia (Kirch 2010:88). The ensuing centuries saw major developments culminating in the emergence of the Hawaiian archaic state before the end of the 17th century (Kirch 2010:174). Captain James Cook arrived at the islands in 1778 and the traditional state effectively ended in 1819 with the death of Kamehameha I, the subsequent abolishment of the *kapu* system, and the establishment of a European styled monarchy (Kirch 2010:30). The significance of this is threefold: firstly, the Hawaiian chronology is fairly recent, making ethnohistoric accounts available and archaeological evidence relatively accessible; secondly, Hawai‘i was isolated, making it possible to distinguish between inherited cultural structures and local developments; thirdly, the Hawaiian chronology encapsulates the development of a primary state society and, as we shall see, ideology played a substantial role in this.
Figure 2.2 Map of Polynesia showing Hawai‘i’s position in the Polynesian triangle and the location of Hawai‘i’s ancestral homeland (adapted from Kirch 2000:Map 1).

Figure 2.3 Map of the Hawaiian archipelago showing location of major islands.
Hawai‘i is an example of a primary state, e.g., a state which developed in isolation of pre-existing state societies (Kirch 2010:4). This process has occurred only a handful of times in human history: in Mesopotamia, Egypt, China, Mesoamerica and Andean South America (Hommon 2013:2). Hommon (2013:2) argues that Hawai‘i provides us with a unique opportunity for understanding the emergence of states for three reasons: it was encountered and recorded in its primary form by Europeans in the 18th century, it lacks certain elements thought essential for the development of states and comparisons can be made between Hawai‘i and other Polynesian societies to document the elaboration of existing traditions and invention of new ones.

The ethnohistoric and archaeological evidence that Hawai‘i was an archaic state is now substantial. Firstly the island polities of Kaua‘i, O‘ahu and Hawai‘i are all large enough in territory and population to fit into state models from other regions in the world (Hommon 2013:130; Kirch 2010:32-3). Secondly, Hawai‘i had a highly stratified system of power distribution, based on land management (Kirch 2010:47). This system provided the organisational structure for the production and redistribution of large surpluses of staple goods and a restricted number of wealth goods (Kirch 2010:42,51). Lastly, this system was legitimised by an elaborate ideology of divine kingship (Kirch 2010:33) and enforced through a ritualised legal system called kapu (Hommon 2013:134).

2.2.2 HAWAI‘I AT CONTACT

2.2.2.1 Sources of information

A number of sources are available for reconstructing the Hawaiian political economy. Among the earliest accounts from foreign visitors to Hawai‘i are the journals of Cooks voyages compiled by Beaglehole (1967) and the first missionary account by Rev. William Ellis (1917) who recorded who manners and customs of the people he met on his tour of the islands in 1823. From the 1830s Hawaiian scholars educated at Lahainaluna sought to gather and record the history of their people. This thesis draws on the work of two prominent scholars from this time: the accounts of Malo (1951), who grew up under the kapu system, and Kamakau (1961, 1964, 1976, 1991), who was born only shortly prior to the abolishment of kapu. The ethnographic and archaeological research of the late 19th and early 20th century, while drawing heavily on the previous sources of Hawaiian history, mark important contributions to the study of Hawaiian culture (Brigham 1908; Fornander
1919; Handy & Handy 1972; Handy & Pukui 1958; Stokes 1991). Other important contributions are the careful analyses of aspects of the Hawaiian political system (Sahlins 1958; Valeri 1985) and a large body of recent archaeological research (for most recent overviews see Hommon 2013; Kirch 1985, 2010). A number of concerns must be taken into account when drawing on any kind of primary or secondary source of information, and as always, careful consideration of the background, intention and potential bias of author and accounts is required.

2.2.2.2 Distribution of land and responsibilities

Control of lands in Hawai‘i was distributed via a hierarchical system of responsibilities. The supreme ruler, (*ali‘i nui*, or *mo‘i*) (Handy & Handy 1972:41), controlled the rights and resources of the entire polity, and delegated management of districts (*moku*) (Kirch 2010:47) to high ranking elite (*ali‘i*) (Sahlins 1958:14). These districts (*moku*) were in turn divided into sub-districts (*ahupua‘a*) managed by elite (*ali‘i*) of lesser rank (Sahlins 1958:14). Sub-districts (*ahupua‘a*) were again divided into even smaller segments (*‘ili*) (Kirch 2010:47-9). While elite (*ali‘i*) had ultimate authority over the sub-districts and segments (*ahupua‘a* and *‘ili*), they were managed on a daily basis by land managers (*konohiki*) (Kirch 2010:49) who ensured fruitful production of the land (Hommon 2013:27; Sahlins 1958:16). At each level of control, the elite (*ali‘i*) were responsible for appointing the managers for the immediate sub-sections of the land controlled and this was usually redistributed among favourite retainers upon succession (Handy & Handy 1972:41,45). In other words, the island’s ruler (*ali‘i nui* or *ali‘i mo‘i*) would appoint who controlled districts (*moku*), while an elite (*ali‘i*) in control of a district (*moku*) would appoint who controlled the sub-districts (*ahupua‘a*) of that district (*moku*).

Earle (1991b:80, 1997:75) typifies Hawai‘i as a *subsistence economy*. The sub-districts (*ahupua‘a*) were central to this economic system as these lands encompassed a full range of resources from coast to the uplands (Handy & Handy 1972:48; Hommon 2013:13; Kirch 2010:47). The smaller land segments (*‘ili*) were worked by the commoners (*maka‘āinana*) to provide the tribute, or tax which was collected annually during the *makahiki* festival (see below) (Handy & Handy 1972:48-9; Hommon 2013:14; Kamakau 1964:21). If the tribute was not sufficient, the sub-districts (*ahupua‘a*) would be plundered to obtain sufficient wealth (Kamakau 1964:21). To prevent this, certain segments of land
called *koele* were marked and the produce was set aside specifically for the elite (*ali‘i*) and land managers (*konohiki*) (Kirch 2010:67; Malo 1951:195).

The Hawaiian household played a key role in the production of economic subsistence. Sahlins’ *domestic mode of production theory* (Sahlins 1972) argues that households in relatively egalitarian societies will only produce enough food and goods to provide for those living in the household. The development of social complexity relies on the ability of certain people to convince these households to produce a surplus of food (or goods), beyond what is required for the existence of the household itself (Sahlins 1972). Based on archaeological evidence from household complexes on the Kohala peninsula, Field *et al.* (2010:81) argue that this transformation occurred around 1650AD. Earlier households were smaller and contained moderate amounts of food remains; later households were larger, more elaborately constructed with a marked increase the amount of food remains at the sites (Field *et al.* 2010:81). They interpret this as evidence for the households’ incorporation into a “regionally integrated political economy” which placed an emphasis on “surplus production of foods and goods, along with increased specialization and probably also gender differentiation in activities.” (Field *et al.* 2010:81)

### 2.2.2.3 The staple goods of the Hawaiian economy

The Hawaiians practiced horticulture, husbandry, arboriculture and aquiculture—all of which came under the control of the elite (Handy & Handy 1972:26). Hawaiian subsistence depended heavily on taro (*Colocasia esculenta*) and sweet potatoes (*Ipomoea batatas*) (Malo 1951:42) which were systematically cultivated under the supervision of the elite (*ali‘i*) (Handy & Handy 1972:19, 26). Yam (*Dioscorea sp.*), bananas (*Musa sp.*), breadfruit (*Artocarpus altilis*), sugarcane (*Saccharum officinarum*) and coconuts (*Cocos nucifera*) were also important cultivates (Kirch 1985:216; Malo 1951:42-3). There is substantial archaeological evidence for cultivation of taro or sweet potato on all of the major Hawaiian Islands (Kirch 1985:220, 224). The extensive agricultural field systems such the Leeward Kohala field system (McCoy *et al.* 2011), Kahikinui (Dixon *et al.* 1999) and the Hālawa Valley irrigation system (Kirch 1990) demonstrate the extent of elite control over agricultural production. These systems were managed by the elite (*ali‘i*) and the land managers (*konohiki*) who collected produce for redistribution at the annual *makahiki* festival.
Pigs and dogs were also an important part of the Hawaiian diet. Pigs (*Sus scrofa*) and dogs (*Canis lupus familiaris*) were considered status foods (Kirch 2010:51), and were raised by elite (*ali‘i*) in large numbers (Ellis 1917:261; Handy & Handy 1972:244). Pigs and dogs were important for trade, tribute and ceremonies (Ellis 1917:242, 261; Handy & Handy 1972:244, 253; Malo 1951:143, 145). Pigs, however, were most important animal (Malo 1951:37). Chickens were less important as a food source in Hawai‘i yet important as ritual offerings or used in sorcery (Handy & Handy 1972:256).

Unique in Polynesia was the Hawaiians development of fishponds (Kikuchi 1976 and Summers 1964 cited in Kirch 2010:54). While the concept of managing resources was not foreign in Polynesia (Sahlins 1958:17), Hawaiians built huge fishponds especially to raise fish for consumption (Handy & Handy 1972:261). These were generally controlled by elite (*ali‘i*) and worked through corvée labour (Handy & Handy 1972:259-61). Shore and off shore fishing also contributed a large proportion to the diet and was often a team activity (Malo 1951:210-11). A large variety of near-shore and off-shore fish were caught, as well as numerous other sea creatures such as shellfish, octopi and squid, sea turtles, sharks, dolphins and crabs (Malo 1951:45-7).

Hawaiians practiced arboriculture for food through the cultivation and management of coconut and breadfruit trees (Malo 1951:21-2). However Hawaiians managed forests for a number of other products and uses. Paper mulberry (*Broussonetia papyrifera*), was cultivated for production of bark cloth (*kapa*) (Malo 1951:48). Pandanus, (*Pandanus tectorius*) was often planted near houses to provide material for thatching or weaving crafts (Handy & Handy 1972:201). Forest resources, in particular *‘ōhi‘a* (*Metrosideros polymorpha*) and *koa* (*Acacia koa*) trees used for houses or canoes, were managed by the elite (*ali‘i*) and permission had to be sought before collecting them (Cordy 2000:41).

Many other goods were produced by the Hawaiians which contributed to the staple economy. These include bark cloth (*kapa*) for clothing and bedding, mats, cord, fishing gear such as nets, fishhooks and canoes, stone adzes and other stone tools, containers and cooking utensils (Malo 1951:77-80). Hawai‘i also produced a number of wealth goods made by specialists using materials collected during the *makahiki*, such as feathers or cord (Malo 1951:76-77).
2.2.2.4 Obligations of the commoner ( makaʻāinana) class

Throughout the year commoners ( makaʻāinana) produced a surplus of food and goods for collection during the annual makahiki festival when the island’s ruler ( aliʻi nui) received offerings on behalf of Lono, god of agriculture (Handy & Handy 1972:331). During the makahiki, an elite procession bearing the image of Lono would circumnavigate the island and collect the tribute gathered in each sub-district ( ahupuaʻa) by the land manager ( konohiki) (Kamakau 1964:20-1; Malo 1951:142-3). The event lasted about three months, during which time a number of kapu restrictions were in force; many foods items, activities and warfare were forbidden (Kamakau 1964:19; Malo 1951:141). People spent their time playing games, engaged in ritual activities and feasting (Kamakau 1964:19; Malo 1951:141). The tribute included a number of staple and wealth goods, including “pigs, dogs, fowl, poi [pounded taro], tapa cloth,” various clothing items, mats, fishing gear, feathers, adzes and other items (Kamakau 1964:21). If the tribute collected that year was not sufficient, the ruling elite ( aliʻi nui) would raid the countryside until enough tribute was collected (Kamakau 1964:21). The makahiki provided the means for annual tax collection and redistribution to elite ( aliʻi) and to military projects (Hommon 2013:100; Malo 1951:143) which could then be invested in expansion of economic projects, to employ craft specialists, implement military campaigns, to employ the priestly class or invest in status goods such as feathers and other fine clothes.

Labour was an important part of the Hawaiian economy. As a requirement of land tenure, commoners ( makaʻāinana) not only had to provide surplus for the annual makahiki, but also labour for working the chief’s plot of land (Malo 1951:60-1) and corvée labour for the construction of agricultural systems, fishponds, temples ( heiau) and elite houses (Kolb & Dixon 2002:516). Punishments for those who failed to fulfil the labour requirements included expulsion from their land or even death (Malo 1951:61).

Labour was also required in the form of warriors for military campaigns. Warriors were sometimes lesser elite ( aliʻi) or men of prowess attached to some ruling elite ( aliʻi) (Handy & Handy 1972:20), however the majority of warriors were commoners ( makaʻāinana) enlisted for a period of time (Kolb & Dixon 2002:517; Malo 1951:61). The military was important in conquering new lands for economic expansion and played a key role in the consolidation of power and wealth (Kolb & Dixon 2002:515; Valeri 1985:348).
When new lands were conquered, the land segments would once again be redistributed among the friends and family of the ruling elite.

2.2.3 DIVINE AUTHORITY OF THE HAWAIIAN ELITE

The elaboration of religious authority in Hawai‘i was one of the key developments in the transition to the archaic state (Hommon 2013:258; Kirch 2010:220). Central to this is the elaboration of the concept of elite. In ancestral Polynesian society, the *qariki (chief) was “the senior, male, titled leader of a social group…who typically inherited his position patrilineally with the senior ranked line of this group, and who acted as the group’s secular as well as ritual leader.” (Kirch & Green 2001:231). By contact, religious authority in Hawai‘i was highly elaborated from the ancestral Polynesian concept. The traditional Polynesian concept of elite as a symbolic head of a social group transformed into a social class itself, with internal rankings based on mana and concepts of blood purity and a greater emphasis on political roles (Kirch 2010:38).

2.2.3.1 Divine hierarchy

The Hawaiian political hierarchy was based on distribution of control over ranked divisions of land. The major social divisions of Hawaiian society however, of elite (ali‘i), commoner (maka‘āinana) and outcasts (kauwa) were ranked according to religious authority (Kirch 2010:34). The elite (ali‘i), in general, were a class of people with divine ancestry, and therefore fit candidates for positions of political power (Kirch 2010:38).

Among the elite (ali‘i) class, people were further stratified based on genealogy: “in the womb was obtained the rank of each chief – the ni’aupi‘o, the pi‘o, the naha, the wohi, the kuhaulua, or the papa chief – and by the rank of each chief was known which kanawai [law or decree] and which kapus [sic] belonged to him.” (Kamakau 1964:9) Unlike land administration titles, rank and the rights and status afforded is entirely hereditary, so an elite (ali‘i) could not achieve a higher rank than that given to him or her at birth (Kamakau 1964:9). They could, however, increase or decrease their power and social standing through accumulation of administrative positions.

The genealogical origin of this religious authority comes from the Polynesian concept of mana. Mana is a “supernatural or divine power” or “authority” (Pukui & Elbert 1986:235) which was inherited from ancestors (Beckwith 1970:376; Kirch & Green 2001:244; Valeri 1985:100). Across Polynesia mana was directly associated with social
rank (Goldman 1970:10; Kirch 2010:38). In Hawai‘i however, the concept of *mana* was elaborated to the extent that amongst the highest-ranking elite (*ali‘i*) marriages were common between siblings and close relatives to maintain a pure bloodline (Kamakau 1964:9; Malo 1951:54-5). By the contact period, elite (*ali‘i*) were seen as the descendants of gods and the elite (*ali‘i*) highest ranks were considered gods themselves (Kirch 2010:38).

Diverging from the earlier Polynesian societies, Hawai‘i also developed an exclusively male priestly class (*kahuna pule*) which looked after the elaborate rituals and ceremonies which legitimised the elite (*ali‘i*) and facilitated the distribution of surplus goods (Hommon 2013:23). High priests (*kahuna nui*) provided counsel for the ruler (*ali‘i nui*) (Malo 1951:190) and managed a class of priests under him with a number of different functions (Malo 1951:188). Priests were responsible for astronomical observations which marked the seasons associated with agricultural production, distribution via the *makahiki* festival and the associated rituals of an enormous number of ceremonies (Malo 1951:147,159, 207). There were at least two kinds of priests, those associated with Kū, the god of war, and Lono, the god of agriculture (Handy & Handy 1972:20). While priests often came from the elite (*ali‘i*) class, they were referred to as *kahuna* as their rights and responsibilities that were distinct from those of the elite (*ali‘i*) (Handy & Handy 1972:20; Kamakau 1991:41).

### 2.2.3.2 Divine control through temple (*heiau*) construction

The archaeological signature of this elaboration in ritual authority can be seen in the widespread construction of temples (*heiau*). “The origin of these *heiau* can be traced back to Ancestral Polynesian concepts of ritual spaces... but in late prehistoric Hawai‘i these became highly elaborated and distinctive” (Kirch 2010:157). Temples (*heiau*) were an important locus of ritual activity. Usually *heiau* refers to constructed temples or monuments which are places of worship however can also refer to locations of the natural landscape where the gods are considered to reside (Valeri 1985:173). Valeri argues that what makes these built and natural places *heiau* are their function as a location of offering and sacrifice to the gods (Valeri 1985:173).

Hawaiian temples, (*heiau*) have a variety of types and functions. Some temples (*heiau*) are used primarily by commoners (*maka‘āinana*) and have relatively domestic functions; the fishing shrine (*ko‘a*) for example was often no more than a small coral alter
on the coast where fishermen give offerings to the fishing gods (Valeri 1985:175). The *kapu* for *ko’a* were mild (Stokes 1991:30). Other temples (*heiau*) were often much larger and more complex—overseen by priests (*kahuna*) and elite (*ali‘i*) who performed ceremonies and sacrifices. Hale-o-Lono were temples dedicated to Lono, god of agriculture and are thus one of the most important types of temples (*heiau*) to the Hawaiians (Valeri 1985:177). *Luakini heiau* were reserved for the royal court and were the temples associated with human sacrifice (Valeri 1985:179). *Luakini* are often described as war temples however they could encompass a wider range of functions than strictly war ceremonies (Kolb & Dixon 2002:518; Valeri 1985:181).

The evidence for the role of temples (*heiau*) in religious authority from ethnohistory is clear. For example, the highest ranking elite (*ali‘i*) could only eat food consecrated in a temple (*heiau*) (Valeri 1985:126) and temples (*heiau*) which border the sub-districts of an island (*ahupua’a*) were the locus of tax collection and rituals during the *makahiki* (Malo 1951:146-7) Moreover, the elite (*ali‘i*) were limited on the types of temple they could commission based on their rank (Malo 1951:160). Temples (*heiau*) were also often seen directly incorporated into the households of the elite as personal temples (*heiau*) (Brigham 1908:118; Kolb & Radewagen 1997; Emerson in Malo 1951:126; Weisler & Kirch 1985:148).

### 2.2.3.3 Archaeological evidence for temple (*heiau*) construction

A number of archaeological studies have assessed the archaeological remains of temples (*heiau*) to understand strategies of ideological control and the transformation of religious authority. The majority of these studies have taken place on Maui, however studies on Moloka‘i and Hawai‘i show similar trends. The studies outlined below are not an exhaustive list of all studies involving temples (*heiau*) in Hawai‘i but are a brief overview of some ways temples (*heiau*) were used for political purposes in the past.

In Kolb’s (1994a) extensive study of temples (*heiau*) in Maui, he identifies a number of specific transitions in temple (*heiau*) construction and use which occurred from about 1400 AD, during a period of political instability. Before 1400AD, temples were usually small and simply constructed and show little evidence of activities associated with sacrifice (Kolb 1994a:527). In the following centuries, a large increase in monumentality of temples (*heiau*) signals the elite ability to muster large amounts of labour due to their growing authority over the economy (Kolb 1994a:531). Simultaneously, the forms of
temples became elaborated in ways which facilitated the restriction of the general public from ritual activities (Kolb 1994a:530).

After unification of the island of Maui, political strategies for control shift from labour, to control over production and distribution of staple foods and wealth goods—most notably indicated by the increase in pig bones found at the temples (heiau) (Kolb 1994a:530-1). This mirrors findings from at Molohai Heiau, Kula district, Maui, where an initial sequence indicates sacrifice and feasting of local wild foods which is then replaced by a highly ritualised consumption of pigs (Kolb 1994b). Again, this documents a shift in political strategies for elite control of the economy by replacing relatively unstable wild resources with stable, predictable and easily controllable food resource (Kolb 1994b:432).

Kirch has focused more specifically on the temples (heiau) of Kahikinui district, Maui. The larger heiau marked district and ahupua’a boundaries and were often associated with agricultural production (Kirch 2010:159). Many of them also had orientations which suggest that they were involved in the astronomical observations associated with specific gods and the seasons, such as Pleiades, an important constellation marker for the start of the makahiki season (Kirch 2004). Kirch and Sharp (2005:104) corroborate the general finding of Kolb (1994a) where a rapid increase in the construction of many types of temples (heiau) around the mid-sixteenth century coincides with a period of unification of the island and later annex of the nearby island of Lāna‘i.

Other studies in Moloka‘i and Hawai‘i exemplify the use of temples (heiau) for political administrative purposes. In Moloka‘i, Kirch (1990) argues that the size and spatial distribution of the different types of temples (heiau) reflect the hierarchical organisation of society based on the divisions of land administration. A study of temples (heiau) on the Kalaupapa peninsula on Moloka‘i identified construction of temples (heiau) associated with the establishment makahiki rituals following the subjugation of the peninsula by foreign elite (ali‘i) (McCoy 2008). In Hawai‘i, evidence from a chronology of temples (heiau) in the leeward Kohala field system also documents an increase in religious authority (McCoy et al. 2011). Beginning around the sixteenth century, heiau were constructed to increasingly segment land districts and from the seventeenth century, became increasingly elaborate, possibly in association with the rise of a priestly class dedicated to Lono (McCoy et al. 2011:937-9).
These studies highlight a number of ways ideology was materialised through religious structures for a variety of political purposes. The construction of temples (*heiau*) on the landscape reinforced political boundaries (Kirch 1990), consolidated authority over new territories (Kirch & Sharp 2005; Kolb 1994a) and aided in the institution of economic redistribution systems (McCoy 2008). Further, the ceremonies and sacrifices performed at temples (*heiau*) were strategies to secure control over particular types of resources by marking them as sacred (Kolb 1994b) and facilitate agricultural production through astronomical observations (Kirch 2004).

2.2.4 SUMMARY

The Hawaiian political economy had a strong subsistence base which provided the surplus and organisational structure for the skilled craft specialists, production of wealth goods, and labour for ideological and military projects. The economic power was distributed via a hierarchical organisation of administration anchored in land management which reinforced social organisation. This system was underwritten by the religious ideologies of the elite (*ali‘i*) which drew on their connection to the gods. The concept of *mana* derived from one’s genealogy was essential to the basic structuring of the elite hierarchy and of the creation of elite (*ali‘i*) and commoner (*maka‘āinana*) classes. Further, the tax distribution system was constructed around an elaborate ceremony called the *makahiki* where the collection of goods was made in the name of the god, Lono. Lastly, elite (*ali‘i*) invested in monumental temple (*heiau*) construction as ways of consolidating political and economic control. Central to Hawaiians religious ideological system was the concept of *kapu*. This is described in the next section.

2.3 THE KAPU SYSTEM

One of the central aspects of Hawaiian religion was the *kapu* system. The *kapu* system was a set of religious restrictions that ordered several key aspects of Hawaiian social structure. From its origins in pre-Polynesian society, the concept of *kapu* came to play a major role in Hawaiian preconceptions of gender and rank and to support elite (*ali‘i*) authority over the economy. It was also materialised in many ways, some of which are identifiable in the archaeological record.
2.3.1 ORIGINS OF THE KAPU SYSTEM

2.3.1.1 Definitions of kapu

The Hawaiian concept of kapu and its corresponding term noa are deeply engrained in ancestral Polynesian culture. The word kapu can be traced back through linguistic reconstruction to the Proto-Polynesian word tapu and further still to the tabu, a word thought to be used by pre-Polynesian cultures in Malaysia (Kirch & Green 2001:239). The modern Polynesian cognates of kapu generally mean “prohibited, sacred or under ritual restriction” (Kirch & Green 2001:239). In contrast, noa means “ordinary” or “unrestricted, free from *tapu” (Kirch & Green 2001:240).

Kapu has had many definitions in anthropological and ethnohistoric literature. Shore describes kapu as a possessed “state,” whereby the person, object or place is connected to the divine (Shore 1989:164). On the other hand, Valeri describes kapu as a relative concept where people, objects and places which are closer to the divine are kapu to those which are further from the divine. (Valeri 1985:90). Both of these examples highlight the religious nature of kapu through its association with the divine or sacredness. Indigenous historians, such as Samuel Kamakau and David Malo often used kapu or tabu as a noun, to mean a rule, law or restriction (Kamakau 1961, 1964, 1976, 1991; Malo 1951). Reasoning for these rules, however, were probably of a sacred or divine nature.

While these definitions expressed above cannot hope to encapsulate the complexity of the concept, they are useful in describing how kapu worked in many aspects of Hawaiian prehistory. For this thesis a generalised definition is used to cover all aspects of kapu that may have functioned in the past. Kapu is used to describe a person, place or object which is forbidden or a rule which is constructed where the reasoning for the restriction or rule is of a divine or sacred nature.

2.3.1.2 Consequences of kapu

Kapu ensured that things of a divine nature did not come into contact with things that were not divine and thus upset the natural order of the world (Valeri 1985:90). Failure to observe kapu had serious consequences for both elite (ali‘i) and commoners (maka‘āinana). The most commonly stated consequence for a breach of kapu is death (e.g., Kamakau 1964:10; Malo 1951:29,57,61). However occasionally there were alternative solutions. For example, during the makahiki festival the land to the left of the
makahiki god statue was under kapu and anyone who trespassed on that area could pay a fine of one large pig to spare their life (Malo 1951:146).

For this reason, many rules (or kapu) were created which dictate the correct behaviours in situations when both divine and non-divine things are involved. However, over the course of Polynesian and Hawaiian prehistory, these rules became an elaborate system which persisted in every aspect of life. This “kapu system” is described by Kirch, (2010:38) as “a whole series of socially and ritually prescribed practices that controlled the daily lives and bodily practices of all ranks of late Hawaiian society.” By the time of European contact, the kapu system had become the ideological backbone of Hawaiian social order (Valeri 1985:128).

2.3.2 THE IMPORTANCE OF THE KAPU SYSTEM TO HAWAIIAN SOCIETY

The kapu system, as Kirch’s (2010:38) definitions suggests, was pervasive in every aspect of Hawaiian daily life. While there are many more regulations than those presented here, the following sections focus on three ways the kapu system structured Hawaiian political economy: gender relations, social rank and the economy. The importance of kapu is exemplified in the events leading up to and following the abolishment of the kapu system in 1819.

2.3.2.1 Structure of gender relations

Hawaiian society was most fundamentally structured by gender (Valeri 1985:124-8). The Hawaiian gods relied on males to acknowledge them and “give them life” through prayer and sacrifice (Valeri 1985:104). Women bore the responsibility of reproduction and thus they were defiled by blood precluding any relationship to the gods (Kamakau 1964:64; Valeri 1985:114). As a consequence, women were forbidden from sacred places, activities and from association with certain objects marked as sacred. This created a gender hierarchy of male:superior—and thus kapu in relation to—female:inferior, which persisted throughout all social rankings (Valeri 1985:128). For example, in the absence of high ranking males, women of high rank were able to enter temples (heiau) to perform ceremonies, yet they were still forbidden from eating the sacrificial foods that men would consume (Ii 1959:160). Further, food and the male act of eating, were considered sacrifice to the gods (Valeri 1985:114) and thus gender and eating must be regulated to uphold the separation of divine and non-divine.
The particular set of rules concerning food consumption was called the eating *kapu* (*‘ai kapu*). The eating *kapu* (*‘ai kapu*) prohibited men and women from eating together or cooking food in the same oven. Further, it set aside specific food items, such as banana, coconut and pig, as *kapu* to women (Kamakau 1964:63-4; Malo 1951:27,29; Valeri 1985:116-7). Men and women ate in separate eating houses to avoid defilement of food, persons or other parts of the household, such as sleeping areas (*hale noa*). This *kapu* also played an essential role in the transition from childhood to manhood. Young boys eat with their mothers and sisters in the women’s eating house (*hale ‘aina*), until they come of age (Malo 1951:87) at about six years old (Handy & Pukui 1958:9). The child was then ritually cast out from the *hale ‘aina* to the men’s house (*mua*) and, now a man (Handy & Pukui 1958:9), would never again be allowed to eat with women (Malo 1951:87-90).

Based on the grounds of *kapu*, women were forbidden from many locations, e.g., temples (*heiau*) and men’s houses (*mua*) (Handy & Pukui 1958:9; Malo 1951:28-9) and also from specific activities such certain kinds of fishing (Handy & Pukui 1958:11,176; Valeri 1985:121). During the period of women’s menstruation the gendered *kapu* was even more severe. Women were required to seclude themselves during this time, during which they may have no contact with men (Handy & Pukui 1958:10-1).

### 2.3.2.2 Structures of rank

The *kapu* system also played a key role in the social stratification of Hawaiian society. The elite (*ali‘i*) religious authority rests upon the “purity” of their *mana* “supernatural or divine power” or “authority” (Pukui & Elbert 1986:235) which was inherited from ancestors (Beckwith 1970:376; Kirch & Green 2001:244; Valeri 1985:100). As Kirch explains, this legitimised the basic social stratification of Hawaiian society, that of elite (*ali‘i*) and commoner (*maka‘āinana*): “the common people… were *noa* in relation to the *ali‘i*, who were *kapu*, because the latter were intermediaries between the gods and the society at large, the all-important transmitters of *mana*” (Kirch 2010:38). The elite (*ali‘i*) were also ranked relative to their purity of *mana*: the most sacred were *ni‘aupi‘o*, *pi‘o*, *naha*, and *wohi* ranks (Kamakau 1964:4-5; Kirch 2010:39).

To ensure safe interaction among the different social ranks of elite (*ali‘i*) and between elite (*ali‘i*) and commoners (*maka‘āinana*), there were a number of strict “chiefly *kapu*” ascribed to the elite (*ali‘i*) with genealogies which had the purest connections to the
gods (Kamakau 1964:9-10). The prostrating *kapu* (*kapu moe*) for example, applied to *ni’aupi’o*, *pi’o* ranks (Kirch 2010:40). Malo writes:

“A chief who had the *kapu-moe* – as a rule – went abroad only at night; but if he travelled in daytime a man went before him with a flag calling out “*kapu! moe!*” whereupon all the people prostrated themselves. When the containers holding the water for his bath, or when his clothing, his *malo*, his food, or anything that belonged to him, was carried along, every one must prostrate himself; and if any remained standing, he was put to death.” (Malo 1951:57)

The elite (*ali‘i*) of *naha* rank had the sitting *kapu* (*kapu noho*), where people were required to sit in their presence, rather than prostrate themselves (Malo 1951:57). These are but a few of many examples of the *kapu* which applied to the elite (*ali‘i*) and their possessions (Malo 1951:56-7). These stringent rules were designed to preserve the elite’s (*ali‘i*) *mana* from the pollution of those with less *mana*. As such, they were not applicable between elite (*ali‘i*) of the same rank (Malo 1951:55). Thus, the *kapu* served not only to reinforce the major social stratification of elite (*ali‘i*) and commoner (*maka‘āinana*), but also the hierarchy of the elite (*ali‘i*) class. Further, while men and women were ranked equally based on their genealogy, i.e., male elite (*ali‘i*) would have to respect the *kapu* of female elite (*ali‘i*) of higher ranks, the *kapu* that structured gender in Hawaiian society, such as the eating *kapu* (*‘ai kapu*), was still strictly enforced (e.g., Kamakau 1961:244).

The eating *kapu* (*‘ai kapu*) also contributed to ordering of people based on rank. Only men of the same rank or status were allowed to eat together (Valeri 1985:125). This observance was particularly stringent for the high ranking elite (*ali‘i*) who could only eat food consecrated in *heiau* (Valeri 1985:162). When these elite (*ali‘i*) ate, their retinue was forbidden from eating and must kneel while the elite (*ali‘i*) ate or drank (Malo 1951:47; Valeri 1985:126).

**2.3.2.3 Structure of economic control**

An important function of the *kapu* system was to legitimise control over economic resources. Economic resources, such as fish, crops or forest products etc., were often controlled via a *kapu*. For example, fishing of two important species of fish were forbidden on a seasonal basis: the *‘ōpelu* (*Decapterus sanctae-helenae*) was only allowed to be fished and eaten for one half of the year, while the *aku* (*Katsuwonus pelamis*) was only allowed to be fished and eaten during the other half of the year (Malo 1951:209). Ceremonies were conducted at each change over to free one fish from *kapu* and place the
other under kapu (Malo 1951:209). The purpose of placing particular foods or specific areas of production under a restriction was often for purposes of accumulating food for feasting, redistribution (Sahlins 1958:17) or as a strategy to prevent famine (Seaton 1974:200).

*Kapu* was also placed on certain objects to restrict their access to the elite (*ali‘i*) who had the required rank to consume or utilise such goods. One such example, were the special red and yellow feathers that came from endemic forest birds (Buck 1957:217). These feathers were highly prized as red was a colour associated with the gods and yellow feathers were difficult to obtain (Buck 1957:216-7; Malo 1951:76). For this reason, they were *kapu* to commoners (*makaʻāinana*) and only used to create objects which only high ranking elite (*ali‘i*) could use such as ornamental dress (clocks, helmets and necklaces) and in the creation of sacred god figures (Kirch 2010:44; Malo 1951:76-7). Further, the amount of red and yellow feathers incorporated into one’s dress was also used to signify rank (Samwell, in Beaglehole 1967:1179).

Before the abolishment of *kapu*, elite (*ali‘i*) also used the *kapu* system to control European trade. For example, Sahlns (1981:45) points out that elite (*ali‘i*) placed *kapu* on European ships to restrict to restrict the trade for European goods. In some early instances, commoners (*makaʻāinana*) were forbidden from trading pigs to the Europeans except for items deemed useful only to the elite (*ali‘i*), such as guns or ammunition (Sahlins 1981:44). Similarly, the elite (*ali‘i*) placed *kapu* on local goods in high demand by the Europeans, such as Sandalwood. Kamehameha I for example placed a *kapu* on the young trees to preserve the forest resource for future generations (Seaton 1974:195) and organised the collection of logs through corvée labour (Sahlins 1981:44). This exemplifies how *kapu* was used to legitimise the elite control over the rapidly changing post-contact Hawaiian economy.

This prerogative however, rested upon their religious observance of the entire *kapu* system. King Kamehameha I for example would not break the sacred *kapu* which were mandated by the gods, such as the eating *kapu* (*ʻai kapu*), or the observance of religious *kapu* periods (Sahlins 1981:49). Failure to do so would result in the pollution or loss of *mana* which gave the elite their high rank and their right to religious authority and control (Kirch 2010:39).
Thus, the *kapu* system is an important aspect of the Hawaiian political economy, structuring the gender roles of society, legitimising the hierarchical stratifications of elite (*ali‘i*) and commoners (*maka‘āinana*) and both a useful tool for economic control, as well as underlying the central authority of the economy. Given the significant role it played, there has been much debate as to why, following the death of King Kamehameha I in 1819, it was promptly abolished by his son.

### 2.3.2.4 Abolishment of the *kapu* system

Shortly after the death of King Kamehameha I in 1819, the *kapu* system was abolished by his son, King Kamehameha II (Liholiho) (Malo 1951:29). Following the death of the highest ranking elite (*ali‘i nui*) it was custom for the elite (*ali‘i*) to practice free eating, where foods normally reserved to men or women based on gender could be consumed by all. When King Kamehameha II failed to reinstate the eating *kapu* (*‘ai kapu*) which restricted this practice, and was then seen to eat in the presence of high ranking women (also forbidden by *‘ai kapu*) he effectively abolished the entire *kapu* system, including the privileges of certain sacred ranks of elite (*kapu ali‘i*) (Kamakau 1961:223-5).

There has been much debate as to why the *kapu* system was abolished and the motivations behind the key conspirators in this event. Some of the major theories and critiques (Kroeber 1948; Kuykendall 1938; Levin 1968; Seaton 1974; Webb 1965) disagree on many points. However they tend to agree on a few key themes: Keopuolani (Kamehameha II’s mother) and Ka‘ahumanu (another powerful wife of Kamehameha I) played a significant role in abolishing *kapu*; European trade had weakened the *kapu* system through extensive use of *kapu* for economic purposes and an influx of new foreign status goods; the *kapu* restrictions that were placed on elite (*ali‘i*) hindered the accumulation of wealth through trade with the Europeans. While these may have aided the process, Levin argues that ultimately, the abolishment of *kapu* served as part of a larger movement by the new ruling elite to solidify their political position after the consolidation of the archipelago under Kamehameha I (Levin 1968:427).

Whatever the cause, the effects of the abolishment were calamitous to the Hawaiian political economy (Handy & Pukui 1958:235; Seaton 1974:203) and attest to its importance as an ideological tool of the elite. Food production was disrupted as fishing grounds were no longer protected by leading to the drastic depletion of near shore resources (Handy & Pukui 1958:235) and sanctified priests no longer kept the calendar
essential for timing of food production of the large agricultural field systems (Seaton 1974:204). Further, the *makahiki* no longer provided the distribution of resources (Handy & Pukui 1958:235; Seaton 1974:201) meaning the subsistence economy suffered. The abolishment of *kapu* also opened up European trade to a wider population of elite (*ali‘i*), eager to acquire new luxury items (Handy & Pukui 1958:234; Seaton 1974:201). Production efforts were shifted from subsistence agriculture to acquiring tradable good such as sandalwood, increasing the labour and tribute demands on lower ranking elite (*ali‘i*) and commoners (*maka‘āinana*) (Bayman 2010:136; Handy & Pukui 1958:234-5).

### 2.3.3 MATERIALSATION OF KAPU

The *kapu* system was materialised in many ways by the Hawaiians. One example discussed above is the use of *kapu* to create sumptuary laws, dictating who could utilise the sacred red and yellow bird feathers. There are also material markers which signified to the Hawaiians where or when *kapu* was enacted. Brigham describes the symbols used to mark the *kapu* enacted on unoccupied buildings: “…two sticks crossed before a door…” (Figure 2.4) or two sticks posted either side of the door “…with a tuft of white kapa [tapa] or a white ball on the tip” (Brigham 1908:100). Similarly, a stick of hibiscus (*hau*) was planted at a beach to denote being closed for *kapu* (Kamakau, in Buck 1957:357).

![Figure 2.4 House marked as kapu by two sticks crossed before the door (Brigham 1908:Fig. 86).](image-url)
The material aspect of the kapu system makes it available for archaeologists to study. Perhaps the most obvious way it can be seen is in the monumental architecture of temples (heiau) and elite (ali‘i) residences. The construction of temples (heiau) or entry into temples (heiau), for example, was restricted based on rank (Kamakau 1964:10; Malo 1951:160). Architectural elements used in the construction of temples (heiau), such as terraces, platforms, enclosures, and the construction of walls, can be seen to restrict access to the ritual complexes at varying scales reflecting control over knowledge and religious spaces (Kolb 1994a:526; McCoy et al. 2011:Table 1). Further, directions associated with sacred and religious notions, such as east with gods/sacred/kapu and west with after world/commonness/noa are argued to influence the spatial orientations and layout of temple (heiau) complexes (Kirch 2004; Kirch et al. 2010:146) and households (Van Gilder & Kirch 1997:60; Weisler & Kirch 1985:154).

The materialisation of kapu within the Hawaiian households is perhaps the most significant as it gives us a direct insight into how this ideological system was practiced in everyday life. The eating kapu (‘ai kapu) required men and women to consume food in separate areas of the household. This separation of activity areas is a major influence in the organisation of Hawaiian households (Hommon 2013:41; Ladefoged 1998; Malo 1951:28; Valeri 1985:124). The traditional Hawaiian household (kauhale) consisted of a number of spatially separate buildings and structures, each with a specific functional purpose: the men’s house (mua), sleeping house (hale noa), women’s eating house (hale ‘aina), women’s menstruation house (hale pe’a), canoe house (halau) (Handy & Pukui 1958:7; Kamakau 1976:96; Malo 1951:122). However, there is confusion as to whether commoners (maka‘āinana) adhered to this model of multi-building household and by extension, whether the kapu system was really as pervasive in the everyday life of ordinary Hawaiians as the ethnohistoric descriptions suggest. This is the central focus of this thesis and as such, the following section is devoted to describing the ethnohistoric descriptions of Hawaiian households and expanding on the problem of how commoners (maka‘āinana) built their homes.
2.4 THE TRADITIONAL HAWAIIAN HOUSEHOLD (KAUHALE)

While traditional studies of ideology focus on materialisation of ideals by elite in the public display of monumental construction, ceremonies or iconography, in Hawai‘i, we have the unique ability to explore the materialisation of ideology within private sphere; through the expression of household architecture. This section provides an overview of the traditional Hawaiian household (kauhale) and how this reflects the materialisation of the kapu system. At the end of this section, the themes of this chapter are summarised and the research problem is outlined.

2.4.1 THE ETHNOHISTORIC DESCRIPTIONS OF KAUHALE

Indigenous scholars writing in the 19th and early 20th century report fairly consistent accounts of traditional Hawaiian households (kauhale) (Handy & Pukui 1958:7-13; Kamakau 1976:96; Malo 1951:27-9, 122). Hawaiian households consisted of a number of spatially separate buildings and structures that were collectively known as the kauhale. Each building had a specific functional purpose and often included restrictions as to who could use it, or what activities could take place there. The main components of the household serve to segregate daily activities such as eating, sleeping, cooking and rituals based on requirements of kapu, and in particular, the eating kapu (‘ai kapu) (Malo 1951:122). These include: the men’s eating house and domestic temple (mua), the sleeping house (hale noa), the women’s eating house (hale ‘aina), the women’s menstrual house (hale pe’a), the cooking structure (hale kuhumu) and earth oven (imu). Other structures varied depending on the specific activities carried out by the adult members of the household. Malo (1951:122) also mentions something called an amana “consisting of three houses built about a court.”

Most clearly materialised in the household is the eating kapu (‘ai kapu). This kapu states that men and women could not eat food in each other’s presence, nor from the same hearth (Handy & Pukui 1958:9, 12; Malo 1951:29). For this reason, men took their meals in the men’s house (mua) while the women and small children took their meals in the women’s eating house (hale ‘aina). Men were forbidden from entering the women’s eating house (hale ‘aina) and women from the men’s house (mua) by punishment of death (Handy & Pukui 1958:112; Malo 1951:29). The men’s house (mua) was more than just an eating house however. The men’s house (mua) is often considered the most important
building of the household (Kamakau 1976:96; Malo 1951:28). It was the domestic temple where men would eat their meals in the presence of their ancestors and gods and also perform the daily prayers for the well-being of their elite (ali'i) and family (Handy & Pukui 1958:8,112; Malo 1951:28; Valeri 1985:114,73). Further, it was seen as the “front” of the household and guests were received there (Handy & Pukui 1958:165; Andrews 1865 and Judd 1975 cited in Valeri 1985:174).

The eating kapu (‘ai kapu) is also reflected in the separate cooking areas for men and women. Households should traditionally have separate ground ovens (imu) (Malo 1951:27) and separate cooking shelters (hale kahumu) to prepare and cook the food that was designated for men and that which was suitable for women (Handy & Pukui 1958:11). Sometimes, men were required to cook and serve food to women (Malo 1951:27, 30) to desacralize the food so that it was safe for consumption by women (Valeri 1985:212). Cooking shelters (hale kuhumu) are described as small stone wall shelters with a thatched roof and used only for cooking in poor weather, or when only small amounts were to be cooked (Handy & Pukui 1958:12). They also served to store cooking mats and food-related utensils (Handy & Pukui 1958:12).

These buildings and structures—men’s house (mua), women’s eating house (hale ‘aina), cooking shelter (hale kuhumu) and earth oven (imu)—played an essential role in the traditional Hawaiian household (kauhale). Not only did they segregate the sacred activities of men’s daily rituals, food preparation and consumption from the non-sacred activity of women’s food preparation and consumption (Malo 1951:27-29), but they more generally designated the safe areas for eating which ensured the segregation of eating from other household activities, such as sleeping.

Aside from the men’s house (mua), the sleeping house (hale noa) was the most important building of the traditional Hawaiian household (kauhale) (Handy & Pukui 1958:112). It was a place for sleeping and various domestic activities such as chatting or playing quiet games (Handy & Pukui 1958:9-10; Malo 1951:29). The name hale noa means a common house or freed from kapu; there were no gender or age restrictions as to who could enter (Handy & Pukui 1958:9-10). Food however was strictly forbidden from the hale noa (Kamakau 1961:212).

Again aside from the men’s house (mua) the house which afforded the strictest kapu was the women’s menstruation house (hale pe’a). During menstruation, women were
defiled by blood and thus were required to seclude themselves from all others (Handy & Pukui 1958:10-1; Malo 1951). They did so in the menstruation house (hale pe’a), a small house constructed upon a raised platform away from the main houses. Soiled objects were buried in an area around this house, upon which it forbidden for men to intrude (Handy & Pukui 1958:11). During this time, women would eat, sleep and weave mats in the menstruation house (hale pe’a); they could have no contact with men.

Other buildings in the traditional Hawaiian household (kauhale) varied based on the skills and needs of the inhabitants (Handy & Pukui 1958:11). A hale kuku or hale kua were places for a woman to beat bark cloth (kapa) and carry out other domestic activities such as dyeing the kapa cloth (Handy & Pukui 1958:11; Kamakau 1976:109; Malo 1951). A family with a canoe would likely have a canoe shed (halau), a longer thatched building where the canoe and other fishing equipment were kept (Handy & Pukui 1958:11). The canoe shed (halau) would have one side open towards the ocean (Brigham 1908:80; Ellis 1917:236). Handy & Pukui (1958:11) note that for a canoe builder’s canoe shed (halau), access was restricted to all but those who worked on the canoe; for a fisherman’s canoe shed (halau), access was not restricted but women could only handle certain fishing gear.

Specific parts of a building also reflect aspect of the kapu system. The doorway for example was an important part of the house that was protected by the god of the door step (Malo 1951:83). Men’s houses (mua), and those of the elite (ali‘i) were said to have two and three entrances respectively (Kamakau 1976:103) and entering a house through the door designated for an elite (ali‘i) of kapu rank was punishable by death (Kamakau 1976:103; Malo 1951:56).

Arrangement of household structure and location on the landscape was another important consideration of traditional Hawaiian households (kauhale). A priest or specialist would be consulted to determine a good location for the site (Fornander 1919:58-64; Handy & Pukui 1958:8; Kamakau 1976:96). Doorways of houses, for example, should be situated so that they were unobstructed (Handy & Pukui 1958:8), and avoid locations where a road will cross the entrance (Fornander 1919:60). Traditional Hawaiian households (kauhale) should avoid areas where kapu was attached to the landscape, such areas where temples (heiau) once stood (Stokes 1991:24) or known burial grounds (Fornander 1919:60).
2.4.2 DID COMMONERS HAVE KAUHALE?

2.4.2.1 Ethnohistoric observations of commoner households

The ethnohistoric description of the traditional Hawaiian household (kauhale) suggest that the kapu system played a major role in the daily life of the ancient Hawaiians, most importantly affecting the way daily activities such as eating and food preparation should be carried out. However whether this description represents the majority of Hawaiian households is unclear. Handy and Pukui’s classic description of the kauhale implies commoners (makaʻāinana) and elite (aliʻi) alike adhered to this multi-building model: “every Hawaiian household had a group of houses… called a kauhale” (Handy & Pukui 1958:7 emphasis added). They note that the men’s house (mua) and sleeping house (hale noa) were the main houses, all other buildings would be little more than sheds (Handy & Pukui 1958:112). Kamakau (1976:96) too suggests that all households consisted of multiple buildings. Moreover, he implies that higher ranking households were likely larger in both size of house and number of buildings than commoner (makaʻāinana) households.

In contrast to these two accounts, Malo (1951) suggests that perhaps this was not true for every household: “people of no account (lapuwale)... only cared for a little shanty...; the fire-place was close to their head, and the poi dish conveniently at hand; and so with but one house they made shift to get along” (Malo 1951:122). The term lapuwale commonly translates to worthless (Pukui & Elbert 1986:194) and the passage suggests that the residents did not adhere to kapu as sleeping, eating and cooking occurred within the one building. By comparison, Malo declares that people of “respectability, of character, persons of wealth or who belonged to the elite (aliʻi) class... had separate houses for themselves and for their wives” (Malo 1951:122). Overall, it is unclear whether Malo’s “people of no account” refers to people of the commoner class (makaʻāinana) in general or certain people of low esteem.

2.4.2.2 Historic observation of commoner households

Malo’s observation of single, multipurpose-building households is supported by a number of historic accounts early post-contact voyagers (Cook 1967:283; Cook 1784, Dixon 1789, Vancouver 1798 and La Perouse 1784 cited in Cordy 1981:Table 15; Samwell 1967:1176). Cordy (1981) summarises these historic descriptions of Hawaiian
households *(kauhale)* for both commoner *(makaʻāinana)* and higher ranking *(aliʻi)* families (Table 2.1) and notes that the reports of multi-building households all come from descriptions of the highest ranked individuals and that more “general” descriptions refer to single buildings with multiple functions (Cordy 1981:75). From his review of the ethnohistoric and historic literature, Cordy argues that only the high-ranking *(aliʻi)* households consisted of more than one or two structures while commoners *(makaʻāinana)* households were centred about the sleeping house *(hale noa)*, which was used for multiple purposes (Cordy 1981:73-4). Cordy’s observation that early post-contact voyagers accounts “constantly noted one house being used for several functions” (Cordy 1981:74) clearly implies that the separation of food, cooking, sleeping and gender were not adhered to by those within single buildings households.

In a similar analysis, Clark (1986) corroborated Cordy’s (1981) argument that commoners *(makaʻāinana)* did not follow the traditional Hawaiian household *(kauhale)* model of multiple buildings. In contrast however, he notes that while commoner households may not have had multiple buildings, they may still have had separate areas outside for different activities (Clark 1986:202). Stewart (1970:182), resident in Hawaii from 1823 to 1825, notes that these single houses were used for little more than to protect their belongings and for sleeping in poor weather; all other activities took place outside. Campbell too observed that in general, while commoners *(makaʻāinana)* did not have a women’s menstruation house *(hale pea)*, women sheltered in the woods during their menstruation and immediately after childbirth (Campbell 1817:133). Similarly, he notes that while not all families owned a men’s house *(mua)*, the men would eat in a neighbouring men’s house *(mua)* (Campbell 1817:131). So while Cordy (1981) and Clark’s (1986) reviews tend to imply that commoners may not have maintained households of multiple buildings there is confusion as to whether separate activity areas and thus adherence to the *kapu* system were maintained.

Golovnin (1979) on the other hand while travelling on the island of Hawaiʻi was told by a Hawaiian elite *(aliʻi)* “Naihe” in 1818 that “each Sandwich Islander [Native Hawaiian] has to have three houses, cabins, or huts, depending on his status: one is used to sleep in, one for the men to eat in, and one for the women to eat in.” (Golovnin 1979:178). This passage makes a clear statement about the practice of *kapu* across social ranks.
Table 2.1 Summary of historic references of Hawaiian households from Cordy (1981:75, Table 15). Cordy notes that the accounts of households with multiple buildings are restricted to descriptions of elite households, while commoner households were usually described as a single building used for multiple activities.

<table>
<thead>
<tr>
<th>Source</th>
<th>Date</th>
<th>Location (category of owners)</th>
<th>One house—multifunction</th>
<th>Several houses—different functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook(a)</td>
<td>1778</td>
<td>Kauai (general)</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Samwell(b)</td>
<td>1779</td>
<td>Kealakekua, Hawaii (general)</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Dixon(c)</td>
<td>1786</td>
<td>Kauai (general)</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Dixon</td>
<td>1786</td>
<td>Waikiki, Oahu</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Menzies(d)</td>
<td>1793</td>
<td>Honauanau, Hawaii (Kamehameha = paramount)</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Vancouver(e)</td>
<td>1793</td>
<td>Kawaihae, Hawaii (general)</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Vancouver</td>
<td>1793</td>
<td>Lahaina, Maui (Kaeo = paramount)</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>La Perouse /(f)</td>
<td>1786</td>
<td>La Perouse Bay, Maui (general)</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Portlock(g)</td>
<td>1787</td>
<td>Waimea, Kauai (Kaeo = paramount)</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Campbell(h)</td>
<td>1809</td>
<td>Lahaina, Maui (Kamehameha = paramount)</td>
<td>x</td>
<td></td>
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<tr>
<td>Campbell</td>
<td>1809</td>
<td>Honolulu, Oahu (Kahemenehau = paramount)</td>
<td></td>
<td>x</td>
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<tr>
<td>Campbell</td>
<td>1809</td>
<td>Oahu (general commoners) (Kamehameha’s enclosure)</td>
<td>x(^1)</td>
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<tr>
<td>Li(j)</td>
<td>1812</td>
<td>Kailua, Hawaii (Liholiho’s enclosure)</td>
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<tr>
<td>Li</td>
<td>1812</td>
<td>Kailua, Hawaii (Liholiho’s enclosure)</td>
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<tr>
<td>Malo(k)</td>
<td>—</td>
<td>General (‘‘No Accounts’’)</td>
<td>x</td>
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<td>Malo</td>
<td>—</td>
<td>General (Chiefs)</td>
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\(a\) Cook 1784.  
\(b\) Samwell 1787:1176.  
\(c\) Dixon 1789:266.  
\(d\) Menzies 1920:86.  
\(e\) Vancouver 1798, II:116,197.  
\(f\) La Perouse 1784, I:350.  
\(g\) Portlock 1789:189–190.  
\(h\) Campbell 1967:89,91,131.  
\(i\) Notes only men’s house and sleeping house.  
\(j\) Li 1959:119–121.  
\(k\) Malo 1951:122.
2.4.2.3 Archaeological observations of households

Since there is a clear material correlation of adherence to kapu through the segregation of activity areas within the home, the problem of how it influenced commoners (makaʻāinana) in daily life is one which can be addressed archaeologically. While few to date have tried to specifically address this question, there are a number of key studies which have sought to identify the traditional Hawaiian household (kauhale) in the archaeological record and link these remains to ethnohistoric descriptions.

The first major study of this kind was Weisler and Kirch (1985). Based on a settlement pattern survey of Kawela and Makakupaia Iki ahupua‘a on the island of Moloka‘i, they identified a number of residential complexes with multiple structures and activity areas. Figure 2.5 shows an example of an excavated residential area, likely belonging to commoner (makaʻāinana) household. This household clearly had multiple buildings for separating different activity types within the household. While it is unclear how many buildings the other excavated households may have had, the commoner (makaʻāinana) residential complexes all seem to have had multiple architectural structures for the segregation of activity areas (Weisler & Kirch 1985:142). This would imply adherence to the kapu system as traditionally recorded. There was also evidence for higher ranking households within the survey area. These two complexes were identified as likely low ranking elite (ali‘i) or land managers (konohiki) due to their extensive and architecturally complex households and presence of temple (heiau) (Weisler & Kirch 1985:148).

Other major studies of Hawaiian households stem from a large settlement pattern survey in Kahikinui, Maui. These represent follow up excavations and investigations of pre-contact settlements from the Kahikinui Archaeological Project in the 1960s and are an important look into the variation present within Hawaiian households. Van Gilder and Kirch (1997) specifically targeted commoner (makaʻāinana) households to identify the importance of the eating kapu (‘ai kapu) in daily life outside that of the elite (aliʻi) class. They excavated three residential complexes in Kahikinui each containing three to four architectural structures and interpreted several structures to be the ethnohistorically recorded sleeping house (hale noa), men’s house (hale mua) and cooking shelter (hale kuhumu) (Van Gilder & Kirch 1997:50). Interestingly in two complexes, structures interpreted as sleeping houses (hale noa) contained dual hearths (Van Gilder & Kirch
While the dual hearth may suggest that food preparation was segregated by gender, it also highlights the potential that locals practiced variations in the kapu system, particularly with regards to regulation of food related areas (Van Gilder & Kirch 1997:55). The faunal remains of two of these residential complexes were subsequently analysed by Kirch and O’Day (2003).

Also relevant to this discussion is Dixon et al. (2008), who looked specifically at identifying men’s houses (mua) through excavations in Lualualei, O’ahu. In this study, they surveyed and identified eight large clusters of archaeological remains; each containing at least one large residential complex interpreted as high ranking households—in this case, the families of land managers (konohiki). Within these large households, eight structures were excavated and six confirmed their interpretation as men’s houses (mua). These men’s houses were dispersed fairly evenly among the eight clusters (Dixon et al. 2008:279) implying that they were used by a number of families in the surrounding regions. (Dixon et al. 2008:282) argue that the men’s house (mua) played a role in unifying communities and “functioned as places for communal redistribution within each extended family or between local residential groups.”

2.4.2.4 Archaeology of kapu in the post-contact period

Following the abolishment of kapu in 1819 a number of cultural transformations occurred (Bayman 2007, 2009, 2010; Ladefoged 1991; Ladefoged 1998; Sweeney 1992). As the practice of kapu ceased, households were no longer required to keep multiple buildings to segregate activity areas. Ladefoged (1991:67) argues that this is reflected in the noticeable decrease of spatially discrete structures in residential complexes dated to the historic period at Hawai‘i Volcanoes National Park, Hawai‘i Island. Post-contact period residential structures also appear to be larger in general and have a higher number of contiguous components than their pre-contact counterparts, reflecting the presence of multiple activity areas within single building structures (Ladefoged 1991:62).

This finding is corroborated by Sweeney (1992) at Lapakahi in Kohala, Hawai‘i, and Mākaha Valley on O‘ahu. Sweeney (1992:51) adds that existing households were often modified to fit the new cultural values. She found evidence for the addition of walls and rooms to larger existing residential structures to create new spaces for activities.
Figure 2.5 Archaeological example of a pre-contact commoner household excavated by Weisler and Kirch (1985:145)
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2.4.3 RESEARCH QUESTION

This section drew on three lines of evidence for describing traditional Hawaiian households (*kauhale*) before the abolishment of *kapu* in 1819. The ethnohistories clearly describe material patterns which reflect the practice of the *kapu* system. Particularly evident is the practice of keeping multiple buildings and regulating the location of food consumption within the home reflecting the practice of the eating *kapu* (*‘ai kapu*).
However, these sources are ambiguous when it comes to the relationship of kapu to social rank. The contact-era accounts of foreign visitors were also ambiguous; the majority indicate people kept single building households yet Golovnin’s (1979:178) account clearly implies that commoner households had three buildings. Finally, the archaeological data reviewed here are evidence that a variety of households in Hawaii have been recorded—but not systematically. The result of this is that we still do not have a clear picture of how the kapu system influenced the wider society.

To address this problem, this thesis explores the research question: is the practice of kapu in Hawaiian households associated with social rank? To address this question, residential complexes in a coastal region of Manukā Ahupua’a were systematically surveyed and analysed to identify indicators of social status and the practice of kapu. As kapu is part of a wider religious system, other signals of religious practice were also analysed to provide support and comparison to the primary analysis. The next section provides a background to the environment and settlement history of the study area.
3.0 MANUKĀ SURVEY REGION

The environment and history of Manukā Ahupua‘a, Ka‘ū District, Hawai‘i Island make it ideal for a study of the influence of kapu on household architecture. The landscape was formed by fairly recent volcanism which has a number of implications for settlement in the region. Further, soil development and precipitation varies with elevation, contributing to distinct landscapes in these zones. The history of settlement in Manukā is explored, drawing on historical accounts of people in Manukā and the surrounding areas. Lastly the previous archaeological research in the area is provided.

3.1 ENVIRONMENT

The Hawaiian archipelago is a chain of volcanic islands in the Pacific Ocean (Figure 2.2 and Figure 2.3). The islands were created from a volcanic hotspot currently near Hawai‘i Island, the largest, youngest and most volcanically active island. As one travels northwest up the chain, each island is progressively older and more eroded (Kirch 1985:24). Manukā Ahupua‘a is located on the southwest coast of the Island of Hawai‘i. It is located on the western boundary of Ka‘ū District at the coast, and borders South Kona to the north (Figure 3.1).

3.1.1 VOLCANIC LANDSCAPE

Ka‘ū district has a distinctive volcanic landscape owing to two of Hawai‘i’s most active volcanoes, Mauna Loa and Kilauea. In Manukā, 750-1500 year old flows are interspersed with kīpuka (i.e., small pockets of older flows), from two age ranges, 1500-5000 and 3000-5000 years old (Figure 3.2). There are two types of flows at Manukā which contribute to distinctive landscape features. ‘A‘ā is a rough, bubbly flow characterised by an irregular surface of loose clinker rocks (Figure 3.3) (Larson 1991:234). Pahoehoe is a smoother dense flow that makes a flat, rippled surface, punctuated by lava blisters, or lava tubes (Figure 3.4)(Larson 1991:242).

These two flows make a distinctive landscape for human settlement. The surface of ‘a‘ā lava flows are rough and unstable—often ending abruptly at a chasm or cliff. Early visitors to Ka‘ū remark on the difficulty of travelling in over the ‘a‘ā, particularly at night (Ellis 1917:142; Lyman 1846). ‘A‘ā however, provides a ready source of material for the construction of stone structures. The smoother surface of pahoehoe flows makes travel
substantially easier and often provides an ideal surface for petroglyphs (Lee & Stasack 1999:8). Further, the caverns and caves created by pahoehoe lava bubbles provide convenient places of shelter (Kamakau 1976:95).

Figure 3.1 Manukā Ahupua’a is located in Ka’ū district of Hawai‘i (Ahupua’a boundary data: Office of Hawaiian Affairs (OHA) 2009).
Figure 3.2 Age of volcanic flows at Manukā Ahupua‘a (outlined) and surrounding regions (Geological data: Sherrod 2008)

Figure 3.3 ‘A‘ā lava flows are rough and loose clinker stones and often form abrupt gulches and depressions
3.1.2 SUBALPINE REGION

The subalpine region of Manukā (Figure 3.5) extends up the barren slopes of Mauna Loa volcano above 1400 metres above sea level (masl). The volcanic flows date primarily to 700-1500 years ago, with few kīpuka. The north western boundary is marked by a younger 200-750 year old flow (Sherrod 2008). Rainfall in this area is about 800-950 mm annually (Figure 3.6), however, only pioneer vegetation and sparse stands of subalpine shrub and forest species are present (Maly & Maly 2004:177). Highly prized timbers of ‘ōhi’a (Metrosideros polymorpha) and koa (Acacia koa) trees are represented in the native species (Maly & Maly 2004:177); these species were typically under elite (ali‘i) control (Cordy 2000:41). Below this region to about 1150 masl is a largely barren transitional zone with small stands of montane mesic forest restricted to kīpuka (Maly & Maly 2004:177).
Manukā’s regions are remarkably different landscapes. The sub-alpine and upland regions have light forest cover with timber resources—although it falls outside the model of arable land suitable dryland crops (Ladefoged et al. 2009). Near the coast, vegetation is restricted to shrubs and grasses with the exception of modern invasive species of trees.

Figure 3.5 The annual rainfall in Manukā varies with elevation and is lowest in the coastal region (rainfall data from Giambelluca et al. 2013).
3.1.3 **UPLAND REGION**

The upland region (Figure 3.5) falls between about 400 and 1150 masl with rainfall at about 800-1050mm per year (Figure 3.6). A higher rainfall in the uplands supports a greater population of forest species than the other zones. The many kīpuka date from 1500 to 3000 years old (Sherrod 2008), supporting denser vegetation than the surrounding younger flows. Unlike the coastal region however, the younger flows here are not entirely barren. The upland region is largely covered by lowland and montane mesic forest species containing ‘ōhi’a (*Metrosideros polymorpha*) trees (Maly & Maly 2004:177). The lower portion also supports *lama* (*Diospyros sandwicensis*) trees and patches of lowland dry shrubland containing ‘a‘āli‘i shrubs (*Dodonaea viscosa*) (Maly & Maly 2004:177).

While the upland region was highly vegetated in comparison to the coastal region, it seems unlikely that the upland region supported a permanent population in prehistory as the environment was not suitable for major investments in agricultural production (Ladefoged *et al.* 2009). According to a recent agricultural model, Manukā falls in a zone of low agricultural potential between the large tracts of arable land belonging to the Kona and Ka‘ū field systems (Ladefoged *et al.* 2009:2378) (Figure 3.7). Part of the reason for Manukā’s poor agricultural potential is likely to be the young age of the volcanic substrates; the oldest kīpuka in upland Manukā date between 1500-3000 years old. Ladefoged *et al.* suggest that volcanic flows younger than about 4000 years old would not have sufficient soil development to support intensive rain-fed (dry land) agriculture (Ladefoged *et al.* 2009:2377). Manukā is also dryer than neighbouring regions in South Kona and Ka‘ū which were capable of supporting extensive forests. The effects of these environmental factors on vegetation growth are easily visible in satellite images of the region Figure 3.7.
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Figure 3.7 Manukā Ahupua‘a falls within a barren zone between the arable land tracks of the Kona and Ka‘ū agricultural field systems and areas of dense forest (adapted from Ladefoged et al. 2009).

3.1.4 COASTAL REGION

Below the upland region is a large barren zone where only few shrubs and grasses grow. The coastal region of Manukā (Figure 3.5) represents the thin zone of human habitation in Manukā where rainfall is not more than about 700 mm annually (Figure 3.6). The landscape, described by Ellis (1917:40) in 1823 as “one vast desert, dreary, bleak, and wild”, consists primarily of exposed ‘a‘ā and pahoehoe volcanic flows with little to no soil development. The sparse patches of coastal dry shrubland and lowland dry grassland contain ‘ilima shrub (Sida fallax) and pili grass (Heteropogon contortus) which are primarily restricted to kīpuka, particularly Kīpuka Malua, Kaulanaumauna and Kaupua‘a, which, at 3000-5000 years old, are the oldest Kīpuka in Manukā (Figure 3.8) (Maly & Maly 2004:177). Vegetation is also clustered around lava tubes, caves and crevices where soil accumulates more rapidly; in Kīpuka Malua for example, the majority of shrubs and trees grow within tube features. The surrounding younger flows are populated predominantly by pioneer vegetation (Maly & Maly 2004:177). Today, thick stands of the
invasive *kiawe* (*Prosopis pallida*) grow along the coastline in areas with sufficient soil deposits. While the *ʻilima* and *pili* grass were used by Hawaiians for a variety of domestic activities (Handy & Pukui 1958:14,114) (Malo 1951:22-3), the endemic vegetation and little-developed soils provide no opportunity for subsistence.

The Kaʻū coastline is characterised by exposed vertical cliffs where wild crashing sea meets the land. Few bays and coves are found along Manukā’s coast, most notably the sandy beach at Manukā Bay (Figure 3.8). Ellis also notes a small canoe landing at Keawaiki (Ellis 1917:140). These bays likely provided the most convenient canoe landing locations in Manukā. However, early historical accounts attest to the skills of the Hawaiians in landing canoes along the steep rocky coastline (Ellis 1917:212; Menzies 1920:179).

Considering Manukā’s poor agricultural potential in both the upland and coastal regions, the coastal resources were undoubtedly what drew Hawaiians to Manukā. Kaʻū district is prized for the large deep sea fish which grew abundant in the strong currents off the coast (Handy & Handy 1972:547). Manukā itself is reported to have excellent fishing grounds (State of Hawai‘i, General Lease File no. 3340, n.d.a in Allen & McAnany 1994:26) and boasts a diverse offshore fish community (C. Baldwin (pers. Comm.,1977) inAllen & McAnany 1994:25). Handy and Handy however, report that there were no reefs and few coves and beaches meaning the usual coastal subsistence of squid, shellfish, crustaceans and seaweed were sparse (Handy & Handy 1972:548).

The initial settlers of Manukā would have faced a number of environmental challenges. The volcanic landscape, particularly the exposed ‘a‘ā flows, would have presented a number of obstacles to travel and exploration. The poorly developed soils impeded agricultural production and forest growth over much of the *ahupua‘a*, and the high rugged coastline and tumultuous ocean would have made launching canoes to catch the large deep-sea fish a difficult and dangerous sport. Given these constraints, Manukā could certainly not support a large prehistoric community nor would it have been the focus of intensive economic investment.
Figure 3.8 Locations of named kīpuka in Manukā and places mentioned in text
3.2 A HISTORY OF SETTLEMENT AT MANUKÄ

While timing of initial settlement at Manukā has not been established, it seems likely that it was settled relatively late in prehistory. Manukā is in leeward zone with little potential for intensive agricultural production (Ladefoged et al. 2009:2378) meaning it was not likely targeted for early settlement. The earliest settlements in Hawai‘i tend to be located in favourable locations (Kirch & McCoy 2007:401). Hommon for example (1976, 1986; 2013) argues that early Hawaiian settlers specifically targeted salubrious cores, “non adjacent ‘sweet spots’ of abundant marine resources and fertile lands far removed from the pioneer settlement” (Hommon 2013:226). Kirch demonstrates that the population of the Hawaiian Islands expanded rapidly between AD 1100 and 1500, first in the most productive agricultural regions (Kirch 2010:138). After this period, expansion continued in some leeward, marginal areas (Kirch 2010:138). As a marginal area, Manukā was most likely settled towards the end of this expansion period, or sometime after AD 1500.

In the late 1700s there was a well-established population in Manukā. Travelling south from Honomalino, South Kona in 1794, Archibald Menzies, surgeon and naturalist aboard the HMS Discovery (Allen & McAnany 1994:26) gives a description of the region: “…[we] passed the western part of the island, which is a dreary tract of the most rugged rocks of lava scattered here and there with some fishermen's huts. About noon we came to a small village named Manu-Ka where we found our chief Luhea's residence” (Menzies 1920:178-9). In Menzies’ account, 50-60 people helped to land his canoe and transport it to a halau atop a precipice (Menzies 1920:179). It has been argued that this number most likely reflects males, indicating a total population of at least of 150-180 people living in or near the village (Sinoto and Kelly 1975:93 in Allen & McAnany 1994:27). Menzies notes that, while the land was rugged and barren, the locals were eager and generous with their hospitality, providing fish, mats and cloth for Menzies and crew (Menzies 1920:180).

However, major demographic changes were occurring across Hawai‘i during the 19th century due to introduced diseases (Bushnell 1993; Stannard 1989), shifting economic focuses (Kelly 1980:12; Kirch 1985:314) and environmental challenges (Paris 1848 in Kelly 1980:11; Lyman 1846). The accounts of travellers to Manukā in the first half of the 19th century tend to support a depopulation of the region. Ellis describes his companions who travelled to Manukā overland: “here and there at distant intervals they passed a lonely house, or a few wandering fishermen's huts” (Ellis 1917:140) and the one night Ellis spent
in Manukā was spent outdoors (Ellis 1917:140). Lyman, travelling through the upland region of Manukā in 1846 mentions no residences at all (Lyman 1846:19-21). Other early visitors to the South Kona-Kaʻū region mention residences concentrated at the coast, but make no specific reference to any settlements within Manukā (Allen & McAnany 1994:27).

Depopulation in Manukā is corroborated by early census and tax records. In 1835, an early census recorded 117 people (45 adult males, 40 adult females and 32 children) living in Manukā (Ke Kumu Hawai‘i 1835-1836:198 in Allen & McAnany 1994:27). Between 1855 and 1861 however, less than five males were recorded each year in the Manukā’s tax records (Allen & McAnany 1994:28). While Allen and McAnany (1994:28) partially attribute these low numbers to inefficient tax collection methods, they point out that a subsequent rise in taxed population to about twelve males by 1865 likely reflects a recovery from population loss.

Population growth at Manukā was further restricted due to its acquisition by the government in 1848. In 1846, the traditional system of land tenure, where the king held the right to redistribute land amongst elite (aliʻi), was abandoned and a fee simple system of land ownership introduced (Kirch 2010:66). During a process called mahele, the ownership of land segments across the archipelago were distributed between the king, elite (aliʻi) and then commoners (makaʻāinana) over a number of years of land claims (Kirch 2010:66). In 1848, William Lunalilo relinquished the sub-district (ahupuaʻa) of Manukā to King Kamehameha III who promptly granted the land to the Government Land Inventory (Maly & Maly 2004:63). Individuals were also permitted to lay a claim on smaller sections of land. Within Manukā, there were seven claims for land in multiple land segments (ʻili) between 1848-53, all of which were denied (Maly & Maly 2004:64).

Government ownership prevented development of homesteads and settlements on the land. Land was leased to residents in 1876 (Maly & Maly 2004:88) however the primary use of the land after 1848 was goat ranching and later cattle ranching (Maly & Maly 2004:88). In 1893, residents petitioned for homestead lots and a recommendation regarding suitable land to the Minister of the Interior mentions that at least one of the kāpuka in Manukā “is inhabited by a very industrious Native family who are anxious to home stead the same.” (Boyd in Maly & Maly 2004:98). The petition was unsuccessful however and no land was ever developed.
The change of focus from coastal resource to inland ranching activities is mirrored in the shifting transport routes. Travel between Kaʻū and South Kona was facilitated via two trail systems, an inland and a coastal trail. Until the early 19th century the majority of travel occurred along the coastal route, connecting the major settlements at the coast. By the 1850s the inland trail was the preferred route (Sinoto & Kelly 1975:98 in Allen & McAnany 1994:29) and by the 1860s the coastal trail was little used (Maly & Maly 2004:37).

In 1911, the upland region of Manukā became part of a protected forest reserve while the lower regions continued to be ranched (Maly & Maly 2004:1). The coastal region of Manukā became more accessible in the mid-1950s with the improvement of trails into jeep roads and since then, public use of Manukā has been for hunting and fishing (Maly & Maly 2004:9). In 1983, the Manukā Natural Area Reserve was established by the Natural Area Reserve System (NARS) covering the majority of the ahupua’a (Maly & Maly 2004:1). NARS’s role is to preserve the natural and cultural state of Manukā and forbids development or modification of Manukā’s landscape. Hunting and fishing continues to be permitted.

3.3 ARCHAEOLOGICAL INVESTIGATIONS OF MANUKĀ

Archaeologists from the Bernice P. Bishop Museum have directed a number of systematic archaeological surveys of the Island of Hawai‘i. The first was John Stokes’ survey of temples (heiau) in 1906 (Stokes 1991). In the early 1930s, reconnaissance surveys by John Reinecke and Alfred Hudson respectively covered West and East Hawai‘i while Violet Hansen and her husband extended this work in the 1960s (Emory 1970:i-iii). These surveys passed through the coastal regions in Manukā, but few detailed records of the sites have been published. Melinda Allen and Patricia McAnany conducted a more intensive survey of Manukā in 1977, focusing on both upland and coastal regions (Allen & McAnany 1994). This survey was the first detailed report on the inland region, and provides a detailed account of the settlement patterns of two kīpuka.

3.3.1 PREHISTORIC ARCHAEOLOGY IN THE UPLAND REGION

The upland region of Manukā has not been surveyed in any great detail. Prior to Allen and McAnany’s (1994) survey, only two archaeological features were recorded. Stokes noted a single temple (heiau) in Manukā: Kaupoku or Kanekaupoku heiau, (50-Ha-
found “2 or 3 miles northeast of the Kona-Ka‘ū road. The story was that magical bananas grew there.” (Stokes 1991:113). A trail feature is also briefly mentioned by Handy and Handy (1972:570) “that connects the seacoast with the upland, passing through the park [Manukā State Park, Kīpuka Kuiki], has along it five water holes.”

Allen and McAnany’s (1994) reconnaissance of the upland portion of Manukā in 1977 identified agricultural features in four kīpuka. This was followed by an intensive survey of the southern portion of Kīpuka Kuiki (Figure 3.8), where the agricultural features were most extensive. The authors identified “loosely mounded rock ridges, modified lava channels, rock mounds of various sizes, walled areas, and faced, soil-filled terraces” (Allen & McAnany 1994:38). The authors found no evidence for permanent settlement in the pre-contact period, however, a number of small residential features were identified possibly representing temporary habitation (Allen & McAnany 1994:43).

### 3.3.2 PREHISTORIC ARCHAEOLOGY IN THE COASTAL REGION

During the archaeological surveys of the coastal region, the majority of the sites were concentrated in or near Kīpuka, particularly at Kīpuka Kaulanamauna and Kīpuka Malua, near Manukā Bay (Figure 3.8). Emory sums up the finds from the Manukā Bay area: “The total assemblage includes a waterhole, a heiau, a holua slide, branching stepping stone trails, ten house platforms, three walled house sites, one walled shelter, four lava tube shelters, five platforms, four graves, two corrals or pens, two ko’a and one small walled-enclosed shrine.”(Emory 1970:18). Emory suggests these remains are evidence that Manukā Bay was an important settlement in prehistory (Emory 1970:18). Concentrations were also found at Kīpuka Kaupua’a and a southern settlement area at Keawaiki (Allen & McAnany 1994:30; Emory 1970:15-8). Notable sites outside of Manukā Bay include a paved canoe landing and a structure resembling shrines found on Nihoa and Necker (Emory 1970:16 ). Handy and Handy also note a number of petroglyphs near a coastal trail paved with chunks of pahoehoe (Handy & Handy 1972:570). The Bernice P. Bishop Museum’s record of archaeological sites in Manukā Ahupua’a are summarised in Appendix 1.

In 1977, Allen and McAnany (1994) surveyed the coastline of Manukā, noting all but three of the previously recorded sites. Their intensive survey focused on Kīpuka Malua, an area where a concentration of archaeological sites had been identified (Figure 3.9). They identified 106 architectural features, including 77 previously unrecorded...
architectural features (Allen & McAnany 1994:35). They recorded all archaeological remains encountered, noting the location, feature type, likely function of each feature and area measurements for many features.

Allen and McAnany found that Kīpuka Malua was permanently settled in prehistory (1994). Eleven residential complexes were identified, each consisting of at least three features. Feature types include a mix of enclosures, platforms, paved areas and caves. Complex 1 for example consists of five features, one of which has ten architectural components: five platforms, three enclosures, one ramp, and a levelled area (Allen & McAnany 1994:table 3). Complex 6 comprises two canoe sheds, two habitation enclosures, another enclosure and a platform (Allen & McAnany 1994:table 3). The architectural investment in the landscape is indicated by the number, size and architectural complexity of these features, and those of the other residential complexes, indicating that they were most likely used on a long-term basis (Allen & McAnany 1994:42). Faunal evidence visible on the surface of Complex 10 suggests that there were functionally distinct activity areas (Allen & McAnany 1994:37) and a few residential complexes were associated with likely shrines (Allen & McAnany 1994:table 3). Specific buildings associated with kauhale were also tentatively identified, including a possible men’s house (mua) in Complex 1 and three canoe sheds (halau) near the coast (Allen & McAnany 1994:35). Further, Allen and McAnany (1994:43) support the view that most of the structures recorded at Manukā are pre-contact in origin based on “architectural construction techniques, feature and complex size, and associated artefact assemblages.” Overall, the study indicates Kīpuka Malua as a location with potential for a high detailed survey of pre-contact Hawaiian households.

Other archaeological features in the survey area include seven complexes with indeterminate, burial, petroglyph or storage functions (Allen & McAnany 1994:35). Other than a potential animal pen, no other agricultural features were identified. Multiple cave shelters were recorded, many with evidence of faunal remains (Allen & McAnany 1994:37). These features likely reflect long-term or temporary activity areas, used by the permanent residents of the area.
Figure 3.9 Map of architectural features in Kīpuka Malua from Allen and McAnany (1994:Fig.3)
3.3.3 **HISTORIC ARCHAEOLOGY IN MANUKĀ**

It is clear from the accounts of Menzies and Manukā’s tax and census records that people resided in Manukā at least until the late 1800s. However there is unlikely to have been substantial historic activity in Manukā, particularly along the coast as economic focus shifted to inland agricultural activities (Allen & McAnany 1994:44; Maly & Maly 2004:88). Allen and McAnany’s upland survey of Kīpuka Kuiki documented historic structures, burials and artefacts in association with historically introduced plant species, suggesting a more permanent settlement of the upland region than in prehistory (Allen & McAnany 1994:44). One of the *mahele* land claims between 1848 and 1853 mentions a garden at Kīpuka Kuiki (Helu 8751, Maly & Maly 2004:65), which supports this interpretation. Along the coast few historic period remains have been recorded. Site 50-10-71-3682, is a habitation complex with historic period surface finds and a large surrounding wall common during the historic period (Allen & McAnany 1994:32). Other indicators of historic occupation are petroglyphs in the vicinity of Manukā Bay which include written letters (50-10-71-3674), a large goat corral (50-10-71-3689) and an animal pen (50-Ha-B24-036).

3.4 **SUMMARY**

Manukā presented a number of environmental challenges which were overcome by the local residents in prehistory. The Hawaiians adapted to this economically marginal zone via permanent settlement of the coastal zone with mobility which allowed access to agriculture in the uplands. Travel over the rugged ‘a‘ā landscape was facilitated by trail systems. Settlement probably occurred late in prehistory and saw little historic activity from the mid-1800s due to regional depopulation. With the introduction of new plants and animals in the historic period, agriculture in the uplands became the major focus of subsistence. Continual ownership of Manukā by the government from 1848, and difficulty in accessing the coast before the 1950s, prevented the disturbance of archaeological sites and both commercial and private development in the region. The coastal settlement of Manukā was likely occupied for a relatively short time-span in prehistory and provides an ideal location for a detailed investigation of traditional Hawaiian households (*kauhale*), in a region on the margins of economic and thus political influence.
4.0 METHODS

This chapter outlines the survey methodology and analysis used in this thesis to investigate the research question: is the practice of *kapu* in Hawaiian households associated with social rank? The survey methodology employed is described first and includes a classification schema for recording households. The next section explains how this methodology was applied in the field and describes the preliminary processing of survey data. Outlined in the last section are the attributes and measures to investigate status, *kapu* and other religious structures.

4.1 SURVEY METHODLOGY

The particular survey methodology employed here was developed prior to fieldwork in three steps. First, after a brief review of possible locations where archaeological survey had previously shown the presence of domestic architecture in a non-agricultural zone, the coast of Manukā was selected for further research. Second, since the detailed study of architecture is the primary goal of this project, a classification schema for the remains I expected to encounter on survey was created. This scheme is based on the functional attributes that have been previously identified, both in the study area and elsewhere in Hawai‘i. Special attention was given to the interpretation of the remains of free standing buildings and other small auxiliary features. Lastly, the target variables that I wished to record were turned in to a digital data model and uploaded to high precision GPS (Trimble GeoXT). The methodology of GPS survey used here differs slightly from typical GPS survey in the Hawaiian Islands, which simply records locations of architecture as points. Thus I describe it in detail below.

4.1.1 STUDY AREA SELECTION: COASTAL MANUKĀ

As discussed in the preceding chapter, Manukā is the ideal place to carry out a study of residential architecture for a number of reasons. Firstly, previous surveys have identified the densest locations of archaeological remains and categorised the types of remains present (Allen & McAnany 1994; Emory 1970). Prehistoric settlement in Manukā was largely situated along the coastline and more densely populated within *kīpuka*, the small pockets of older volcanic flows (Allen & McAnany 1994:42). The most detailed survey in this region to date, Allen and McAnany (1994) identified a number of
archaeological feature types associated mainly with residential sites. These include habitation sites such as platforms, enclosures and pavements, and are associated with other residential features including shell midden deposits, walls and shelter caves. Ritual sites identified included petroglyphs, a shrine, and a number of possible burials. Allen and McAnany (1994) found no evidence for gardening in the coastal region, and environmental and historical evidence discussed in the previous chapter suggest agricultural remains are unlikely.

The lack of soil development in the study area makes it more likely that detailed survey will yield a complete inventory of architecture remains; no structures are buried by lava to impede this. Artefactual evidence is readily found on the ground surface, indeed, so much so, that Allen and McAnany (1994:42) propose that excavations would not likely to add significant detail to our understanding on Manukā. Given the lack of activity in this region in the recent past, shell midden and stone tool remains are likely relatively intact. Therefore, a highly detailed survey of Manukā stands a good chance of returning the maximum data possible from a survey in terms of an intact and complete record of domestic activities in a well-defined area.

4.1.1.1 Boundary problems

Hawaiian settlement patterns are often bounded by the natural environment. Settlements in Hawai‘i were frequently concentrated along the coast or inland in fertile agricultural areas (Kirch 1985). Between these areas is often a barren zone where settlements are restricted to areas along streams or roads (Figure 4.1). Allen and McAnany’s (1994) survey found a similar pattern where residential settlement was restricted to the coastal margin, particularly within kīpuka. The barren inland regions and clustering of archaeological sites within kīpuka create discrete and natural survey boundaries which help to counter “edge effect” issues in spatial analysis (e.g., Banning 2002:80).
Figure 4.1 Sites in Hawai‘i are often found along coastal regions and in inland agricultural zones. Forest and barren zones create natural boundaries. (Apple from Kirch 1985:4)
4.1.1.2 Determining extent of coastal settlement

Prior to the survey, satellite images were used to determine the extent of coastal settlement. The locations of archaeological sites recorded before the widespread use of Global Positioning Systems (GPS), such as those recorded at Manukā, are notoriously unreliable (Lebo et al. 2011:34). To aid the identification of settlement areas, high resolution satellite images (Geoeye satellite imagery with 0.5m pixel resolution, Figure 4.2) was used in an attempt to identify remains recorded by Allen and McAnany (1994). While no features could be identified for Kīpuka Malua, a number of larger remains and trails were identified in surrounding portions of the coast.

Based on the data from previous surveys and satellite imagery, seven days of survey were budgeted, with the intention to survey along the southward coast, starting from the South Kona-Kaʻū district boundary where the densest settlements were recorded in known locations. The plan was to survey as many households as possible within the given time-frame to a level of detail that would be useful for a comparison to the traditional household description \((kauhale)\). Survey boundaries were thus to be determined in-field from the location of actual remains. The survey was called the Manukā Archaeological Reconnaissance Survey 2012 (MARS2012).

4.1.2 FORMAL AND INTERPRETIVE METHODOLOGY

An explicit recording methodology based on previous research is vital to a scientifically rigorous field survey (Lebo et al. 2011; Tuggle 2010). The method used here was designed to record the formal descriptions of the archaeological remains in a way that promotes the interpretive classification of archaeological patterns through ethnohistoric information. This is often done intuitively on field surveys in places like the Hawaiian Islands where we have a rich body of data on what to expect (e.g., Kirch 1985; Weisler & Kirch 1985) there is nonetheless value in being explicit about formal attributes and interpretive goals.
The term “formal” in this case refers to the description of the form of remains as they appear on the ground today. They represent major functional classification schemas and usually record the smallest functional unit (e.g., platform, midden, hearth) and then groups features into sites or complexes which are meaningful to the archaeologist. Recording involved in this type of survey involves photos, GPS and recording the present condition of features. The term “interpretive” aims to describe the archaeological remains in ways that would have been meaningful in the past (e.g., interpretation of “building” as opposed to archaeological notions of “site” or “L-shaped wall”). They involve sketch maps and forms describing the remains. Interpretive methods aim to not only describe the remains as seen by the archaeologist but to record them in a way that describes the relationship between different remains.

Weisler and Kirch (1985) tackled this very issue and created a hierarchical classification schema which is able to describe multi-unit sites without having to define site boundaries yet retaining the useful relationships between archaeological remains (Figure 4.3). The classification scheme used in this study builds on Weisler and Kirch’s (1985) with a few major differences designed to target the identification of households of buildings and their associated features. The first level is the formal description of
archaeological remains, these are recorded as components. These components make up interpretive units, buildings and features. Clusters of related buildings and features make complexes (Figure 4.4). This schema allows archaeological remains to be associated with meaningful categories in the past, i.e., households, houses and domestic activity areas.

4.1.2.2 Components

The most basic level of recording is the component. This essentially corresponds to Weisler and Kirch’s (1985:131) architectural component and is a formal description of individual remains as they are seen on the ground. Components can represent built structures such as walls, pavements, cairns or post-holes, or activity related patterns such as scatters of artefacts or midden. Individual artefacts are also represented as components. Components, as defined here, make up buildings or features and cannot exist in isolation. Each component was recorded based on the best interpretation of original structure.

4.1.2.3 Buildings

Single buildings are the primary unit of analysis in this research. Buildings deviate from (Weisler & Kirch 1985:131) category of “feature” in that while they are a discrete aggregate of components, buildings only include structures that could have been roofed in the past given the present arrangement of components capable of baring support posts (i.e., core-filled walls). Since there is little soil development for supporting building structures in many parts of Hawai‘i, most building foundations consist of dry-stone masonry platforms, enclosures or variously shaped walls into which posts are inserted (Figure 4.5 and Figure 4.6) (Kirch 1985:248).

In plan view, building walls are often core-filled and have formally defined shapes, i.e., I-, L-, J-, U-, or C-shaped enclosures (Clark, 1986@203). Walls erected for some purpose other than raising a roofed structure, such as agricultural walls and animal enclosures or boundary walls, can be distinguished by stacked construction method, their informal shapes or unusual wall height or thickness (Dixon et al. 2008:277). Non-building enclosures are often much larger and walls built to follow natural contours of the landscape rather than to support a wooden superstructure. Other indications that walls formed the foundation of a building are the presence of cupboards or niches in walls,
Figure 4.3 Hierarchical classification scheme created by Weisler and Kirch (1985:131)

Figure 4.4 Hierarchical classification of components ("Com."), buildings and features used in this thesis building on Weisler and Kirch (1985:131).
Figure 4.5 Reconstructed building of a canoe shed (*halau*) at Pu`u`honua o Honaunau. Note post embedded in walls.

Figure 4.6 Archaeological remains of a building in coastal Kohala, Hawai`i Island.
formal paving within and outside the building (i.e., a porch, lanai) and the presence of midden or domestic artefacts (Figure 4.7) (Weisler & Kirch 1985). In addition to built elements of foundation walls, there are natural ‘a’ā lava formations that may be incorporated or modified slightly to provide suitable support for a post-hole. Floor areas upon the rough ‘a’ā are always paved, while upon pahoehoe they may consist of little more than an area cleared of loose rocks.

The ‘building’ category includes a range of houses described in ethnohistoric literature such as the men’s house (mua), sleeping house (hale noa), women’s eating house (hale ‘aina), women’s menstruation house (hale pe’a), canoe house (halau) (Table 4.1)(Handy & Pukui 1958:7; Kamakau 1976:96; Malo 1951:122). It also includes smaller roofed structures which were associated with these houses such as cooking shelters (hale kuhumu) and other shelters for activities like beating tapa cloth (kapa) or storage. Buildings were also part of ritual complexes (heiau) (Buck 1957:520; Ii 1959:34). Some buildings are associated with specific components or characteristics that might further aid the interpretation of the function of the buildings (Figure 4.7).

For the purposes of this thesis, buildings do not include caves or other natural shelters. While in many cases caves may be used in the same ways as buildings by humans (e.g., O'Day 2001), they are not classified here as ‘buildings’ as they do not have a built roof and their locations are fixed in the landscape. This fixed positions means it cannot be used in spatial analyses which are targeted at understanding human choice in settlement locations. Further, natural features such as lava tubes would create difficulty in classifying discrete “buildings” as they can have multiple openings over large areas. (i.e., a network of lava tubes).

The digital model for representing buildings that is most appropriate for this study is the smallest possible area of its footprint (i.e., a minimum bounding polygon that closely conforms to the location of the building’s components). This footprint includes roofed porch (lanai), and paved-areas immediately adjacent to the entrance that may have only been partially roofed, or open porches (lanai). All parts of the building are recorded separately as components. Buildings minimally consist of floor-area components and most also contain wall components. Other likely components associated with buildings include platforms, pavements, artefacts, cupboards and midden.
Features, as defined here, represent any areas of human activity in the past which appear to have taken place outside of a roofed building. It may refer to a spatially discrete event such as a fire-feature or midden deposit, a group of components spread over an area, such as a petroglyph field and also single component events such as the deposition of an artefact or ecofact. The category “feature” is never used to refer to a building, but rather aims to refer to aspects of the built landscape that reflect the by-product of some specific action; i.e., ovens (imu), burials, shrines, isolated cooking or activity areas used in the past. Features with only one component are described as single component features and in the case of simple features components are not recorded separately to speed recording. Features are recorded as the minimal bounding area of activity based on the feature’s components.

Figure 4.7 Example of typical building components recorded archaeologically from Weisler and Kirch (1985:144).

4.1.2.4 Features
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Activities</th>
<th>Used by</th>
<th>Archaeological components or characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>mua</em></td>
<td>Men’s house</td>
<td>Eating/meeting place with family gods</td>
<td>Men and older boys</td>
<td>Two entrances to buildings, components associated with ritual (e.g., coral offerings, platform alters, upright stones), presence of midden</td>
</tr>
<tr>
<td><em>hale ‘aina</em></td>
<td>Women’s eating house</td>
<td>Eating, prayers to family gods</td>
<td>Women and children</td>
<td>Presence of midden</td>
</tr>
<tr>
<td><em>hale noa</em></td>
<td>Sleeping house</td>
<td>Sleeping, quite social activity</td>
<td>Everyone</td>
<td>Absence of midden</td>
</tr>
<tr>
<td><em>hale pe’a</em></td>
<td>Women’s menstruation house</td>
<td>Eating/sleeping during menstruation</td>
<td>Menstruating women</td>
<td>Greater distance from the other buildings</td>
</tr>
<tr>
<td><em>hale kahumu</em></td>
<td>Cooking hut</td>
<td>Cooking in bad weather</td>
<td>One each for men and women</td>
<td>Smaller size, hearth, presence of midden</td>
</tr>
<tr>
<td><em>halau</em></td>
<td>Canoe shed</td>
<td>Storage of canoes or fishing gear</td>
<td>Men and sometimes women</td>
<td>Longer than other buildings, open at one end</td>
</tr>
</tbody>
</table>
4.1.2.5 Complexes

The definition of ‘complex’ used in this thesis takes into consideration two important concerns. Firstly, it is well known that clusters of non-residential activities (e.g., quarries) make up an important part of the pre-contact Hawaiian landscape but are often ignored by archaeologists (Lebo et al. 2011:33) thus the presence of a building is not requirement of an archaeological ‘complex’. Secondly households could potentially take on many forms, from a cluster of buildings or a single building with many internal components to households with no buildings at all. For this reason, complexes are not required to have an objective number of buildings or features. Complexes are thus defined as any buildings or features in the landscape that create a spatially discrete area of activity. Following Lebo et al. (2011:35) and Weisler & Kirch (1985:132) complex boundaries were drawn in post survey, once all known buildings and features in the area were identified. Rather than impose an arbitrary distance to mark the boundaries of complexes (e.g., Ladefoged et al. 1987:38; and Sweeney 1992:42), the buildings and features were considered as a whole to determine spatially clustered groups “which are presumed to represent a contemporaneous unit” (Weisler & Kirch 1985:132 14). The complex boundaries are represented by smallest possible area that encompasses the spatial extent of buildings and features (excluding trails) within the complex.

4.1.3 RELATIVE DATING

While the majority of archaeological remains at Manukā are likely to be prehistoric in origin (Allen & McAnany 1994:43), historic period archaeology can be distinguished based on a number of characteristics. An important indicator that archaeological remains are historic in origin is the presence of artefacts such as glass, metal or introduced mammals such as sheep, goats or cattle. Historic period buildings were often enclosed a stone wall (Clark 1986:218-9) and while they tended to be larger and have more components than prehistoric buildings, overall the historic complexes usually consisted of fewer buildings (Ladefoged 1991; Sweeney 1992). Further, platform and enclosed building foundations are more common in the historic period than the semi-enclosing C- or L shaped walls (Sweeney 1992:51).

Dye (2010) argues that intact standing-stone habitation structures in Hawai‘i likely date to after Cook’s arrival in 1778 due to frequent movement of homes and recycling of
building materials (Dye 2010:141). However evidence from a number of projects tend to support a late, but less extreme date of post-1650 for such remains (Hommon 2013:209). Thus, stone structures at Manukā are likely late in prehistory with any well preserved structures possibly dating to the post-contact period.

4.2 APPLICATION OF SURVEY METHODOLOGY

4.2.1 RECONNAISSANCE SURVEY

The Manukā Archaeological Reconnaissance Survey 2012 (MARS2012) began with an archaeological reconnaissance of the previously identified coastal habitation zone. Beginning at Manukā Bay, a three person University of Otago survey team, including the author, walked in transects roughly at 50 m intervals from each other along the coastline to identify archaeological remains. Archaeological maps aided in locating previously recorded features. This method worked well in the pahoehoe lava flows where free standing walls stand out from the natural flat weathered stone around it (Figure 4.8). On ‘a‘ā lava flows, the undulating surface made it necessary to walk transects along contour, rather than along bearing lines, and features built on ‘a‘ā flows were much less recognisable from afar than those on pahoehoe (Figure 4.9). Thus, ‘a‘ā flows were surveyed more carefully during the initial reconnaissance. Sites initially catalogued as simple point markers using GPS to allow us to return for detailed recording. When we returned to record features the immediate area was again thoroughly searched for signs of archaeological evidence to ensure full coverage of the surrounding area.

4.2.2 DIGITAL RECORDING

All components, features and buildings were systematically recorded in the field using GPS devices. As the primary unit of analysis, buildings were recorded in finer detail with sketch maps and hand written descriptions to aid interpretation. The digital recording of all components focused on the preserved sections to record them as close to original shape as possible while buildings and features recorded the outline of groups of components. Single component features were recorded as features only to speed recording.
Example of building in pahoehoe. Buildings were far easier to identify in the pahoehoe than in the ‘a‘ā flows.

Example of a building identified in an ‘a‘ā flow. Such locations required thorough searching of surrounding areas to identify all buildings and features.
4.2.2.2 Points, lines, and polygons

Two Trimble handheld Global Positioning System (GPS) devices, GeoXT 6000 series and GeoXT 3000 series) were used to record archaeological remains to sub-metre accuracy. Data was recorded by the GPS as points, lines or polygons, depending on the type of archaeological evidence being recorded (Figure 4.10). Points were used to record small components or single component features. Based on the sensitivity of the GPS, any component or single component feature smaller than about 1 m² was recorded as a point. Point recording was generally appropriate for components such as artefacts, cairns, upright stones, petroglyphs, cupboards, holes, midden deposits, hearths and ecofacts. Potential burials were also recorded as points. Points were recorded by placing or holding the GPS as close the feature as possible and logging the position for approximately 30 counts.

Lines were used to record linear or curvilinear archaeological features or components such as walls, doorways, trails, or the drip lines of caves or overhangs. Lines were recorded by logging positions for a number of counts while slowly walking along the line of the feature. Polygons were used to record the footprints of buildings and features, and for recording components over 1m² in area. Typical components recorded as polygons are floor areas, terraces, platforms, lanai, large midden scatters, clearings and pavements. Unlike line features, polygons were not recorded by logging positions while walking around the object for two reasons. Firstly, previous experience dictates that the inherent error range of GPS recording means that the shapes of the features created rarely represented footprints of the intended targets in the size range of buildings in the survey area. Secondly, the difficulty in traversing over ‘a‘a meant that it was often difficult to follow the object accurately while walking. Instead, positions were logged at intervals and corners.

4.2.2.3 Attributes of buildings and features

A data dictionary was created for GPS recording which targeted the description of residential remains. Data dictionaries are essentially form filled out alongside the recording spatial data in the GPS (see Appendix 5 for descriptions). Standard metrics such as length, width and height were measured using hand tapes and recorded in the GPS for buildings, and also for features and components where greater accuracy was required. Where traditional hand measurements are inconvenient (i.e., within caves or lava tubes), a
laser measuring device was used. Other attributes include construction styles for architectural

components (e.g., core-filled or stacked construction), presence or absence of artefacts (i.e., volcanic glass, basalt or historic material) and density of midden scatters. More general attributes were also recorded: number of components for buildings and features, comments, preservation, type of lava in landscape and interpretation of traditional classification (e.g., men’s house).

In many cases midden and other artefacts did not occur as discrete areas but as a part of other components, e.g., a scatter of midden over the floor area of a building or placed inside a cupboard. For this reason, we included the option to record midden present within components, buildings and features as well as a separate discrete component. The density of such deposits was measured on a scale of: none present, single item present, presence (less than 10 pieces) and light midden (10-100 pieces) and heavy midden (+100 pieces). These general categories are easily distinguished by sight (Figure 4.11 and Figure 4.12).
Figure 4.11 Example of a house floor with light midden scatter (10-100 items).

Figure 4.12 Example of a house floor with heavy midden scatter (+100 items).
4.2.3 OTHER RECORDING METHODS

4.2.3.1 Recording of buildings

In addition to digital recording using GPS, each building was recorded on a building form. This involved a sketch map of the buildings and components and record any relationship to nearby features (e.g., trails to the building). Components were labelled and described and interpretations of the possible uses and function of the building were recorded. Detailed building photos were also taken in plan-view with the intention to stitch photos together post-field. To aid this process three to six extra GPS points were taken at locations on the corners of the buildings and positions logged for ~100 counts. Building identification tags were placed at these locations and photos were taken from the end of a 2m long pole at roughly 1m intervals.

4.2.3.2 Recording of petroglyphs

Within the area previously surveyed by Allen and McAnany (1994) were a number of petroglyphs. Petroglyphs have the potential to tell us a lot about ritual and spatial arrangement therefore required special recording. Each petroglyph was individually recorded by GPS point as a component of a petroglyph field feature. In addition to digital recording, petroglyphs were photographed and traced onto plastic bags using permanent marker. The orientation from the viewer perspective was recording in the field notebook.

4.2.4 POST-FIELD PROCESSING

4.2.4.1 GPS correction

The data was differentially corrected using UNAVCO’s “YEEP” base station data 18 km from the survey area. About 60% of the data resulted in a spatial accuracy of 0.3-0.5 m while only 6% had an accuracy range greater than 1 m. Some data was able to be not corrected by UNAVCO’s YEEP base station so another differential correction was used from a base station at Hawai‘i National Park, 36 km away. The two datasets were then merged to provide maximum coverage of survey area. The data shows excellent internal consistency of spatial location. While internally consistent, the initial GPS output shapes are not ideal for interpretive analysis and contain and inherent 0.3-0.5m error of the GPS and further editing was required.
4.2.4.2 Editing

Further processing using Esri’s ArcGIS (version 10.1) was undertaken to provide maximum utility to the dataset and aid display. The GPS data for buildings and features were checked against the measurements recorded for maximum length and width. Shape and location of components in buildings were also checked against sketch maps on the building forms. The data was then edited to match measurements where appropriate and adjust any distortion in shapes. This involved initial smoothing of the lines and polygons where lines or edges jagged or were broken. For buildings, wall components were also converted to polygons based on field-measurements to aid visual display. An example of this transformation can be seen in Figure 4.13.

Figure 4.13 Comparison of building B10 before and after post-processing. Lines and polygon edges were smoothed and wall-lines were converted to polygons. Note the yellow stars are reference points which remain unchanged between images.
4.3 ANALYSIS OF MANUKĀ HOUSEHOLDS

The aim of this thesis is to explore the relationship between status and the practice of *kapu*, an ideology of religious restrictions. The ethnohistoric descriptions of the traditional Hawaiian household (*kauhale*) suggest that the *kapu* system played a major role in the daily life of the ancient Hawaiians, yet there is conflicting evidence as to whether the majority of Hawaiian households adhered to this model where households comprised of a number of buildings and features which were designated for a specific activities such as eating, sleeping, cooking and performing rituals. Further, there have been no studies to systematically address the materialisation of other aspects of the Hawaiian religious system within households.

To address this, residential complexes identified in the survey were analysed for status, *kapu* and investment in religion. The residential complexes were first assessed on architectural investment to create a relative ranking of the status of households at Manukā. Then, three indicators of adherence to *kapu* were considered based on the presence or absence of patterns identified to reflect *kapu* from the ethnohistoric descriptions. Lastly the residential complexes were assessed against three quantitative measures of investment in religion to support interpretations about the importance of ritual practice within the home. As one of the goals of this study is to encourage the use of GPS to record architecture in a way that is sensitive to measures used to indicate the practice of *kapu* and other religious practice, copies of the GIS layers created will be made widely available for others to use as a baseline for future research in Hawaiian household archaeology.

4.3.1 DEFINING SOCIAL STATUS: INVESTMENT IN ARCHITECTURE

Investment in architecture is a standard form of evidence that archaeologists use to determine status—a palace, for example, implies higher status than a simple house because of the difference in the amount of labour and building materials necessary to construct them. In Hawai‘i, the households of the prominent elite (*ali‘i*) were larger and had a greater variety of structures than lower ranking households (Hommon 2013:42). Further, elite residences are often described as being more “architecturally complex” than those of commoners (*maka‘āinana*) in Hawaiian archaeology (Allen & McAnany 1994:35; Weisler & Kirch 1985:148). Three measures are used here to create a simple relative ranking of residential complexes: higher, middle and lower rank.
4.3.1.1 Investment in building size

Building size is an important marker of social status (Clark 1986:210; Cordy 1981:86; Hommon 2013:42) as the effort and materials involved in the construction of buildings increases with size. In Hawai‘i for example, a larger building requires more stone for walls, foundation platforms or pavements, as well as more trees to be felled for posts, thatching to be collected and then transported to the site. Further, certain resources were under the control of the elite (ali‘i) or land managers, and permission had to be sought to gather them, giving high status the best access to housing resources. (Cordy 2000:41).

In areas like Manukā, access to building materials, such as pili grass and tree timber, is restricted by the poor soil development at the coast and a large barren lowland zone dominated by shrubs and grasses (e.g., Maly & Maly 2004:177). Thus, it is likely that the elite (ali‘i) enforced stricter control of these materials. Trees suitable for buildings (‘ohi’a, Metrosideros polymorpha and ‘a‘āli‘i shrubs, Dodonaea viscosa) are found in the upland region of Manukā at least 6 km across rough inland ‘a‘ā from the coast (Maly & Maly 2004:177). Cordy notes that larger trees such as ‘ohi’a were especially likely to be under elite control (Cordy 2000:41). This suggests that commoner ( maka‘āinana) household sizes may be restricted based on access to resources, extra labour required to haul wood from far inland and also by the smaller size of ‘a‘āli‘i shrubs for posts.

For this analysis of investment buildings were ranked according to the estimated internal floor area. While dimensions of stone foundations are often reported in previous studies of architectural structures in Hawai‘i, there is sometimes little explanation of how those measurements were actually determined. Usually it is assumed the area of a building is the footprint of the architectural structure (Figure 4.14). However measuring these external dimensions becomes a problem when building foundations are only partially walled by stone; and thus only certain sections will be preserved. Buildings may have stone walls on three or fewer sides these walls may not represent the entire length of the building (e.g., Figure 4.14). Building in ‘a‘ā were required by the nature of the landscape to have paved, level surfaces meaning that floor area is always able to be determined while external dimensions may not. The floor area of buildings on pahoehoe were often paved or cleared of rubble. In addition, presence of midden, artefacts and extent of wall components are used to aid the estimation of floor areas. Another advantage of using internal floor area
over external dimensions is that it represents a better estimate of space for indoor activities and thus may aid in determining the function of a building (e.g., some structures were not large enough for a person to lie down in), and therefore are unlikely for sleeping).

The internal dimensions of buildings were measured by hand in the field and then the spatial information for the floor area of buildings from the GPS survey was edited using GIS to ensure agreement with in-field measurements. During editing, major errors in shape present in the survey data were also corrected with the aid of sketch maps. The floor area was then calculated using GIS software to produce a more accurate measure than the traditional “area= length x width” calculation. Floor area of porch components (lanai) were not included in this calculation and where buildings had internal walls, platforms or other components, floor area was calculated to include the space beneath these structures.

Figure 4.14 Example of how different structures can be measured. External area of buildings can be difficult to measure when buildings have less than four walls (lower example), whereas floor area can usually be interpreted from paved floors, walls and distributions of midden or artefacts. Note stippled area in lower figure represents pavement.
4.3.1.2 Number of buildings

The number of buildings in each complex will provide an overall measure of investment in architecture which is considered to correlate with status in Hawaiian archaeology (Clark 1986:202; Cordy 1981:76; Hommon 2013:42; Kirch 1985:252; Weisler & Kirch 1985:148). High ranking households had more resources available for the construction of multiple buildings required by the kapu system, may have supported larger or extended families including servants or retainers (Malo 1951:58), and have been associated with more specialist activities requiring extra structures (e.g., tapa beating, canoe sheds, tool manufacture, storage) (Handy & Pukui 1958:12; Weisler & Kirch 1985:153).

However, number of buildings may also be directly associated with adherence to the kapu system (e.g., Malo 1951:122). Ladefoged (1991) showed that the number of buildings within household complexes generally decreased after the abolishment of kapu in 1819 as activity areas such as eating, sleeping and gendered eating no longer needed to be kept separate. Since this thesis aims to investigate the relationship between status and kapu within the home, the overall investment based on the number of buildings in each residential complex will make an interesting comparison to the two other measures of status.

4.3.1.3 Elaboration index

Another way we can measure investment in architecture is by assessing architectural complexity, i.e. the creation of more labour-intensive architecture, e.g., a platform instead of a pavement, or the incorporation of greater numbers of components. Elite residences are often described as being more architecturally complex than those of commoners (maka‘āinana) in Hawaiian archaeology (Allen & McAnany 1994:35; Weisler & Kirch 1985:148). In this thesis, I measure architectural complexity specifically through elaboration; defined here as the presence of extra components added to buildings beyond what is functionally required. For example, the most basic Hawaiian building usually requires foundations for posts to hold up a roof. In addition to this, a number of components were identified as elaboration, adding to the architectural complexity of a building: porch (lanai), internal walls, platforms or terraces, cupboards and other built structure or upright. The presence and absence of these five components was used to create an elaboration index for each building (min 0, max 5).
A porch (lanai) is a cleared area at one end of a building which was often covered by an extended roof—but not considered part of the internal floor area. This represents an additional segmentation of space, which could be used for a range of activities. Internal walls also create additional segmentation of space, which may have been augmented with thatched walls or screens. Platforms or terraces within a building can indicate higher investment in foundations, segmentation of space or the construction of furniture or ritual alters. Cupboards are usually cubbies within core-filled walls used for storing or hiding objects or food. The last category of elaboration is used to account for other built features such as hearths or slab-lined pits or the presence of uprights. These components all indicate extra investment in the construction of buildings beyond what is necessary for a functional building thus are an appropriate measure of investment in architecture.

4.3.2 DEFINING KAPU: MATERIAL CORRELATES OF SOCIAL RESTRICTION ON DAILY LIFE

Once the residential complexes at Manukā were ranked based on status, the next step was to compare them to the ethnohistoric descriptions of Hawaiian households (kauhale) which materialised the religious restrictions of the kapu system through gendered and spatially discrete activity areas. Kauhale comprised of a number of buildings and features which were designated for a specific activities such as eating, sleeping, cooking and performing rituals (Handy & Pukui 1958:7; Kamakau 1976:96; Malo 1951:122). Central to this separation was the eating kapu (‘ai kapu) which strictly controlled who could eat which food and in the presence of whom. In this section, three indicators reflect the materialisation of this fundamental separation within the home: presence of multiple buildings, regulation of eating areas and presence of men’s house (mua).

4.3.2.1 Presence of multiple buildings

The first and most obvious way we can identify the presence of multiple, discrete activity areas is by looking at the evidence that the household kept multiple buildings. While the ideal material correlate of kapu would be to identify the full range of buildings described in the ethnohistoric traditions, men’s house (mua), sleeping house (hale noa), women’s eating house (hale ‘aina), women’s menstruation house (hale pe’a) and canoe house (halau) (Handy & Pukui 1958:7; Kamakau 1976:96; Malo 1951:122), unambiguous interpretation of specific building functions can be impossible based on survey alone.
Indeed while this survey was not able to identify specific functions of the majority of buildings, the number of buildings indicates that multiple buildings were being utilised and thus indicates the separation of activity areas.

As the number of buildings in a residential complex is also correlated with status (Weisler & Kirch 1985:148) the ethnohistoric traditions were used to estimate the minimum number of buildings required to represent the practice of kapu within the home. Minimally, we would expect households to have at least three buildings to spatially separate the activities of sleeping from eating and food preparation and to segregate eating and food preparation by gender. Sleeping and eating are activities that are required for survival, thus they should be present in any residence. Further, the separation of eating by gender is fundamental to the kapu system (Handy & Pukui 1958:9; Kamakau 1976:96; Malo 1951:27-29; Valeri 1985:126-7) thus two eating areas are minimally required. This number is corroborated by the account of Golovnin (1979:178) who was told by a Hawaiian elite in 1818 that households must have three buildings, and Malo (1951:122) who describes an amana—three buildings built around a court.

4.3.2.2 Regulated eating areas

Another way we can identify the separation of activity areas is by looking for the distinction of food related, vs non-food areas. This was an essential requirement of the kapu system and special attention was given to the processing, consumption and disposal of food (Handy & Pukui 1958:9; Kamakau 1976:96; Malo 1951:27-29; Valeri 1985:126-7). The ethnohistoric traditions suggest that the only buildings within which food could be consumed were the men’s or women’s eating houses (mua and hale ‘aina). Upholding these eating areas were so important that Kamehameha I’s final moments were spent being ferried back and forth between the sleeping house (hale noa) and the men’s eating house (mua), lest his death defile the eating house, or his eating defile sleeping house (Kamakau 1961:212). The consequence of such defilement by the highest ranking elite (ali‘i nui) would cause the “whole race to perish” (Kamakau 1961:212).

While it is difficult to tell whether complexes represent gender-based segregation of activity areas, by using midden as a proxy for consumption we can look for evidence that eating was restricted to two or fewer buildings, thus indicating a distinction of food related and non-food related areas. Food remains in a frequently used space such as an
eating house will likely be present as scatters of midden, rather than discrete deposits as food remains fall through mats or flooring to get trampled underfoot.

If processing or cooking was performed in buildings other than eating houses (i.e., *hale kuhumu*), we can expect find evidence of hearth stones, charcoal, volcanic glass and midden (O'Day 2001:301). Further cooking shelters (*hale kuhumu*) are likely much smaller than eating houses (Handy & Pukui 1958:12). Such shelters would be excluded from this count.

**4.3.2.3 Presence of a men’s house (mua)**

The last indicator used to interpret adherence to kapu was the presence of a men’s house (*mua*). Hawai‘i’s ethnohistorians considered the men’s house (*mua*) as the most important building of the household (*kauhale*) and they were associated with strict kapu (Kamakau 1976:133; Malo 1951:28; Valeri 1985:174). The men’s house (*mua*) was also the domestic temple; a focal point of ritual activities within the household (Handy & Pukui 1958:9,112; Malo 1951:28; Valeri 1985:114,73). Further, because this eating house was restricted to male members (Handy & Pukui 1958:9; Malo 1951:29) it implies the separation of eating by men and women.

The ritual nature of men’s houses (*mua*) means they can be more readily identified in the archaeological record from the architectural remains. Perhaps the most important indicator is the evidence of ritual activities such coral or other offerings (Cordy 1981:82; Dixon *et al.* 2008:272), upright stones (Kirch 1985:261; Weisler & Kirch 1985:142) and altars (Cordy 1981:82; Handy & Pukui 1958:95) or other places for holding offerings (e.g., niches) (Van Gilder & Kirch 1997:52). These ritual activities may be in the north-east corner of the building (Van Gilder & Kirch 1997:52; Weisler & Kirch 1985:142). Further, men’s houses are likely to be one of the largest buildings in the complex (Cordy 1981:77; Dixon *et al.* 2008:272; Weisler & Kirch 1985:141) and may have two doors (Kamakau 1976:103). Lastly, since they functioned as eating houses, evidence of midden is likely.

These three criteria, evidence of at least three buildings, no more than two building with midden and presence of a men’s house (*mua*) are by no means a complete representation of the traditional Hawaiian household (*kauhale*) or adherence to the kapu system. However, in the absence of excavation data, it provides the best available means to
identify the separation of activity areas, in particular eating, which reflect the structuring principles of kapu.

4.3.3 INVESTMENT IN RELIGIOUS DISPLAY

The last step in this analysis was to assess the investment in religious architecture and features within residential complexes. While not a direct measure of the practice of kapu, this measure is relevant to the research aims for two reasons. Firstly, religious architecture and other religious features may be incorporated into households (Weisler & Kirch 1985:142). This may reflect materialisation of religious ideologies in much the same way that temple (heiau) construction reflects the overt materialisation of elite ideological strategies to legitimise the Hawaiian social order and control of the economy (Kirch 1990; Kolb 1994a; Kolb 1994b; McCoy et al. 2011). Secondly, the kapu system was integrated into the larger sphere of Hawaiian religion; it applied to a range of religious ceremonies, e.g. the makahiki (Malo 1951:141), architecture, e.g., temples (heiau) (Malo 1951:161) and incorporated religion into the fundamental justifications for restriction, i.e., things that were kapu held divine power (Shore 1989:164; Valeri 1985:90). Thus, a conscious and deliberate practice of kapu was likely associated with the practice of Hawaiian religion more generally. Therefore a quantitative assessment of the materialisation of religion provides a useful comparison between overt materialisation of religious ideals (investment in religion) and the more subtle practice of kapu. As yet, investment in religious displays within the home has yet to be investigated systematically in Hawaii. Investment in religion was quantified using three measures: the architectural investment in the domestic temple, i.e., the men’s house (mua), the size of religious features, and the distance between buildings within the home.

4.3.3.1 Investment in the men’s house (mua)

As discussed above, and in section 2.4 of Chapter 2, the men’s house (mua) was an important focal point for ritual within Hawaiian households. So it stands to reason that one way people could invest in religion, or promote their appearance of being religious, is through investment in the men’s house (mua). For example, just as the ritual significance of temples, (heiau) increases with size and elaboration (Kirch 2004:107), we can expect that the size and elaboration of men’s houses (mua) reflects an overt strategy to display religious practice—either to a higher entity or to other people. Architectural investment in
the men’s house (*mua*) is measured here through building size (floor area) and architectural complexity (elaboration index—described above).

### 4.3.3.2 Investment of non-*mua* religious features

Previous archaeological investigations have indicated that higher status household have not only a men’s house (*mua*) but separate temple (*heiau*) or ritual features (Weisler & Kirch 1985:148). However, commonly encountered ritual features, such as shrines (Kirch 1985:258) or petroglyphs (Lee & Stasack 1999:9) require only those materials that are readily accessible in Manukā (e.g., stone quarried from the land, labour of family and friends). Thus we can assume that there are few environmental barriers to the construction of ritual features for both low and high status households. Any differences in the size of religious features are likely of a social or cultural nature.

### 4.3.3.3 Spatial separation of buildings

A strict interpretation of *kapu* would imply that you want buildings far away from one another to avoid overlapping activities that are meant to be separate. Dixon *et al.* (2008:272) found that certain high status household (*kauhale*) were isolated somewhat from the other households in the landscape. He describes this as ritual decentralisation, where empty space between households likely reflects the “sanctions of the *kapu* system that mandated the spatial separation of certain high ranking individuals and their residences from the commoner majority” (Dixon *et al.* 2008:272). This implies that the high status/low status and *kapu/noa* dichotomies of households persisted in the landscape outside of the physical boundaries of buildings and the inferred boundaries of household as interpreted by archaeologists. This was certainly true for temples (*heiau*) where commoners (*maka’āinana*) would attend certain religious ceremonies outside the temple complex (Fornander, 1880:59 in Stokes 1991:22). Further, a passage from Malo (1951) indicates that extreme *kapu* may exist within households beyond the physical building structures: “even if there were no fence surrounding the ali‘i’s residence, only a mark, or faint scratch in the ground hidden by the grass, and a man were to overstep this line unwittingly, not seeing it, he would be put to death.” (Malo 1951:56-7)

We should expect the ritual separation of activities by buildings to exhibit a similar ritual decentralisation within the household complex. According to ethnohistoric traditions, the women’s menstruation house (*hale pe’a*) is an example of this ritual decentralisation;
this building was constructed away from the main houses, upon a raised platform and contained a restricted area around the house where soiled objects were buried (Handy & Pukui 1958:11). Thus households with a greater average distance between buildings are assumed to be more religious. This distance was calculated from the closest edge of building polygons between each of the buildings within the complex; i.e., if there were four buildings labelled a through d it would be the average of distances a-b, a-c, a-d, b-c, b-d and c-d (Figure 4.15).

![Figure 4.15](image)

Figure 4.15 The average distance between buildings within each residential complex was calculated by averaging the distance between each possible pair of buildings within the complex i.e., the average of a-b, a-c, a-d, b-c, b-d and c-d.
4.3.4 **SUMMARY**

This chapter described the methodology developed for the GPS survey aimed at targeting residential complexes in the study area. A classification schema was developed to aid recording of households using the categories of components, buildings, features and complexes. This classification was applied during a GPS field survey to record archaeological evidence of activities along the northern stretch of coastline of Manukā Ahupua’a. After post-processing and editing of survey data, residential complexes were assessed to address the research question: is the practice of *kapu* in Hawaiian households associated with social rank? First, complexes were ranked into three categories, higher, middle or lower status based on the size, number and architectural complexity of buildings in the complex. Next, practice of *kapu* within the home was interpreted based on the presence or absence of multiple buildings, regulated eating areas and a men’s house (*mua*). Lastly, the materialisation of religion was measured based on the architectural investment of the men’s house (*mua*), religious features and the distance of ritual separation between buildings.
5.0 RESULTS

This chapter presents the results of the Manukā Archaeological Reconnaissance Survey 2012 (MARS2012) and analysis which investigates the relationship of kapu and status within pre-contact Hawaiian households. It begins with an overview of the survey results, including a general description of the kinds of buildings and features recorded in the survey as well as an overview of each complex interpreted from the data. While this section mentions most of the archaeological remains recorded, a complete list of buildings, features and components and detailed description of buildings and features can be found in Appendix 2 and Appendix 4. The second section of this chapter focuses on the analysis of residential complexes described in the first section. These complexes were ranked into higher, middle and lower status groups, and analysed against three indicators of adherence to kapu and three measures of investment in religion.

5.1 OVERVIEW OF SURVEY

The survey in Manukā was conducted over seven working days during October 2012. It focused on a number of well-preserved examples of residential complexes along approximately 1.5 km of the Manukā coast, beginning at the South Kona-Ka‘ū district boundary to the southern edge of Kīpuka Malua, south of Manukā Bay (Figure 5.1). In total, the survey covered an area of approximately 0.43 km$^2$ and recorded 30 buildings and 98 features (Figure 5.2). Three buildings and 21 features were interpreted as historic in origin and a further 14 features classed as potential burials. The remaining pre-contact buildings and features clustered into six complexes, one isolated building and a few isolated features.
The MARS2012 survey area extended from the South Kona-Ka‘ū border to the edge of Kīpuka Malua covering 0.43 km².
Figure 5.2 Map of all buildings and features recorded in the MARS2012 survey. Detailed maps and figures are available in Appendix 2. Note colour of Kīpuka Malua has been modified to distinguish its boundaries from the surrounding ‘a‘ā.
5.1.1 PRE-CONTACT BUILDINGS

Of the 30 structures recorded as buildings, 27 were likely constructed before the arrival of Europeans into Manukā (Table 5.1). These buildings were classified into a number of functional types, based on their form, construction and association with other features and buildings. These types include men’s houses (mua), generic houses (hale), sheds or shelters, canoe sheds (halau) and temples (heiau). The functions of these buildings include ritual, domestic, domestic ritual and storage. Below I give general descriptions of each of these building types before summarising each complex in the next section.

5.1.1.1 Men’s houses (mua)

Four buildings were identified as likely men’s houses (mua) (B11, B22, B25 and B28 (Figure 5.3). These buildings were generally the largest within each complex yet vary considerably in absolute size and construction (Table 5.1). Each building has components which indicate a ritual function and various other characteristics that are associated with men’s house (mua). While other studies have identified patterns regarding location of ritual components within buildings (Van Gilder & Kirch 1997:52; Weisler & Kirch 1985:142) or more generally in the landscape (Kirch 2004:106; Weisler & Kirch 1985:142), no such patterns were identified here.

B11 (Figure 5.3a) is the smallest men’s house (mua) in the survey region. Its ritual component is a cluster of large coral pieces, some of which are branch coral with no evidence of abrasion—often used as ritual offerings in Hawai‘i (Kirch & Sharp 2005:103). Adjacent to the coral are a number of small black basalt and white coral pebbles typical of those used in playing the konane game. These game pieces are also thought to have been associated with healing and priestly class (Malo 1951:207-8) and have been found in association with a priest’s house in Kahikutuni, Maui (Kirch et al. 2010:153). B11 also had two possible entrances to the building which Kamakau (1976:103) states is a characteristic of men’s houses (mua).
<table>
<thead>
<tr>
<th>Complex</th>
<th>ID</th>
<th>Function</th>
<th>Classification</th>
<th>Hawaiian Name</th>
<th>Primary component</th>
<th>External Length (m)</th>
<th>External Width (m)</th>
<th>Floor area (m²)</th>
<th>Midden</th>
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<td>Complex 1</td>
<td>B01</td>
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<td>Temple</td>
<td>Heiau</td>
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<td>3.9</td>
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</table>
Figure 5.3 Four buildings were interpreted as men’s houses (*mua*) B11 (a), B22 (b), B25 (c) and B28 (d).
B22 (Figure 5.3b) is the largest of the four men’s houses (mua). Its walls enclose a sunken lava tube and a large core-filled platform. The platform is located in the centre of the lava tube and contains a number of coral offerings and water worn stones which suggest the platform functioned as an altar. Like B11, B22 also had two entrances to the enclosure further supporting the interpretation of a men’s house (mua). This building also contained a light midden (10-100 items) which may reflect its use as a men’s eating house.

B25 (Figure 5.3c) is a medium-sized building with an irregular shaped wall and a porch (lanai) at the northern end. It contains a core-filled platform at the southern corner of the building interpreted as an altar and a heavy midden scatter (+100 items) across the floor and altar, reflecting its use as an eating house. A niche in the eastern corner also contains a heavy midden deposit with a high frequency of slate pencil sea urchin spines (Heterocentrotus mammillatus) which were often used as abraders in pre-contact Hawai‘i (Kirch 1982:457).

B28 (Figure 5.3d) is a small building enclosed by a low wall with no visible entrance and a small porch (lanai) at the western end. It has a well-recognised ritual component: an elongated water worn basalt upright placed on the eastern side of the enclosure. Such uprights are typical of shrines and men’s houses (mua) (Kirch 1985:261; Weisler & Kirch 1985:142).

5.1.1.2 Generic houses (hale)

The term generic house (hale) used here encompasses the larger building structures which were associated with domestic activities but could not be confidently assigned a more specific function and encompasses any buildings with suspected eating house (hale ‘aina) or sleeping house (hale noa) functions. The distinction between generic buildings and shed or shelter structures was determined separately for each complex rather than by arbitrary size brackets.

Nine buildings were interpreted as generic house (hale): B07, B08, B10, B12, B16, B19, B23, B24, B29 (Table 5.1). These buildings exhibit a range of sizes (floor area, 7.3-58.4 m²), shapes and were associated with a diverse range of components. The primary components of generic buildings are pavements (n=2), walls (n=3) or enclosures (n=4). Little to no midden (less than 10 items) was found in six of the buildings, one has light midden (10-100 items) and two have heavy midden (more than 100 pieces). Two generic
houses (*hale*) have multiple rooms created by internal wall divisions and three generic houses (*hale*) have porches (*lanai*).

### 5.1.1.3 Sheds and shelters

Nine small buildings (floor area, 0.5-7.4 m$^2$) were interpreted as sheds or shelters. These buildings could further be distinguished into a number of groups based on similarities in their shape, construction and locations.

Two of the larger buildings in this category were tentatively identified as storage buildings (*hale papa’a*): B03 and B09. Both buildings are relatively square in shape and found in close proximity to ritual buildings or features. The formal shape of these buildings, their lack of cupboards or midden, and their location suggest that they may have been used to store ritual objects. The smallest building in the survey, B06, is a small enclosure with stacked stone roof. The small size (0.5 m$^2$) suggests that storage was the only likely function of this building, however it is not described as a *hale papa’a* as it is little more than a large cupboard.

Three buildings have a similar shape and spatial arrangement which suggests they may have had a similar function in the past. B13 (Figure 5.4a), B26 (Figure 5.4b) and B30 (Figure 5.4c) are all circular or semi-circular type structures located one end of a residential building or platform. No substantial midden remains (less than 10 items) or other components were associated with any of these buildings. A small shelter feature F21 (Figure 5.4d) associated with B12 also fits these same characteristics. While at this stage the function of these shelters is unclear, it seems likely that their function was complementary to the domestic buildings or platform they are associated with.

Three other buildings were interpreted as shed or shelters, B04, B05 and B27. B04 is an isolated building, not associated with any complex, buildings or features. It is a small enclosure with an entrance to the west. The small size and lack of midden or other domestic components suggests this was not used as a permanent habitation. B05 is a small enclosure incorporating a rock shelter. Its shelter and cupboards suggest a domestic function. B27 is a partially walled enclosure and its association with domestic buildings suggests a domestic function.
Figure 5.4 The circular and semi-circular buildings recorded in the survey and a similar looking feature all appear to be spatially related to a larger buildings or platform.
5.1.1.4 Canoe sheds (halau)

A further three buildings, B17, B18 and B20, were interpreted as canoe sheds (halau). These canoe sheds (halau) are all situated on a rocky precipice above the ocean. Their three-walled enclosures are open to the coast and they have a long narrow shape typical of houses for storing canoes, fishing gear or other long implements (Brigham 1908:80; Ellis 1917:236; Handy & Pukui 1958:11). All are associated with light (10-100 items) to heavy (+100 items) midden.

5.1.1.5 Temple (heiau) buildings

Two buildings, B01 and B02 appear to have a ritual function and were interpreted as temples (heiau). The temples (heiau) are the first and third largest buildings identified in the survey (66.3-145.9 m²). They are rectangular with large core-filled walls, multiple rooms and both contain slab lined pits which may have been used to hold carved ritual figures (ki‘i). These buildings have a high density of broken and water-worn coral present and there is a marked absence of midden. These buildings, particularly B01, represent a significant investment in the landscape indicative of ritual buildings.

5.1.2 PRE-CONTACT FEATURES

Overall, 63 pre-contact features were recorded during the survey; including multiple trails, clearings, platforms and walls (Table 5.2). These were classified by general function, domestic (N=37), ritual (n=6), transportation (n=11) or unknown function (n=9) and are briefly described below. A more detailed consideration of features can be found in the Appendix 2 and summarised in Appendix 4.

5.1.2.1 Domestic features

The domestic features recorded in the survey represent a number of different activities. Their close association with residential buildings and type of components, such as midden indicated their domestic function. Clearings are the most numerous domestic (n=8) and were largely identified as paved areas in ‘a‘ā lava flows. Two clearings, F05 and F70 were slightly removed from the main activity areas of their respective complexes and may reflect seclusion of people or activities. Built features included platforms (n=4), enclosures (n=3), free-standing cupboards (n=2) and terraces (n=2). Only one pre-contact artefact was recorded, F45—a basalt core. Also interesting to note was F62, a game board
(papumu) pecked into the pahoehoe and used for playing the konane game (Figure 5.5). A number of midden deposits were identified (n=6). Natural features included rock shelters, lava tubes and caves and most contained midden deposits. One stone-lined hearth feature was also recorded, F10.

5.1.2.2 Ritual features

Six ritual features were identified. Two of the ritual features were constructed from platforms (F15 and F75). F15 is a large shrine which is constructed of two tiered-platforms topped by a cairn (Figure 5.6). Its excellent condition indicates that it has likely been modified or reconstructed at some point and has many modern offerings; glass bottles and other packaged food items are found alongside traditional offerings such as large pieces of coral and shells. F75 is a smaller platform and is interpreted as a shrine due to the deliberate placement of coral in one corner and the presence of two stone cups.

Two petroglyph fields were identified. F50 is a large petroglyph field with 37 individual petroglyphs pecked into flat pahoehoe. F85 is a smaller field with 6 petroglyphs pecked into the sloping sides of a natural pahoehoe enclosure. Many are human figures with triangular bodies, curved legs and a small or absent head. A few of these petroglyphs had dots above the shoulders and some had three-fingered hands and feet. Figure 5.7 shows examples of two figures from F50—see Appendix 3 for full list of illustrations. F85 was also associated with two other ritual features: F86, a low stacked wall with two uprights slabs of ‘a’ā lava and F87, a highly disturbed terrace with a single ‘a’ā lava slab upright and a cairn.

5.1.2.3 Transportation

Trails were numerous in the survey area (n=11) and were only visible within ‘a’ā. These included trails paved with water worn stones and ‘a’ā cobbles and pebbles. One large trail paved with water worn basalt boulders, F14, connected settlements along the coast while another partially water worn paved trail, F30, connected the coast with inland regions. Smaller trails were found connecting parts of complexes together or leading away from complexes.
Table 5.2 Table of pre-contact features recorded in the MARS2012 survey

<table>
<thead>
<tr>
<th>Function</th>
<th>Type</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic (n=37)</td>
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<td>1</td>
</tr>
<tr>
<td></td>
<td>Clearing</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Cupboard</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Enclosure</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Game board (papumu)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Hearth</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Midden</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Natural feature</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Other</td>
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</tr>
<tr>
<td></td>
<td>Platform</td>
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</tr>
<tr>
<td></td>
<td>Terrace</td>
<td>2</td>
</tr>
<tr>
<td>Ritual (n=6)</td>
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</tr>
<tr>
<td></td>
<td>Platform</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Terrace</td>
<td>1</td>
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</tr>
<tr>
<td>(n=11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown (n=9)</td>
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</tr>
<tr>
<td></td>
<td>Platform</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Terrace</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Wall</td>
<td>6</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>63</td>
</tr>
</tbody>
</table>

Pecked grid surface of a *papumu* a board used to play the *konane* game.
Figure 5.6 Photograph of F15, a two-tiered shrine with a cairn on top. Offerings along the lower tier and cairn include both traditional coral and shell offerings and modern food and beverage items.

Figure 5.7 Images of petroglyphs F50-J (left) and F50-N (right). Images were modified by highlighting the peck lines in yellow to aid visibility of the glyphs.
5.1.2.4 Unknown features

A number of features were identified during the survey where no function could be discerned. These were largely isolated walls, one platform and one terrace, some near domestic areas. One feature, F40, is a small modified rock shelter with midden situated in the ‘a‘ā about 200 m away from the nearest buildings or features. While it may have had some domestic function, it is not likely large enough to have been used for sleeping or other activities that we might associate with a women’s menstruation shelter (hale pea).

5.1.3 COMPLEXES

The pre-contact Hawaiian settlement pattern describes small dispersed communities of households (Handy & Pukui 1958:2; Ladefoged et al. 1987; Weisler & Kirch 1985). As we would expect, small groups of pre-contact buildings and features cluster together in Manukā in a dispersed pattern on the landscape. A nearest neighbour index indicates that the buildings are significantly clustered within the Manukā survey area (p-value=0.0,) with an observed mean distance between buildings of 32 m and an expected mean distance of 70 m. Further, a nearest neighbour index of these clusters indicates that they are significantly dispersed in the landscape (p-value=0.0) with an observed mean distance between complexes of 219 m and an expected mean distance of 118 m.

Each of these clusters were interpreted as a complex, defined here as any buildings or features that create a meaningful and spatially discrete area of activity (Figure 5.8). Complex 1 was interpreted as a ritual complex and Complex 2, Complex 3, Complex 4, Complex 5 and Complex 6 were interpreted as residential complexes. Each complex is briefly described below with emphasis on the complex as a whole. For greater detail on individual buildings, refer to section 5.1.1 pre-contact buildings and the extended complex descriptions available in Appendix 2. As shown in Figure 5.8, there are few features, and only one building which did not group into one of these complexes. These isolated features and building are shown in greater detail in Appendix 2.
Figure 5.8 Six complexes were identified in the Manukā survey area. Note colour of Kīpuka Malua has been modified to distinguish its boundaries from the surrounding 'a‘ā.
5.1.3.2 Complex 1

Complex 1 consists of three buildings which are likely related to ritual activity Figure 5.9) on the edge of Kipuka Kaulanaumauna (pahoehoe lava flow), about 20 m inland of the coral sand beach at Manukā Bay. Buildings B01 and B02 are interpreted as temples (heiau) and are the first and third largest buildings in the survey. A third building B03 is interpreted as a ritual storage (hale papa’a) building and is situated between B01 and B02.

These buildings share a number of characteristics that indicated they were likely related. Firstly, none of the buildings have a clearly defined entrance and all were built by core-filled pahoehoe enclosures with cobble pavements. A large amount of coral is found across the site and midden was entirely absent. This is quite unusual considering the proximity of the site to the beach and supports the interpretation that Complex 1 had a ritual function.

5.1.3.3 Complex 2

Complex 2 is a group of four buildings and a number of features on an ‘a‘ā lava ridge, raised above Manukā Bay, about 190 m NE of Complex 1 (Figure 5.10). Two small buildings, B05 and B06 are small shelters possibly used for storage purposes. The other two buildings, B07 and B08 are similarly sized generic houses (hale) defined based on rectangular cleared areas and paving. Complex 2 is interpreted as a residential complex.

The central focus of this complex appears to be a large clearing, F09, which is bordered by B05 to the east and a two tiered platform structure, F08, to the north east. The clearing contains a hearth, F10, and a deposit of light midden, F11, adjacent to B05. The platform, F08, runs the length of the clearing and has a second tier with two platforms. No coral, midden or offerings were found to associate this platform with a ritual function, however an anchor stone was found in close proximity to it. A paved ‘a‘ā pebble trail, F07, connects the clearing F09 to the clearing F06. About 30 m north of the main cluster of buildings and features is a small clearing (F05) and a free-standing cupboard, F12, to the north-east of B08.

5.1.3.4 Complex 3

Complex 3 lies within ‘a‘ā about 200 m to the south-east of Manukā Bay, along F14, a coastal trail paved with water worn boulders. It has five buildings and a number of domestic features which support the interpretation of Complex 3 as a residential complex.
The buildings represent a range of activities typical of a prehistoric household – a men’s house (mua) B11, two generic buildings (hale) B10 and B12 and a small circular shelter B13. A fifth building, B09, is interpreted as a storage shelter (hale papa’a) which is likely associated with a ritual function due to its close proximity to F15, a large two-tiered platform shrine measuring 10.4 m by 4.8 m by 1.7 m at the bottom, 10.4 m by 2.6 m by 1.25 on the second tier and topped with a cairn approximately 1.4 m high (Figure 5.6). There are also four clearings F17-F19 and F24, two cleared terraces F23 and F25, two trail features F16 and F20, two lava tube shelters F27 and F28, and a platform F26.

Within Complex 3, buildings and features appear to cluster with three areas. While this may be due to purposeful segregation of activity areas, it is also likely to be due to the uneven nature of the ‘a‘ā landscape. Further, a modern road cuts through this complex, separating the shrine F15, building B09 and the coastal trail F14 from the main part of the complex, and potentially destroying any features which may have been located there.

5.1.3.5 Complex 4

Complex 4 is situated on a pahoehoe flow about a kilometre south of Manukā Bay, on the coastal edge of Kīpuka Malua. There are seven buildings and numerous features representing a variety of activities which make it the largest and most dispersed complex in the survey (Figure 5.12). Although they are quite dispersed, many of the buildings in this complex share similarities in size and construction method. Further, the different types of buildings present suggest that many buildings may have been used for specific activities and only together do they provide enough evidence to be considered a residential complex.

In the north-western part of the complex are two canoe sheds (halau) B17 and B18, a large elongated generic building (hale) B16, and a two stacked walls enclosing a large cleared area, F44. Another canoe shed (halau), B20, is located about 60 m down the coast in an area where remains may have been destroyed by historic activity. Another 60 m down the coast is a large generic house (hale) constructed by modifying a large natural depression in the lava to create an enclosure B23. On a ridge above B23 is a pecked game board (papumu) F62. Directly inland from B23 and F62 is the men’s house (mua) B22. In the northern part of the complex is a large field of petroglyphs (F50) containing 37 petroglyphs pecked into the pahoehoe. About one-third are oriented to the north-east, towards Mauna Loa volcano, when measured from the viewer’s perspective. Also in the
northern part of the complex is a large generic building \( (hale) \), B19 built in a similar manner to the men’s house \( (mua) \). Other features in this complex included scattered midden deposits within lava tubes and a number of short walls of unknown function.

5.1.3.6 Complex 5

Complex 5 is a tightly clustered group of buildings and features on a ridge of ‘a’ā lava flow above Kīpuka Malua. Its four buildings and features are connected by a number of trails (Figure 5.13). Again these buildings likely represent a range of domestic functions- a generic house B24, a men’s house B25 and two shelters or sheds B26 and B27. B24 has two rooms and is the only building which contains a possible hearth.

There are a number of features in Complex 5, including a clearing F70, a midden deposit F78 and a rock shelter F68. Most importantly are two platforms near the mua B25. The smaller platform F75 (3.8 m by 2.1 m by 0.7 m) is interpreted as a shrine due to the deliberate placement of coral in the corner of the structure and two stone cups. The second slightly larger platform F76 (6.5 m by 5.7 m by 0.7 m) is of unknown function however tentative evidence may point towards a ritual function as it contains a poorly preserved enclosing wall, a small cupboard and a three large pieces of coral. Trail features F69, F72 and F74 connect multiple areas of this complex while F77 and F79 lead away from the complex.

5.1.3.7 Complex 6

Complex 6 is roughly 300-400 m inland from the coast of Kīpuka Malua and consists of three buildings (Figure 5.14). There are two main areas of activity which appear to correlate with domestic and ritual parts of this residential complex. Rather than representing two separate residential complexes, the inhabitants appear to have used the nature of the landscape to segregate ritual areas from the domestic areas.

The domestic area consists of a large natural depression in the lava with a large cave F93 with two platforms constructed at the entrance and substantial evidence of domestic activities within (e.g., heavy shell and bone midden, +100 items) and an L-shaped platform of unknown function F94. Overlooking the enclosure is a small generic building \( (hale) \) B29 and a small shelter, B30.

The ritual area was also situated within a natural enclosure, roughly 70 m towards the coast from the domestic area. There is a men’s house \( (mua) \) B28 with an upright stone
along the eastern wall. Associated with this building are a rock shelter and three ritual features: a petroglyph field with six figures F85, a small stacked wall with uprights F86 and a highly disturbed terrace with an upright and cairn F87. Other features within the vicinity include a collapsed lava blister modified to form an enclosure F82, and another cave with heavy (+100 items) midden deposits F83 and F84, a lava blister with midden deposit F81, and a small L-shaped platform F80 at the Western edge of the complex.
Figure 5.9 Map of Complex 1 showing buildings (labelled) and their components. Note no pre-contact features were found at Complex 1; complex boundary (yellow-dash) was created in the GIS and not recorded in the field.
Figure 5.10 Map of Complex 2 showing buildings and features (labelled) and their components. Note complex boundary (yellow-dash) was created in the GIS and not recorded in the field.
Figure 5.11 Map of Complex 3 showing buildings and features (labelled) and their components. Note complex boundary (yellow-dash) was created in the GIS and not recorded in the field.
Figure 5.12 Map of Complex 4 showing buildings and features (labelled) and their components. Note complex boundary (yellow-dash) was created in the GIS and not recorded in the field.
Figure 5.13 Map of Complex 5 showing buildings and features (labelled) and their components. Note complex boundary (yellow-dash) was created in the GIS and not recorded in the field.
Figure 5.14 Map of Complex 6 showing buildings and features (labelled) and their components. Note complex boundary (yellow-dash) was created in the GIS and not recorded in the field.
5.1.4 POST-CONTACT ACTIVITY AND BURIALS

Historic buildings and features and a number of burials were also recorded during the survey of Manukā. Three historic period buildings and 21 historic period features were recorded. Historic buildings and features were usually accompanied by historic material culture such as bottle glass or metal objects. As pre-contact buildings and features are the target of this thesis, the post-contact remains will not be described here. However a complete list of historic buildings and features can be found in Appendix 4 along with figures and descriptions in Appendix 2.

Also recorded were 14 cairns, mounds and platforms, some associated with small coral offerings, which were interpreted as potential burials. Previous research (i.e., Soehren and Tuohy 1987 in Field et al. 2010:61) suggests these types of structure are likely to be burial features. These were found both within and between pre-contact complexes at Manukā. Due to the difficulties in dating burials through relative dating and their sensitive nature in Hawai‘i burial data is not included in this analysis.

5.1.5 COMPARISON TO PREVIOUSLY RECORDED ACTIVITY IN MANUKĀ

The level of detail recorded in the previous surveys of the Manukā area makes it difficult to positively match most of the buildings and features recorded by Manukā Archaeological Reconnaissance Survey in 2012 (MARS2012) to Bishop Museum or State Site records of archaeological sites. However overall there is a good correlation between the locations of archaeological evidence recorded in the MARS2012 survey and prior surveys in the Manukā Bay region (Allen & McAnany 1994; Emory 1970). In particular, the locations of sites recorded by Allen & McAnany (1994) in Kīpuka Malua (Figure 3.9) closely resemble with the buildings and features recorded in this survey.

However in contrast to prior surveys, MARS2012 recorded the archaeology in much greater detail—recording the outlines of individual components, buildings and features rather than points on the landscape. Further, this survey recorded previous unidentified archaeological remains at Manukā. With the exception of the large shrine F15 (BPBM site number: 50-Ha-B24-002), Complex 3 was unrecorded prior to the MARS2012 survey. Other archaeological sites that were previously noted in the Manukā Bay area were recorded and described in far greater detail – Complex 1 and Complex 2. Buildings and
features in Complex 4, Complex 5 and Complex 6 were previously recorded only as point locations in Allen (1994).

5.2 ANALYSIS OF RESIDENTIAL COMPLEXES

This section describes the results of the analysis of residential complexes that were identified from the data recorded in the Manukā Archaeological Reconnaissance Survey in 2012 (MARS2012). Five pre-contact residential complexes were identified, Complex 2, Complex 3, Complex 4, Complex 5 and Complex 6, described above. The aim of this analysis is to investigate the research question: is the practice of kapu in Hawaiian households associated with social rank? To address this, the residential complexes were first ranked into three status groups, higher, middle and lower, based on the relative investment in architecture within each complex. Next, three attributes were identified which would indicate the practice of kapu within the home. Lastly, another three measures provide a quantitative assessment of the overt materialisation of religion in the home. The results of these analyses are outlined below and discussed in the following chapter.

5.2.1 ANALYSIS OF SOCIAL STATUS

Allen and McAnany’s (1994:35) survey of Kīpuka Malua indicated that there was likely some degree of social ranking in pre-contact Manukā. Following Cordy (1981:87) this thesis quantitatively assesses social rank in Manukā through an investigation of the investment in domestic architecture. This investment was compared for each residential complex using three measures: average floor area of buildings, number of buildings and total elaboration, summarised in Table 5.3. Using these measures, the complexes were ranked relative to each other, i.e., a high ranking complex here may not be considered high ranking in other studies.
Table 5.3 Summary of the analysis of floor area, number of buildings and elaboration index of residential complexes. Note Complex 1 and B04 are not considered residential complexes and are included here for the reader’s interest only.

<table>
<thead>
<tr>
<th>Complex</th>
<th>ID</th>
<th>Classification</th>
<th>Floor area</th>
<th>Lanai</th>
<th>Internal walls</th>
<th>Cupboards</th>
<th>Platform</th>
<th>Other</th>
<th>Elaboration (of 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex 1</td>
<td>B01</td>
<td>Temple</td>
<td>145.9</td>
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</tr>
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<td>Complex 1</td>
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<td></td>
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<tr>
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<td>6.9</td>
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<td>N</td>
<td>N</td>
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<td>N</td>
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<td></td>
<td><strong>8.9</strong></td>
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<td><strong>1</strong></td>
<td><strong>2</strong></td>
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<td><strong>Total</strong></td>
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<td><strong>44.5</strong></td>
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Table 5.3 continued.

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<th>Cupboards</th>
<th>Platform</th>
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<th>Elaboration (of 5)</th>
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</thead>
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<td>N</td>
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<th>Internal walls</th>
<th>Cupboards</th>
<th>Platform</th>
<th>Other</th>
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</thead>
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<td>Generic house</td>
<td>27.9</td>
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<td>Y</td>
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<td>Y</td>
<td>4</td>
</tr>
<tr>
<td>Complex 5</td>
<td>B25</td>
<td>Men's house</td>
<td>20.2</td>
<td>Y</td>
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<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>4</td>
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<tr>
<td>Complex 5</td>
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<td>N</td>
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<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Complex 5</td>
<td>B27</td>
<td>Shed/shelter</td>
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<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>0</td>
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<td>15.4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
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<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>8</td>
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<table>
<thead>
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<th>ID</th>
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<th>Floor area</th>
<th>Lanai</th>
<th>Internal walls</th>
<th>Cupboards</th>
<th>Platform</th>
<th>Other</th>
<th>Elaboration (of 5)</th>
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</thead>
<tbody>
<tr>
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<td>Men's house</td>
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<td>N</td>
<td>N</td>
<td>Y</td>
<td>2</td>
</tr>
<tr>
<td>Complex 6</td>
<td>B29</td>
<td>Generic house</td>
<td>7.6</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Complex 6</td>
<td>B30</td>
<td>Cooking shelter</td>
<td>3.9</td>
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<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
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<td></td>
<td>25.9</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
5.2.1.2 Floor area

The size of buildings has long been an important measure for status in Hawai‘i (Clark 1986:210; Cordy 1981:86; Hommon 2013:42), as building size directly relates to the amount of labour and resources required to build them. Floor area is used here in place of the more conventional “area” calculated from length and width of exterior walls as it is considered to be a more accurate measure of building size (see discussion in Chapter 4 – Methods). The individual building floor areas are displayed in Table 5.3.

Residential complexes in Manukā were ranked by two measures of building size: total floor area of complex, and average floor area of complex. The total floor area is a sum of floor areas of the buildings in each complex and represents the overall investment in architecture based on size buildings (Figure 5.15). The average floor area of buildings within each complex represents a measure of the investment in architecture per building (Figure 5.16). Both measures show the same trend: Complex 4 has the highest overall investment in floor area (258 m²) and also the largest buildings on average (36.9 m²) followed by Complex 5 (total=61.5 m², average=15.4 m²), Complex 3 (total=44.5 m², average=8.9 m²), Complex 6 (total=25.9 m², average=8.6 m²) and lastly Complex 2 (total=24.1 m², average=6.0 m²).

5.2.1.3 Number of buildings

It is thought that only the wealthy could afford to build many houses in pre-contact Hawai‘i (Clark 1986:202; Cordy 1981:76; Hommon 2013:42; Kirch 1985:252; Weisler & Kirch 1985:148). Just as access to labour and resources could restrict the size of buildings being constructed, it could also restrict the number of buildings being constructed. Thus, if we hold number of people living in each household as roughly equivalent, the number of buildings can be used to rank the status of households relative to each other. The number of buildings recorded within each domestic complex is shown in Figure 5.17. Complex 4 has the most buildings (n=7), followed by Complex 3 (n=5), Complex 5 and Complex 2 (n=4) and Complex 6 (n=3).
Residential complexes were ranked based on the total floor area of each complex. Complexes with a greater total floor area are more likely represent higher status households than complexes with lower total floor areas.

Figure 5.15

Residential complexes were also ranked by average floor area and reveal the same trend as the total floor area shown above. Complexes with a greater average floor area are more likely represent higher status households than complexes with lower average floor areas.

Figure 5.16
Residential complexes were ranked by number of buildings. Complexes with a higher number of buildings are more likely represent higher status households than complexes with fewer buildings.

5.2.1.4 Elaboration

Elite residences are often described as being more architecturally complex than those of commoners (makaʻāinana) in Hawaiian archaeology (Allen & McAnany 1994:35; Weisler & Kirch 1985:148). Architectural complexity was measured based on an elaboration index which reflects the effort invested in the building above what is required for the basic structural integrity of the house, i.e., floor, side walls and roof. The index (min 0, max 5) was calculated for each building based on the presence of five components: of porch (lanai), internal walls, cupboards, platforms or terraces and other non-structural built element (Table 5.3). Figure 5.18 shows this index averaged across all buildings in each residential complex. Complex 5 has the most architecturally complex buildings with an average elaboration index of 2. This means that each building has on average two components which add to the building’s architectural complexity. Complex 3 is the second-most architecturally complex with an average of 1. The remaining complexes all have less than one component per building, on average, which contributes to the building’s architectural complexity: Complex 6 has an average index of 0.67, Complex 4 has an average index of 0.43 and Complex 2 has an average index of 0.25.
Residential complexes were ranked by the average architectural complexity of buildings in the complex. Architectural complexity was measured by an elaboration index, a measure which reflects the effort invested in building construction above what is required for the basic structural integrity of the building. Higher status households tend to be more architecturally complex than lower status households.

5.2.1.5 Summary of status

Overall, Complex 4 exhibits the greatest investment in architecture and is therefore the highest social status ranking in the analysis. When comparing the size of the buildings within each complex, it is clear that Complex 4 is much higher ranking than the other domestic complexes—its total floor area (258 m$^2$) is greater than the total floor area of Complex 2, Complex 3, Complex 5 and Complex 6 combined (156 m$^2$). Complex 4 also has the most buildings, supporting its position as the highest ranking complex recorded in the survey. Complex 4 had a low elaboration index indicating its buildings were less architecturally complex than all but one other domestic complex. The discrepancy between the buildings size and frequency, and the elaboration index for Complex 4 is a point I will return to in the next chapter.

Complex 5 and Complex 3 are middle ranking complexes as both represent less investment in architecture than Complex 4 but greater investment than Complex 2 and Complex 6. Both Complex 5 and Complex 3 have larger and more architecturally complex buildings than Complex 6 and Complex 2; Complex 3 also has the second highest number of buildings in the survey. Complex 2 and Complex 6 exhibit the least investment in architecture with only two exceptions. The buildings of Complex 6 are, on average, more architecturally complex than Complex 4, and Complex 2 has the same number of buildings as
Complex 5. However their consistent placement at the lower end of architectural investment across these three measures indicates they are lower ranking complexes.

5.2.2 ANALYSIS OF THE MATERIAL CORRELATES OF KAPU

The ethnohistoric descriptions of the traditional Hawaiian household (kauhale) suggest that the kapu system played a major role in the daily life of the ancient Hawaiians (Handy & Pukui 1958; Kamakau 1976; Malo 1951) yet there is debate as to what extent this shaped the lives of elite (ali‘i) and commoners (maka‘āinana) (c.f. Clark 1986; and Cordy 1981). In this section, I compare the domestic complexes recorded in the survey to the traditional description of the Hawaiian households (kauhale)—where multiple buildings separated distinct activity areas on the grounds of kapu, especially the eating kapu (‘ai kapu) and men ate in a separate house called the men’s house (mua) where domestic rituals were also performed (Handy & Pukui 1958:7-13; Kamakau 1976:96; Malo 1951:27-9, 122). The three attributes determined to represent the fundamental notions of kapu are displayed in Table 5.4.

Table 5.4 The practice of kapu within residential complexes was assessed based on the presence or absence of three attributes

<table>
<thead>
<tr>
<th>Adheres to traditional description of kauhale</th>
<th>Does not adhere to traditional description of kauhale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple buildings in the complex</td>
<td>Single building</td>
</tr>
<tr>
<td>Restriction of eating areas</td>
<td>No restriction of eating areas</td>
</tr>
<tr>
<td>Presence of men’s house (mua)</td>
<td>No men’s house (mua)</td>
</tr>
</tbody>
</table>

5.2.2.2 Evidence for multiple buildings

Ethnohistoric traditions suggest Hawaiian households had multiple buildings for separating activities according to kapu (Handy & Pukui 1958:7; Kamakau 1976:96; Malo 1951:122). Minimally under the kapu system, we would expect households to have at least three buildings to spatially separate the activities of sleeping from eating and food preparation and to segregate eating and food preparation by gender. All domestic complexes identified in this survey contained at least three buildings (Table 5.3) and therefore fit the ethnohistoric descriptions that traditional Hawaiian households (kauhale) had multiple buildings. Further, a breakdown of buildings by type suggests that they likely had different
uses within the complex and thus represent the separation of activity areas according to *kapu* (Table 5.5).

Table 5.5 The residential complexes at Manukā display a number of different building types indicating that buildings likely had different functions within the complex.

<table>
<thead>
<tr>
<th>□=1 building</th>
<th>Complex 2</th>
<th>Complex 3</th>
<th>Complex 4</th>
<th>Complex 5</th>
<th>Complex 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic house (<em>hale</em>)</td>
<td>□□</td>
<td>□□</td>
<td>□□□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Men's house (<em>mua</em>)</td>
<td>□□</td>
<td>□□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Shed/shelter</td>
<td>□□</td>
<td>□□</td>
<td>□□□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Canoe shed (<em>halau</em>)</td>
<td>□□□□□</td>
<td>□□□□□</td>
<td>□□□□□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

5.2.2.3 Evidence for regulation of eating areas

Valeri argues that the eating *kapu* (‘ai *kapu*) is the most basic foundation of the *kapu* system (Valeri 1985:126-7). Central to the eating *kapu* (‘ai *kapu*) is that special attention must be given to processing, consumption and disposal of food (Handy & Pukui 1958:9; Kamakau 1976:96; Malo 1951:27-29; Valeri 1985:126-7). More specifically, food should only be consumed within two buildings: the men’s and women’s eating houses (*mua* and *hale* ‘aina). In this analysis, midden scatters within buildings were used as a proxy for identifying areas where food was likely consumed. While this cannot tell us whether households segregated eating based on gender, it can indicate whether food consumption was kept separate from other activities such as sleeping. Midden scatters in more than two buildings indicates a disregard for the eating *kapu* (‘ai *kapu*) while midden scatters in two or less buildings indicates that consumption of midden was restricted to certain buildings and/or outside areas.

Light to heavy midden scatters, representing 10-100 items and 100+ items respectively, were identified in nine buildings (Table 5.6). In Complex 5, two buildings had heavy midden scatters. This represents the ideal expectation of a household which designated specific buildings for eating and also segregated eating based on gender. Complex 2 and Complex 3 both had one building each with light or heavy midden scatters suggesting that consumption was restricted to a specific building. Complex 6 had no buildings containing midden. It seems likely that in the case of Complex 6, and perhaps also in the cases of
Complex 2 and Complex 3 that food was consumed in outside areas. This is supported at Complex 6 by two large caves with substantial midden deposits, F83 and F93. Nevertheless, the evidence suggests that buildings were designated as either food or non-food areas at these three complexes as required by the *kapu* system. Complex 4 had five buildings with light or heavy midden scatters which suggest that food consumption may not have been restricted to specified eating areas. This may indicate that *kapu* was not practiced by this household in the manner described by the ethnohistoric traditions.

Table 5.6 Evidence for midden present in residential complexes. Light or heavy midden in two or fewer buildings indicates a separation of eating from other activities as required by the *kapu* system. Colour refers quantity of midden deposit: White = absent; Green = single or present, 1-10 items; Yellow = light, 10-100 items, Red = heavy, +100 items.

<table>
<thead>
<tr>
<th>□=1 building</th>
<th>Complex 2</th>
<th>Complex 3</th>
<th>Complex 4</th>
<th>Complex 5</th>
<th>Complex 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic house (<em>hale</em>)</td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Red" /></td>
<td><img src="image" alt="White" /></td>
</tr>
<tr>
<td>Men's house (<em>mua</em>)</td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Red" /></td>
<td><img src="image" alt="Green" /></td>
</tr>
<tr>
<td>Shed/shelter</td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Red" /></td>
<td><img src="image" alt="Green" /></td>
</tr>
<tr>
<td>Canoe shed (<em>halau</em>)</td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Green" /></td>
<td><img src="image" alt="Red" /></td>
<td><img src="image" alt="Green" /></td>
</tr>
</tbody>
</table>

5.2.2.4 Presence of men’s house (*mua*)

The men’s house (*mua*) was both the eating house and domestic temple of the male members of the household. Many have suggested that it is the most important building of the traditional Hawaiian household (*kahului*) (Kamakau 1976:133; Malo 1951:28; Valeri 1985:174). While we cannot infer whether *kapu* was enforced within this building, its presence indicates importance of the *kapu* system, and more generally religion, to the household as it is a building where the strict *kapu* applied and daily offerings were made to the gods (Handy & Pukui 1958:9,112; Malo 1951:28; Valeri 1985:114,73). In this survey, men’s houses (*mua*) were identified based on the presence of ritual components within a building. Four out of five residential complexes contained a men’s house – Complex 3, Complex 4, Complex 5 and Complex 6 (Figure 5.3 and Table 5.5) which are described in section 5.1.1 of this chapter. Overall, the presence of men’s houses (*mua*) support the notion that eating may have been separated by gender and that religion played an important role in the majority of these households.
5.2.2.5 Summary of material evidence for kapu

Overall, each of the five complexes adheres to the traditional descriptions of traditional Hawaiian household (kauhale) in at least two of the three indicators (Table 5.7). All of the complexes had more than three buildings indicating the separation of activity areas according to kapu. While only one complex, Complex 5 exhibited the ideal number of buildings associated with food consumption to indicate segregation by gender (two), only Complex 4 showed any evidence for a disregard for the eating regulations. Lastly, all complexes except Complex 2 had a men’s house (mua) indicating that kapu was an important part of domestic life in Manukā. These results show that kapu is adhered to along the coast of Manukā, yet indicate that there may be some variation as to how kapu is interpreted.

Table 5.7 Summary of complex attributes that indicate the practice of kapu. All residential complexes exhibit some evidence to suggest kapu was practiced in daily life.

<table>
<thead>
<tr>
<th>Complex</th>
<th>At least 3 buildings</th>
<th>Presence of mua</th>
<th>Midden at 2 or less buildings</th>
<th>Adheres to kapu?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex 2</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Mostly</td>
</tr>
<tr>
<td>Complex 3</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Yes</td>
</tr>
<tr>
<td>Complex 4</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Mostly</td>
</tr>
<tr>
<td>Complex 5</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Yes</td>
</tr>
<tr>
<td>Complex 6</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Yes</td>
</tr>
</tbody>
</table>

5.2.3 DOES INVESTMENT IN KAPU DIFFER ACROSS RANKS?

This section presents the analysis of the investment in religious architecture and features within the domestic sphere. As kapu was part of the wider Hawaiian religious system we can assume that the practice of kapu was associated with other religious practices within the home. By looking at the overt strategies by which each household materialised religion within the home we gain a better understanding of the role religion played in the daily life of pre-contact Hawai‘i. Three measures were used to quantify the investment in religious architecture, i.e., men’s house (mua), investment in ritual features, i.e., shrines and petroglyphs, and the extent of separation between buildings.

5.2.3.1 Architectural investment in men’s houses (mua)

The men’s house (mua) traditionally had a strong association with religious practice (Handy & Pukui 1958:9,112; Malo 1951:28; Valeri 1985:114,73) and investment in the size
and elaboration of the men’s house (mua) is one way a household could promote the religious beliefs of the inhabitants. For example, the greater the architectural investment in the men’s house (mua), the more religious the owners are portrayed—either to the gods or to other people. Architectural investment in the men’s house is measured here through building size (floor area) and architectural complexity (elaboration index).

The absolute floor areas of men’s houses (mua) are shown in Figure 5.19. This measure tells us which complex had the biggest men’s house (mua) in the survey area. The men’s house (mua) of Complex 4 has the largest floor area (90.7 m²), followed by Complex 5 (20.2 m²), Complex 6 (14.4 m²) and Complex 3 (12.8 m²). Based on absolute size, Complex 4 has clearly invested the most effort and resources in the construction of its men’s house (mua). However, this may be a reflection of higher access to wealth and resources associated with status rather than a metric of greater adherence. For example, it is entirely possible that a men’s house may be the largest in the survey area, yet smaller than other buildings within the household. This would lead to an entirely different interpretation about the importance of religion to the household. A more direct measure of religiosity is the relative size of the men’s house (mua) which measures how much effort was invested in the men’s house compared to the generic buildings (hale) in the complex (Figure 5.20). Again, Complex 4 has the largest men’s house (mua) at 2.3 times the average size of the generic houses (hale, n=3), in the complex. This is followed by Complex 6 with a men’s house (mua) 1.9 times the size of the generic house (hale, n=1), Complex 3 with a men’s house (mua) 1.1 times the average size of the generic houses (hale, n=2) and finally Complex 5 with a men’s house only 0.7 times the size of the generic house (hale, n=1).

While we can be confident that Complex 4 shows the greatest investment in both absolute and relative size of the men’s house, the overall trend is quite different. Where Complex 6 has a small investment in the men’s house in terms of absolute size, it has a high investment in relative size, nearly rivalling that of Complex 4. Conversely, while Complex 5 has the second largest men’s house (mua) in absolute size, it is smaller than the generic house (hale) in that complex, suggesting less significance was ascribed to the construction of Complex 5’s men house when compared to the men’s houses (mua) in other complexes.

A different trend is seen again in the architectural investment of men’s houses (mua) when comparing the architectural complexity (elaboration index). Three of the four men’s house had components in excess of what is required for the basic structural integrity of the
building (i.e., porch (lanai), internal walls, cupboards, platform/terrace and other built structure) (See Table 5.3). Figure 5.21 shows that the men’s house (mua) of Complex 5 had the most complex architecture (elaboration index=4), followed by Complex 4 and Complex 6 (elaboration index=2) and lastly Complex 3 (elaboration index=0). While Complex 5 saw little architectural investment in terms of size, there is a much greater investment in the architectural complexity of the buildings measured by the elaboration index.

Overall, Complex 4 and Complex 6 have the greatest investment in men’s houses (mua) in terms of size while Complex 5 has the greatest investment in terms of architectural complexity. Complex 2 was not mentioned here as it does not have a men’s house (mua) and thus it represents the least investment in religion for this measure.

![Absoulte size of men's house (mua)](image)

Figure 5.19 Absolute floor area was used to measure the architectural investment in men’s houses (mua). As men’s houses (mua) were focal points of ritual activity, larger buildings imply that the household placed a greater importance on religion than residential complexes with small, or no men’s houses (mua). Note however that this measure is biased towards households who could afford the timber resources to construct large buildings.
Relative size of men’s houses (mua) measures how large each men’s house (mua) was in comparison to the average size of generic buildings (hale) in each residential complex. Unlike absolute size, this measure is relative to each complex and provides an indication of how effort was invested in the construction in the men’s house (mua) over other buildings. Complexes where the men’s house is much larger than other buildings on average imply that the men’s house (mua) was an important building within the complex. At 1.0 (shown by blue line) the men’s house (mua) is the same as size as the average generic building (hale) in the complex.

Figure 5.21 The third measure of investment in the men’s house (mua) was the elaboration index (min. =0, max. = 5) which measured the construction of building components (i.e., porch (lanai), internal walls, cupboards, platform/terraces and other built structure) that were superfluous to the structural integrity of the building. Men’s houses (mua) that were more architecturally elaborate were likely to have been more ritually significant to the household than non-elaborate buildings.
5.2.3.2 Investment in ritual features

Four out of the five domestic complexes contained separate ritual features (i.e., not found as components within buildings). Complex 3 and Complex 5 both contain shrines—platforms of stacked ‘a‘ā boulders (F15 and F75). Complex 4 and Complex 6 both contain petroglyph fields pecked into the pahoehoe flows within the complex boundaries (F50 and F85). As these ritual features require only labour and resources easily derived from the immediate landscape, investment in the size of these structures is interpreted as representing investment in religion, rather than status. Two observations of the data are clear when we consider the size of these ritual features: Figure 5.22 shows that the shrine of Complex 3 (F15, area=49.29 m$^2$) is much larger than the shrine of Complex 5 (F75, area=8.11 m$^2$) and Figure 5.23 shows that the petroglyph field of Complex 4 (F50, petroglyphs n=37, area=485.3 m$^2$) is much larger than the field in Complex 6 (F85, petroglyphs n=6, area=17.93 m$^2$). It should be noted, however, that the petroglyphs within Complex 6 are also associated with a small stacked wall with two upright slabs and a terrace with a third upright slab which are indicative of a ritual function (Weisler & Kirch 1985:148). Overall, Complex 3 and Complex 4 show a greater investment in religion through ritual features than Complex 5 and Complex 6. Again, Complex 2 was not mentioned here as it does not have a ritual feature and thus it represents the least investment in religion for this measure.

5.2.3.3 Distance used to separate buildings.

The third measure of investment in religion is the distance between buildings within the complex. As kapu acts not only on buildings but also on the landscape (Fornander, 1880:59 in Malo 1951:56-7; Stokes 1991:22), a strict interpretation of kapu would imply that the further houses are from one another, the safer the inhabitants are from breaking kapu or being accused of such. Figure 5.24 shows the average distance between the buildings of each complex. Complex 4 has the greatest average distance between buildings (76.6 m) followed by Complex 6 (46.3 m), Complex 3 (34.4 m) Complex 5 (16.3m) and lastly Complex 2 (8.2m). This implies that Complex 4 was the most concerned with the spatial element of kapu and employed distance between buildings as a way of segregating activities that were kapu e.g., eating, from those which were noa (not sacred) e.g., sleeping.
Figure 5.22 Two shrines were associated with residential complexes. Complex 3’s shrine is substantially larger than the shrine of Complex 5 representing a greater investment in religion at Complex 3.

Figure 5.23 Number of components in two petroglyph fields that were associated with residential complexes. Complex 4’s field has many more petroglyphs than the field of Complex 5 representing a greater investment in religion at Complex 4.
The average distance between buildings within the residential complexes reflects the ritual separation of activity areas in the landscape. Complexes with a greater distance between them are assumed to be more religious than those with closer buildings.

5.2.3.4 **Summary of investment in religious orthodoxy**

Across all quantitative measures—investment in men’s house (*mua*), investment in ritual feature and distance between buildings, Complex 4 shows the greatest investment in religion. Similarly, Complex 2 shows the least investment in religion across these measures. Complex 5, Complex 3 and Complex 6 however are more variable. Complex 3 has a high investment in ritual features, yet little investment in the men’s house. Complex 5 has a relatively short distance between buildings and a small shrine yet a high investment in men’s house (*mua*) in terms of architectural complexity. Complex 6 has a high investment in the men’s house (*mua*) in terms of relative size and a relatively long distance between buildings, yet a small petroglyph field. These results indicate that the religious proscriptions of *kapu* were most clearly expressed in Complex 4 and least important to Complex 2. In between these two extremes (Complex 3, Complex 5 and Complex 6), it seems there is much variation in how ideology was materialised.

5.2.4 **SUMMARY**

This chapter first presented the results of the Manukā Archaeological Reconnaissance Survey 2012 (MARS2012). In total, 27 pre-contact buildings and 63 pre-contact features were recorded. The majority of these grouped into six complexes, five of which were interpreted as residential complexes. The residential complexes were further analysed to investigate the relationship of social status and *kapu* in the Hawaii.
The five residential complexes were first ranked into three status groups and then analysed for indicators that *kapu* was practiced within the home and the importance of religion through the investment in religious architecture and features (Table 5.8). Complex 4 was the highest ranking complex which met two of the three criteria for the practice of *kapu* within the home, and had the greatest investment in religion overall. Complex 3 and Complex 5 were middle ranking complexes. Both exhibited all three indicators of the practice of *kapu* and had mid-level investment in religion, albeit through different means. Complex 2 and Complex 6 were the lower ranking complexes. Complex 2 only met two of the three criteria for the practice of *kapu* and had no indication of investment in religion, while Complex 3 met all three criteria for *kapu*, and had a mid-level investment in religious architecture and features.

<table>
<thead>
<tr>
<th>Residential complex</th>
<th>Social rank</th>
<th>Practice of <em>kapu</em>?</th>
<th>Investment in architecture for religious practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex 2</td>
<td>Lower</td>
<td>Mostly</td>
<td>Low</td>
</tr>
<tr>
<td>Complex 3</td>
<td>Middle</td>
<td>Yes</td>
<td>Medium</td>
</tr>
<tr>
<td>Complex 4</td>
<td>Higher</td>
<td>Mostly</td>
<td>High</td>
</tr>
<tr>
<td>Complex 5</td>
<td>Middle</td>
<td>Yes</td>
<td>Medium</td>
</tr>
<tr>
<td>Complex 6</td>
<td>Lower</td>
<td>Yes</td>
<td>Medium</td>
</tr>
</tbody>
</table>
6.0 DISCUSSION

The ethnohistoric descriptions of the traditional Hawaiian household (*kauhale*) suggest that the *kapu* system played a major role in the daily life of the ancient Hawaiians. The *kapu* system, and in particular the eating (*'ai kapu*), required traditional Hawaiian households (*kauhale*) to have a number of buildings and features which were designated for a specific activities such as eating, sleeping, cooking and performing rituals (Handy & Pukui 1958:7-13; Kamakau 1976:96; Malo 1951:27-9, 122). Commonly noted are the men’s eating house and domestic temple (*mua*), the sleeping house (*hale noa*), the women’s eating house (*hale aina*), the women’s menstrual house (*hale pea*), the cooking structure (*hale kuhumu*) and earth oven (*imu*). These buildings reflect the religious restrictions on food consumption which must be kept separate from other activities such as sleeping, and separated based on gender. The *kapu* not only applied to the activities but to the buildings themselves. For example, it was *kapu* for member of the opposite gender to enter a men’s house (*mua*) or a women’s menstruation house (*hale pea*) - to do so would have been punishable by death (Handy & Pukui 1958:11,112; Malo 1951:29).

However there is conflicting evidence as to whether the majority of Hawaiian households adhered to this model of multiple buildings. Ethnohistoric evidence is inconclusive; Handy and Pukui (1958:7) and Kamakau (1976:96) suggest that elite (*ali‘i*) and commoner (*maka‘āinana*) alike had households consisting of multiple buildings, while Malo’s (1951:122) account suggests that some “people of no account” had only a single building where multiple activities were carried out. The historic evidence, as summarised by Cordy (1981:74) and Clark (1986:202) tend to suggest that commoners (*maka‘āinana*) had no more than one or two buildings, although they disagree on whether these buildings were used for multiple activities, or whether other activities were simply carried out outside. Lastly, the archaeological excavations provides tentative evidence to suggest that both elite (*ali‘i*) and commoner (*maka‘āinana*) households did in fact have multiple buildings (Loubser 2009; Van Gilder & Kirch 1997; Weisler & Kirch 1985) but also that there is local variation in the expression of households which may indicate a local variation in the interpretations of the *kapu* system (Kirch et al. 2010; O’Day 2001; Van Gilder & Kirch 1997).
6.1 DO WE SEE ADHERENCE TO KAPU ACROSS RANKS?

The principal aim of this thesis was to investigate whether kapu was reserved for elite houses, as would be expected if it conformed to the ‘high culture’ strategy for ideological control found in other early states (Baines & Yoffee 1998; Brumfiel 2000), or if religious orthodoxy guided the construction and use of elite (ali‘i) and commoners’ (maka‘āinana) households. To address this issue, a high detail GPS survey was conducted in Manukā Ahupua‘a and the results were interpreted within an ethnohistoric framework. The survey recorded a number of buildings and features within a 0.43 km² area along the coast, south of Manukā Bay which clusters into six complexes¹. The survey revealed one ritual complex—marked so because of an absence of features (i.e. non-buildings structures) and midden, and the monumental size of the buildings. A further five complexes were interpreted as residential complexes. All residential complexes contained a number of buildings and features with evidence for domestic activities in the form of architectural structures, food refuse, storage and in some cases cooking. These domestic complexes were first ranked relative one another, based on three measures of status: size of buildings, number of buildings and the architectural complexity of buildings. Then each complex was compared to three essential elements of the traditional Hawaiian household (kauhale) that reflect the practice of kapu: presence of multiple buildings, separation of activity areas and the presence of a men’s house (mua). Lastly, the investment in religious architecture and features within these complexes was assessed along three measures: size and architectural complexity of the men’s house (mua), size of religious feature and the extent of separation between buildings.

6.1.1 EXPRESSION OF KAPU IN THE HIGHEST RANKING HOUSEHOLD

Complex 4 was easily distinguished as the highest ranking complex in the Manukā survey region. Not only did Complex 4 have the most buildings of any residential complex in the survey, but the average building size of Complex 4 was more than twice that of the next largest average and the total investment in floor area was greater than the combined total area of the remaining four residential complexes. The Complex 4 household clearly had far greater access to wealth and resources, and wood in particular, than the other households in this area.

Furthermore, while the low elaboration index of the buildings in Complex 4 indicates they were not terribly architecturally complex, there are a number of other indicators that

¹ The terms components, buildings, features and complexes that are used here refer to specific definitions of archaeological remains outlined in section 4.1.2 of Chapter 4.
support the interpretation of Complex 4 as the highest status household. Firstly, Complex 4 is located in a position which infers control over coastal resources; with the exception of the ritual complex (Complex 1), Complex 4 was the only complex where direct access to the shore was observed during the survey (Figure 6.2). As coastal resources were likely the primary source of subsistence in Manukā (Handy & Handy 1972:547), it stands to reason that the prominent location of Complex 4 reflects a position of social and economic power. Secondly, there is evidence that the residence of Complex 4 possessed a number of valuable items. Complex 4 is the only complex to possess canoe sheds (halau), where canoes and other valuable fishing equipment were stored (Handy & Pukui 1958:11). Also, the men’s house (mua, B22) contained a number of the large cowrie shells—valuable for the construction of octopus lures (Malo 1951:77-9). Lastly, the size of the two largest buildings of Complex 4 (B22, floor area = 90.7 m$^2$ and B19, floor area = 58.4 m$^2$) are comparable in size to two buildings from low ranking elite residences in Kawela, Moloka‘i (51.0 m$^2$ and 77.5 m$^2$). As Weisler and Kirch (1985:142,148) interpret these buildings as belonging to the households of lesser chiefs (ali‘i) or land managers (konohiki), the household of Complex 4 may have held similar status positions.

Complex 4 generally fits the ethnohistoric descriptions of the traditional Hawaiian household (kauhale) with multiple buildings to separate activity areas and a men’s house. Its seven buildings include three generic houses (hale), one men’s house (mua) and three canoe sheds (halau) suggest that multiple buildings were used to separate activity areas. The separation of activity areas however is not supported by the distribution of midden. Light (10-100 items) and heavy (+100 items) midden are found within a generic house (hale), the men’s house (mua) and all three canoe sheds (halau) of Complex 4. However, while this may suggest that Complex 4 did not observe the ritualised consumption of food through the distinction of dedicated eating areas there are two other explanations which are just as likely. The first is that the midden within the three canoe sheds (halau) may derive from the historic or modern fishing activities identified nearby (see Appendix 2). The second is that canoe sheds (halau) may have been exempt from the rules surrounding the separation of food areas. Canoe sheds (halau) were used for storing fishing and related food gathering equipment thus may not have had the same severe restrictions regarding food consumption. This last explanation can certainly be tested in future archaeological research.
6.1.2 **EXPRESSION OF KAPU IN THE MIDDLE RANKING HOUSEHOLDS**

Complex 3 and Complex 5 are interpreted as middle ranking complexes in this survey. Their building sizes are far smaller than those of Complex 4, yet they are slightly but consistently larger, more numerous and more architecturally complex than Complex 2 and Complex 6. This indicates that while the households of Complex 3 and Complex 5 did not have the access to resources we might expect of an elite ranking household (i.e., *ali‘i* or land manager *konohiki*) such as Complex 4, they did have greater access to wealth than Complex 2 or Complex 6.

The interpretation that Complex 3 and Complex 5 were adequately provisioned commoner (*makaʻāinana*) class households is also supported by observations from the survey. Both complexes are located in prominent positions which are often considered an indicator of status (Fornander 1919:60; Van Gilder & Kirch 1997:54; Weisler & Kirch 1985:148). The shrine of Complex 3, F15, is visible from a considerable distance inland of the coast (Figure 6.1) while Complex 5 is on a high ridge of an ‘a‘ā flow overlooking Kīpuka Malua (Figure 6.2). In the case of Manukā, these prominent and visible positions appear to be second in preferences to locations with coastal access. Further, B24, a generic house (*hale*) in Complex 5, contained a number of cowrie shells which were considered to be valuable in pre-contact times (Malo 1951:79). The largest buildings within these complexes (B10, floor area = 15.1 m$^2$ and B24, floor area = 27.9 m$^2$) are also within the size range of the commoner (*makaʻāinana*) households (9.8 m$^2$ to 60.5 m$^2$) described by Weisler and Kirch (1985:142).

Complex 3 and Complex 5 best fit the ethnohistoric descriptions of Hawaiian households (*kauhale*). Complex 3 has five buildings altogether: two generic houses (*hale*), one men’s house (*mua*), a two shed/shelters. The range of buildings suggests they were used for different activities. This is supported by the restriction of food remains to only one building, a generic house (*hale*). As no midden was found within the men’s house (*mua*), it is possible that food remains were disposed of nearby, in one of the plethora of crevices typical of ‘a‘ā lava flow landscapes. Complex 5 has four buildings: one generic house (*hale*), one men’s house (*mua*), and two shed/shelters. Again the range of buildings suggests they were used for different activities. Light-heavy midden scatters (10-100 items to +100 items) were found within the generic house (*hale*) and men’s house (*mua*)—reflecting the pattern we would ideally expect if eating areas were separated by gender.
Figure 6.1 Location of Complex 1, Complex 2 and Complex 3 in the landscape

Figure 6.2 Location of Complex 4, Complex 5 and Complex 6 in the landscape
6.1.3 **EXPRESSION OF KAPU IN THE LOWER RANKING HOUSEHOLDS**

Both Complex 2 and Complex 6 are the lowest ranking complexes in the survey. They have smaller and fewer buildings than the other complexes and are generally less architecturally complex suggesting that these complexes had the most restricted access to house building materials. These households may have had to acquire permission from the local land managers (*konohiki*) or elite (*aliʻi*) to gather such resources, or travel further inland or along the coast to source materials.

The low rank of Complex 6 is supported by other evidence. Firstly, it is the furthest from the coast of all the complexes (Figure 6.2). While this is a short walk in linear distance (approx. 300 m), the residents of this household may have had to rely on the household at Complex 4 for access to the shore, or travel a further distance for uninhibited access. Secondly, there are three cave features recorded within the complex. While all appear to have been used in the past based on the presence of shell and bone midden, coral and other ecofacts, the largest cave (F93) was used as a house. This cave is modified by two large platforms either side of the entrance and the heavy (+100 items) midden scatter inside indicates domestic activities. The use of caves as homes is noted as an indication of low status (Clerke in Beaglehole 1967:592; Malo 1951:118)

For Complex 2, the alternative evidence for status is less clear. On the one hand, the buildings generally lack the formal architectural structures found in other complexes (e.g., C-shape or L-shaped core-filled walls) which could support the interpretation that Complex 2 was ranked lower than the other complexes in the survey. However this complex is not only situated in a prominent on a ridge above Manukā Bay, but it is also overlooking the temple (*heiau*) complex on the beach below (Figure 6.1). Higher vertical positions in the landscape are usually reserved for temples (*heiau*) and elite (*aliʻi*) (Fornander 1919:60; Van Gilder & Kirch 1997:54) so its placement in a position vertically superior to the temple (*heiau*) complex is unusual. Further research may indicate the two complexes are not contemporary. The largest buildings of Complex 2 and Complex 6 (B07, floor area = 10.8 m² and B28, floor area = 14.4 m²) however fall within the lower size-range of residences interpreted as commoner (*makaʻāinana*) households (9.8 m² to 60.5 m²) in Kawela (Weisler & Kirch 1985:142) supporting the interpretation of the complexes as lower status than the complexes at Manukā.
Despite their lower ranking, both Complex 2 and Complex 6 adhere to the general description of *kauhale*. Complex 2 has four buildings: two generic houses (*hale*) and two shed/shelters, and only a single building contained midden remains—evidence of the separation of activity areas and regulation of food consumption that we expect from a household structured by the *kapu* system. This interpretation is tentative however as no men’s house (*hua*) was identified at Complex 2. While it may imply that necessary daily rituals were not carried out at this location, it does not rule out the possibility that the men’s house (*hua*) of Complex 2 was not identifiable from the archaeological remains, nor the possibility that the household at Complex 2 adhered to the *kapu* system by utilising a neighbouring men’s house (*hua*) for men’s daily rituals and food consumption, as was recorded historically (Campbell 1817:131).

Complex 6 fares well across all three indicators of adherence to the *kapu* system. This complex had only three buildings: one generic house (*hale*), one men’s house (*hua*) and a shed/shelter. This evidence for distinct activity areas is further supported by the presence of a modified cave (F93) that was likely used as a building. A similar use of caves was identified by O’Day at Kahikinui, where excavations of a rock shelter revealed evidence for repeated cooking events and an abundance of shells and bone and associated artefact fragments (e.g., volcanic glass) consistent with an interpretation of a cooking shelter (*hale kuhumu*). Bone and shell midden was abundant in F93 and future excavations would likely be fruitful for determining the function of this shelter. While no midden was found within the buildings in Complex 6, there is midden within the two largest caves indicating that the household regulated where food was consumed and deposited. Additionally deposits of midden were identified in a few of the many lava tubes and crevices in this landscape.

6.1.4 KAPU WAS PERVASIVE IN PRE-CONTACT HAWAII

The results of this thesis imply that in Manukā, the *kapu* system was an important factor in daily life regardless of the social rank of the household. While evidence from Complex 2 and Complex 4 suggests that there was variation in the practice of *kapu* within households, the majority of the households adhered to the fundamental segregation of eating and sleeping from other activities through the construction of multiple buildings, designation of specific areas for food consumption and the construction of a men’s house (*hua*) to create a space where men could perform daily rituals and consume their food with the family’s
gods. In this section I describe how this fits in with our expectations based on previous ethnohistoric, historic and archaeological accounts of Hawaiian households (kauhale).

6.1.4.1 Kapu reflected in the construction of multiple buildings

Each household in Manukā consisted of a number of buildings and all commoner households (middle and lower ranks) showed regulation of food consumption areas. This suggests that kapu was pervasive among the commoner class, and fits the expectations that Hawaiian households would have multiple buildings based on the ethnographic accounts of Handy and Pukui (1958:7) Kamakau (1976:96) and Malo (1951:122). It also fits the archaeological evidence from Kahikinui, Maui where Van Gilder and Kirch (1997) excavated three commoner (makaʻāinana) residential complexes with multiple buildings in each. In North Kohala, Hawaiʻi Island, commoner (makaʻāinana) residential complexes were interpreted to have multiple buildings fitting the descriptions of sleeping houses (hale noa), men’s houses (mua), canoe sheds (halau) and temples (heiau) (Loubser 2009).

However others have indicated that the kapu system was not as significant in ordering the daily life of commoners (makaʻāinana) as it was for the elite (aliʻi). Based on historical accounts from early European explorers, Cordy (1981:74) and Clark (1986:202) argued that commoners (makaʻāinana) generally had single building households. Similarly, Malo suggests that low ranking households had only one small house where multiple activities took place within the one building (Malo 1951:122).

Ladefoged (1991) argued that single building households became more common after the abolishment of kapu in 1819. While there is no reason to doubt the conclusions of Ladefoged’s (1991) study, the fact that single building households were reported during Hawaiʻi’s earliest contact with Europeans in 1778 (Cook 1967:283; Samwell 1967:1176) gives reason to suggest that this expression of households was present at European contact. A likely explanation, and one that has been repeated by archaeologists for decades (Kirch 1985:273,283; Tuggle 2010:159-60; Van Gilder & Kirch 1997; Weisler & Kirch 1985:130), is that there is a lot of variation in how households were constructed in Hawaiian prehistory. There is some evidence to suggest that Kaʻū district is one of the likely places we should expect to see adherence to the traditional descriptions of Hawaiian households (kauhale). Handy and Pukui’s (1958) description of the Polynesian family system is one of most well-known texts describing Hawaiian households and family life. These descriptions were derived from Pukui’s experience growing up in Kaʻū and from interviews.
with older relatives in Kaʻū and neighbouring districts on Hawaiʻi Island in 1935 (Handy & Pukui 1958:ix). Further, the people of Kaʻū were regarded as fiercely independent (Handy & Pukui 1958:viii) and religious – being one of the last places to abandon the kapu system (Stokes 1991:11-2). It is possible then, that in other districts and other islands commoners (makaʻāinana) had less regard for the kapu system and consequently the construction of multiple buildings in such places was restricted to the higher ranking households.

Another likely explanation, put forward by Hommon (2013:42), is that smaller structures such as shelters or sheds may not have been included in the early European house counts. For example, if sheds and shelters had not been considered buildings by this survey, only the highest ranking household would appear to have had multiple buildings. This highlights an issue raised by Tuggle (2010) who argues that archaeologists need to employ more rigorous methodologies in Hawaiian archaeology to bridge the inferences of archaeological data from ethnohistoric and historic descriptions of life in Hawaiʻi. This is something this thesis has attempted to address by describing an explicit survey methodology and testing the archaeological assumptions about households in the past which are, for the most part, based on historic and ethnohistoric research as opposed to archaeological data.

6.1.4.2 Kapu reflected in the presence of men’s houses (mua)

With the exception of Complex 2, each household in the survey area had evidence for a men’s house (mua). This corroborates archaeological investigations from Kahikinui where men’s houses (mua) were identified in two out of three commoner households excavated by Van Gilder and Kirch (1997). Again while this fits our expectations based on the ethnographic accounts of Handy and Pukui (1958:7) Kamakau (1976:96) and Malo (1951:122), it also contradicts historical observations and archaeological data. Campbell observed that “the lower ranks have one [men’s house (mua)] to every six or seven families” (Campbell 1817:131) while there are many more records describing that elite households always contained a men’s house (mua) (see Cordy 1981:74). In Lualualei, Oahu, Dixon et al. (2008) similarly reported several men’s houses (mua) that were only identified within elite households. Dixon et al. (2008:282) suggest that the men’s houses (mua) belonged to the families of local land managers (konohiki) which met the ritual and economic needs of the community.
Again, this confusion as to whether commoner households had men’s houses (mua) could be due to a variation in how kapu was practiced throughout the Hawaiian archipelago. However, there is no reason why both patterns could not have been practiced within the same community. Not only was the men’s house a focal point for ritual activities, it was a focal point for social engagements. The men’s house (mua) was the “front” of the building, where guests were received (Handy & Pukui 1958:165; Judd 1975:21, 24 and Kamakau 1961:212 in Valeri 1985:174). Malo notes that fishing parties would gather to sleep within the men’s house (mua) before commencing a fishing trip (Malo 1951:210). They were also used by men in times of war, canoe building (Handy & Pukui 1958:112) or other important occasions requiring discussion (Kamakau 1961:102). Thus it is not impossible that while many commoner households had their own men’s house (mua) for every day purposes, the inhabitants were often visiting neighbouring men’s houses (mua) to share meals or activities with others in the community.

6.1.4.3 Variation in the practice of kapu

There is also tentative evidence for a local variation in the practice of kapu at Manukā. Complex 3 and Complex 5 both have domestic buildings with multiple rooms (B10 and B24, Figure 6.3). This deviates from the historic descriptions that buildings should consist of a single room that is used for a single purpose (Campbell 1817:130; Ellis 1917:225; Ledyard 1963:128). One interpretation is that multi-room buildings are a local interpretation of kapu. Van Gilder and Kirch (1997:53) noted a possible variation in the practice of kapu in Kahikinui, Maui, where two houses exhibited dual hearths possibly indicating separate cooking areas for men and women within the same building. These multi-room buildings may represent a similar variation where internal walls were used to physically separate activity areas without the construction of separate buildings. For example, B24 is a building with two rooms where a hearth was found in one room and both rooms have heavy midden (+100 items) which could indicate a combined cooking and eating house separated by internal walls. The three rooms of B10 however are devoid of any material remains aside from two water worn cobbles providing no indication of possible functions.

An alternative interpretation is that these buildings were modified in the historical period. Archaeological studies support the idea that pre-contact buildings were more likely to have a single room while after the abolishment of kapu in 1819, houses with multiple rooms became more common (Ladefoged 1991; Sweeney 1992). Sweeney (1992:51) argues that
during this transition, existing households may have been modified with the addition of extra walls and rooms to the larger residential structures. This may be a viable explanation for B24, where evidence for agricultural activities were found in the vicinity of B24 (wire fence and stacked animal pen) may have been historic in origin. Again however, B10 shows no evidence of historic activity and the internal walls of both buildings did not stand out as later additions.

Figure 6.3 Building B10 (a) and B24 (b) both have multiple rooms which may indicate a local variation of kapu. Historical accounts suggest that traditional Hawaiian households should have only one room dedicated to a single activity.
6.2 RELIGIOUS ARCHITECTURE AND FEATURES WITHIN HOUSEHOLDS

It is well known that the elite materialise ideological structures through public displays and that these can take many forms e.g., monumental architecture (DeMarrais et al. 1996; Moore 1996), high culture (Baines & Yoffee 1998) and sumptuary laws (Buylaert et al. 2011; Hooper 1915). DeMarrais et al. (1996:17) argue that those with greatest access to wealth and resources are able to invest in the biggest and most elaborate displays. In Hawai’i we see ideological structures materialised in religious architecture, particularly through the construction of numerous temples (heiau) which legitimise the Hawaiian social order and elite control over the economy (Earle 1997:175-177; Kirch 1990; Kolb 1994a; Kolb 1994b; McCoy et al. 2011). For example, the authority to construct certain temple (heiau) types was restricted based on rank; only the highest ranking elite (ali‘i nui) may order the construction of a luakini heiau (Malo 1951:160). Temples (heiau) were often also incorporated into the households of the elite as personal temples (heiau) (Brigham 1908:118; Kolb & Radewagen 1997; Emerson in Malo 1951:126; Weisler & Kirch 1985:148).

While it may be difficult to quantify the extent elite and commoners adhered to the kapu system, we can look for ways they expressed religious values through the investment in religious architecture within the households of commoners (maka‘āinana) and elite (ali‘i). Since expressions of religious orthodox belief have not been systematically investigated within commoner (maka‘āinana) households, this research aims to look for initial trends that can be elaborated in future research. This was addresses by comparing the investment in three ways we might expect religious orthodoxy to be displayed: investment in the men’s house (mua), investment in ritual features and the spatial separation of buildings within the household.

6.2.1 INVESTMENT IN ARCHITECTURE AND FEATURES FOR RELIGIOUS PRACTICE

Overall, investment in religious displays was more obvious in the highest ranking household (Complex 4). Not only did Complex 4 have the largest men’s house (mua) in the survey area, but it also invested the most effort in making the men’s house the biggest building in the complex. This suggests that not only did Complex 4 have more resources available to invest in this domestic temple, but it devoted more resources to its construction than other buildings in Complex 4 – making it clear to any observer that the men’s house was
important to the inhabitants of this household. Complex 4 also had the largest ritual feature—a large petroglyph field with 37 petroglyphs. Petroglyphs have the potential to embody considerable mana (Lee & Stasack 1999:9) and whether created over a short period of time, or over generations the petroglyph field represents a considerable investment within a single location. Lastly, the buildings of Complex 4 had the greatest distance between them supporting the idea that buildings were ritually dispersed to avoid the mixing of people, objects, places or activities which may be kapu or noa (non-sacred).

Similarly, the least investment in religious displays is seen within a lower ranking household (Complex 2). Complex 2 had no evidence for a men’s house (mua), or a ritual feature suggesting that if rituals were carried out here, they were not materialised in an architecturally obvious way. Additionally, the buildings of Complex 2 were tightly clustered compared to the other household suggesting that the distance between buildings was not employed as a way of increasing the separation of activities. As Complex 2 was lower ranking and had the least investment in religious displays across all measures and Complex 4 was the highest ranking and had the greatest investment in religious display across all measures (except the elaboration index of men’s house) we can make the general conclusion that, at Manukā, status was positively correlated with the materialisation of religion.

Beyond these two extremes—Complex 2 and Complex 4—the correlation between investment in religious orthodoxy and status is less evident. Middle ranking households (Complex 3 and Complex 5) as well as a lower ranking household (Complex 6) all appear to invest similar amounts of effort in architecture and features for religious practice, albeit through different means. Complex 3, for example, had the largest shrine feature, yet the men’s house (mua) was simply constructed and the buildings were only somewhat dispersed. In contrast, Complex 5 had the most architecturally complex men’s house (mua) which is also the second largest men’s house in the survey area, yet it was not the largest building within Complex 5. Lastly, Complex 6 had moderate to high investment across all measures—second largest men’s house based on relative size, second-most dispersed pattern of buildings, and a small petroglyph field with additional upright ritual features. These middle and lower ranking complexes each displayed their religious values in unique ways suggesting considerable variety in how religions may be materialised.
6.2.1.1 “Pele” buildings

Evidence of the past plays an important role in Hawaiian identity today (Cachola-Abad 2013; Mills & Kawelu 2013). The archaeological remains discussed in this thesis are more than “archaeological sites”; they are “cultural sites” and the interpretations that are made can have an important significance to modern populations living in Hawai‘i. Thus, when the opportunity arises, archaeologists are obliged to make assessments of the cultural significance of archaeological sites in ways which resonate with Native Hawaiians or other members of the public (Cachola-Abad 2013:34). While archaeologists have tended to avoid speculation in favour of archaeological assessments, there is value in interpreting archaeological patterns within cultural frameworks that are relevant not only to archaeologists but to the wider public as well.

There is a unique style of building construction seen in Complex 4 which may hold cultural significance to the people of Hawai‘i. Two buildings, B19 (generic house, *hale*) and B22 (men’s house, *mua*) were constructed of core-filled wall enclosures around a collapsed lava tube (Figure 6.4). While other buildings in the survey incorporated outcrops of rock from the landscape, these are the only two buildings to fully enclose lava tubes. This may have had a religious association. The ritual feature of the men’s house (B22) was located within this depression; the tube within the generic house (B19) was filled in with rubble, possibly reflecting a ritual closure of the opening. A similar building was identified by Van Gilder and Kirch (1997:56), where a deliberate opening was made in a lava tube and then was incorporated within the north-east corner of the house, a direction that seems to be associated with ritual in Kahikinui (Kirch 2004:106; Van Gilder & Kirch 1997:52). While no such trend is found here—ritual components are found in central, southern and eastern parts of men’s houses—the walls of these buildings are curiously aligned with the temple (*heiau*) enclosures at Manukā Bay, all of which fall on a northwest-southeast axis (Table 6.1). Only one other building is oriented within this range (B24, generic house, *hale*).
The orientation of these buildings towards the northwest and their incorporation of lava tubes may be related to the worship of Pele, the volcano goddess and an important deity to the people of Kaʻū (Handy & Pukui 1958:22; Lebo et al. 2011:8). Beckwith writes:

“The [Pele] myth narrates the migration or expulsion of Pele from her distant homeland and her effort to dig herself a pit deep enough to house her whole family in cool comfort or exhibit them in their spirit forms of flame and cloud and other volcanic phenomena. She approached the group [Hawaiian Islands] from the northwest, tries island after island without success, and finally settles on Hawaiʻi…” Beckwith (1970:168-9).

This oral tradition clearly associates Pele with the volcanic landscape, subterranean housing and the northwest-southeast axis, all of which are seen in B19 and B22 of Complex 4. Whether or not these attributes are seen in prehistoric buildings elsewhere in Kaʻū would be an interesting line for future research.

Figure 6.4 Two buildings, B19 (a) and B22 (b) were found in Complex 4 which may be related to the worship of the volcano goddess Pele. Enclosures were built around lava tube openings and along a northwest to southeast axis which are themes identified in the Pele origin myth.
Table 6.1 The two temples (heiau) at Manukā Bay and two building with enclosures built around lava tubes are closely oriented along a southwest-northeast axis supporting a ritual interpretation of the buildings.

<table>
<thead>
<tr>
<th>ID</th>
<th>Type</th>
<th>Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01</td>
<td>Temple</td>
<td>321</td>
</tr>
<tr>
<td>B02</td>
<td>Temple</td>
<td>322.8</td>
</tr>
<tr>
<td>B19</td>
<td>Generic house</td>
<td>329.4</td>
</tr>
<tr>
<td>B22</td>
<td>Men's house</td>
<td>322.9</td>
</tr>
</tbody>
</table>

6.2.2 RELIGIOUS ORTHODOXY AND THE ROLE OF THE ELITE

Given that the investment in public religious displays is correlated with status (DeMarrais et al. 1996; Kirch 1990; Malo 1951:160) it is not unsurprising that we also see this association with more private displays of religion. The higher status of Complex 4 suggests a greater access to wealth and labour for the construction of greater displays of religiosity. The men’s house (B22) in particular would have been a considerable undertaking as it is over four times the size of the next largest men’s house (mua) (B25). However, while access to wealth and resources (wood and labour in particular) is likely to play a role in this, it does not fully explain why the men’s house of Complex 4 is by far the largest building in the complex, nor why its buildings are the most dispersed.

This may be explained, in part, by the role of elite households in the Hawaiian community. Hospitality was an important part of Hawaiian society (Handy & Pukui 1958:185; Emerson’s notes in Malo 1951:76) and the elite were likely expected to entertain important guests and strangers, as well as others in the community. Handy and Pukui (1958:6-7) describe the term haku as a name given to the head of a family who was in charge of entertaining visitors to the community, organising communal activities and rituals. While they state that haku did not imply a ranked position, elite (ali‘i) households, in many cases, would certainly have filled this role in society. During the contact period, for example, many of the foreign visitors were accommodated within the elite households (Campbell 1817:90; Ellis 1917:49; Golovnin 1979:178, 182-3; Handy & Pukui 1958:230; Menzies 1920:178). Further certain passages from Malo suggest that commoners (maka‘āinana) would visit elite households (Malo 1951:56,71). As discussed in the previous section, men’s houses (mua) likely played an important role in these social engagements. Thus the larger size of the men’s
house (\textit{mua}) of Complex 4 may reflect its role as a space for community gatherings and entertaining visitors.

This scenario would imply that the household of the elite would be in a liminal state between the public and private spheres and as such, it would be all the more important to materialise religious observance in an obvious way. The religious authority of the elite (\textit{ali`i}) rested on their adherence to the \textit{kapu} system (Valeri 1985:92) and their outward appearance as religious (Malo 1951:75,90). Not only were elite (\textit{ali`i}) subject to \textit{kapu}, but failure to observe \textit{kapu} could diminish their \textit{mana} (Valeri 1985:92) and thus their status (Beckwith 1970:376). Their spiritual power or connection to the gods was thought to be essential to the productive qualities of the land (Kirch 2010:38), thus the commoners (\textit{maka`ainana}) desired their chiefs to be religious (Malo 1951:75, 190)—those who were not were often disposed in favour of others (Malo 1951:56). Thus, as locations for community engagement, it would have been important for elite to publicly display their orthodox religious values within the home to legitimise their position as political and moral leaders of the community.

\textbf{6.2.3 PRACTICE OF ORTHODOX RELIGION AMONG THE COMMONER CLASS}

Access to wealth and resources also does not explain the stark difference in religious displays between the two lowest ranking complexes, Complex 6 and Complex 2. While they have many similarities which suggest low status—few, small buildings with simple architecture, Complex 6 displays a much greater investment in religion than Complex 2. Complex 2 had no evidence for ritual within the complex and the buildings were tightly clustered suggesting the ritual separation of activity areas was minimal. In contrast, the ritual features of Complex 6 include six petroglyphs, a low wall and a small terrace associated with three upright slabs—all simple structures made of resources from the immediate environment. Further, Complex 6 used the natural landscape to separate the ritual areas of the household, including the simple men’s house (\textit{mua}), from the domestic areas. This evidence from Complex 6 clearly indicates that access to resources was not necessarily a barrier to architecturally obvious materialisation of religion.

One could endlessly speculate on the many possible explanations for why Complex 2 lacked more evidence for religious architecture or features. Perhaps Complex 2 was used on a temporary or periodic basis by visitors to the Manukā coast. The smaller size of buildings would mean that shelters could be constructed faster and with fewer resources when the inhabitants arrived. If Complex 2 did indeed represent a temporary residence, we might
expect that religion practiced at Complex 2 was practiced in less materially obvious ways, or that the inhabitants visited neighbouring households or temple (heiau) for the daily rituals.

At Manukā it was not only the elite (ali‘i) who invested in religious displays within the home, but also the commoners (maka‘āinana) as the evidence from Complex 3, Complex 5 and Complex 6 clearly shows the material investment in religious architecture and features religion within the home. The implication of this finding is twofold. Firstly, that commoners (maka‘āinana) incorporated religion at the household level attests to its importance in Hawaiian society. The strength of the ideological system lay not only in the severe punishments for breaking kapu but also in the deep-rooted belief in the entire religious system. Secondly, it implies that the commoners were active participants in the Hawaiian religious system. They were not simply mystified or impression by the public displays by the elite (ali‘i), but practiced, and therefore were agents of the belief system in some of the same ways as the elite (ali‘i) were.

6.3 LIMITATIONS AND CONSIDERATIONS FOR FUTURE RESEARCH

6.3.1 METHODOLOGICAL IMPLICATIONS AND LIMITATIONS

6.3.1.1 Consideration of survey methods

The GPS recording method outlined in this thesis was an ideal way to rapidly record individual components, buildings and features. While entering detailed information about the archaeological remains is tedious using the GPS unit, using GPS in conjunction with written “buildings forms” to sketch, record and describe buildings and building components allowed for a detailed reconstruction of the survey area. Building forms were particularly useful in the post-processing of the GPS data for correcting minor locational details in the GPS database (e.g., the alignment of abutting walls or platforms). This post-processing and editing of the initial GPS data meant the data could be used to create useful and intelligible maps of the archaeological remains which can be readily published.

The detailed photo recording of buildings was less successful. Multiple photos of each building were taken in plan-view at 1 m intervals. Attempts were made to stitch photos together using Microsoft Image Composite Editor (ICE). However, there were not enough unique details in each photo to accurately stitch multiple photos over the entire building area. The best reconstructions only captured the general shape of the buildings; many components
and architectural features were misplaced or missing entirely (Figure 6.5 and Figure 6.6). As such, these images were not useful for accurately recording or describing the buildings in the survey and thus did not contribute to the analysis.

Figure 6.5 Example of best quality image created by stitching multiple high-detail photos together from B10. Note location of missing cupboard and boulder visible in Figure 6.6 (circled in red).
Another, partial stitched image of B10, showing the top half of Figure 6.5. Note the cupboard and boulder present in this image, which are missing in the previous figure.

6.3.1.2 Consideration of interpretations

Another issue encountered during this survey is the noticeable lack of obvious cooking features. Since the typical Hawaiian underground cooking ovens (imu) were not suitable for Manukā due to poor soil development, cooking was most likely carried out over a fire (Handy & Pukui 1958:13). Typical characteristics of such fire-features are stone-lined pits or hearths with charcoal, volcanic glass and midden (Kirch 1985:249-50; O'Day 2001:301). Only one feature (F10) was confidently identified as a stone-lined hearth belonging to the pre-contact period. A second pre-contact building component, a rectangular shaped depression within an outcrop was interpreted as a “possible hearth” (B24-F). That neither of these were associated with charcoal or artefacts suggests that such evidence is unlikely to survive into the archaeological record at Manukā. Further, F10 was not associated with any substantial midden (recorded as present: 1-10 pieces) which indicates any non-stone-lined fire feature incredibly difficult to identify.

With these difficulties in mind, there is one noticeable building type which may be associated with cooking shelters (hale kuhumu). Three of the five residential complexes exhibited small circular or semi-circular buildings (B13, B26 and B30) which were always to the north or west of another building or, in one case, a platform (described also in section
5.1.1.3 sheds and shelters, Figure 5.4). Similar to these is a small wall feature (F21) associated with B12. Like the stone-lined hearth and possible hearth features, these shelters were not associated with any charcoal or artefacts. Nor were they ever associated with any substantial (more than 10 pieces) amounts of midden. However their unique spatial arrangement as ancillary to another building or structure and architectural similarities (low stone circular or semi-circular wall, small floor area and no cupboards) match with what we might expect for a small shelter intended for cooking (Handy & Pukui 1958:13). A similar c-shaped shelter was described as a cooking shelter (hale kuhumu) by Van Gilder and Kirch (Van Gilder & Kirch 1997:53) despite the lack of cooking related remains within the structure. Further high detail surveys and excavation are necessary to determine whether this is a significant pattern seen in other parts of Hawai‘i and resolve whether such buildings are associated with cooking facilities.

Not finding midden in association with hearths and these interpreted cooking related areas also raises another concern about our ability to identify eating areas from midden remains. For example, men’s houses (mua) are not only focal points for ritual activity but eating houses for men and thus we should expect to find substantial evidence for food consumption. Yet only two of the four men’s houses (mua) described in this thesis contained midden. There could be a number of behavioural, environmental and post-depositional factors influencing the distribution of midden in the archaeological record that need to be taken into account. One useful consideration might be how different settlement landscapes, e.g., ‘a‘ā lava flows, pahoehoe lava flows or accumulated soils, could affect both human behaviours and deposition of midden. For example, when sweeping a pahoehoe surface it is easier to remove all refuse than it would be on an ‘a‘ā pavement. Similarly, refuse deposits can be trodden into soil floors, while on the lava flows, they are more likely to shatter and are more easily disturbed from the original deposition site.

6.3.1.3 Elaboration index

The elaboration index attempts to reflect the architectural complexity of buildings which is often cited as an indicator of status (Allen & McAnany 1994:35; Weisler & Kirch 1985:148). This is done by analysing the extra effort invested in the construction of buildings, above what is required for the basic structural integrity of the house, i.e., floor, foundation walls and roof. The elaboration index, as presented in this thesis is measured based on the presence and absence of a porch (lanai), internal walls, cupboards, platforms or terraces and
other non-structural built element or upright. As a measure of social status, the elaboration index creates a similar ranking of complexes to that seen in the average building size—but for one major exception. It was noted that the highest ranking complex, Complex 4, had a low elaboration index compared to most other complexes that was not a reflection of the higher building count within this complex. This is concerning considering the elaboration index was designed to supplement the size and number of buildings as a marker of status.

However, there is an interesting correlation between building size and elaboration, albeit on a small sample of buildings, that deserves further consideration in the analysis of larger datasets. When the floor area and elaboration index of individual buildings is plotted, there is an obvious correlation between building floor area and elaboration index of the building (Figure 6.7). What is interesting to note is that this correlation appears along two trend lines. The first pattern, label “Trend One” ($r^2 = 0.85$) includes the buildings with at least 1 on the elaboration index of mid and low ranking complexes (Complex 2, Complex 3, Complex 5 and Complex 6) while “Trend Two” ($r^2 = 0.95$) includes the buildings with at least 1 on the elaboration index of the high ranking and ritual complexes (Complex 1 and Complex 4).

These trends suggest there may be separate criteria for considering elaboration according to rank. In this case, at lower and middle ranking complexes the elaboration index is a good indicator of investment (as indicated by total area). In complexes with higher investment in building size, the smaller buildings have a much lower elaboration index than we would expect. It may be that these sites have other markers not identified in this survey, such as perishable goods, which signify rank. Or, their size may have been enough of a marker of differentiation that they should be considered as belonging to a different class of architecture.
Two distinct trends can be seen when comparing building floor area with the elaboration index. Trend One contains residential complexes interpreted as commoner households (triangles= Complex 2 is dark blue, Complex 3 is purple, Complex 5 is green and Complex 6 is light blue. Green Complex 5). Trend Two contains an elite residential complex (Complex 4, red square) and ritual complex (Complex 1, yellow square). These trends suggest there may be separate criteria for considering elaboration according to higher and lower status complexes.

6.3.1.4 Dating limitations:

One of the major limitation of this study is the lack of secure dating for the buildings and features identified. To date, there are no radiocarbon dates published for Manukā due to the lack of excavation data. The distinction between pre-contact and post-contact remains were made largely on the presence of historic surface remains such as metal and bottle glass, and the style and preservation of building construction. While this is not ideal, the limited presence of historic activity identified in the survey was expected given the historic depopulation of Ka‘ū (Allen & McAnany 1994:27; Kelly 1980:12) and shift in resource use away from the coast (Allen & McAnany 1994:44; Maly & Maly 2004:37,88). There are a few lines of evidence to suggest the remaining pre-contact settlements occurred late in prehistory.
Firstly, an inventory survey of the neighbouring region of Kahuku revealed a number of radiocarbon dates which suggest that the region was settled several centuries after Hawaiian colonisation (Lebo et al. 2011:171). This is in line with the theory that the more marginal lands such as those of coastal Ka‘ū (Ladefoged et al. 2009:2378), would be settled later than productive agricultural regions in other parts of the archipelago (Hommon 1976, 1986; 2013; Kirch 2010:138). Further, oral traditions form the regions record at least one late settlement of Manukā and Ka‘ū in the mid-late 1700s (Allen & McAnany 1994:26).

To draw any solid conclusions about the pre-contact patterns of household in Manukā we must assume that both complexes, and the buildings and features within them, are contemporary, or if not contemporary, built as part of a continuous building tradition. This assumption of contemporaneity is based on the late settlement of the coast of Manukā and the identification of post-contact settlement through historic period remains. Alternative possibilities to this scenario are 1) that one or more families are moving their household about the landscape in Manukā over one or more generations, and 2) that within complexes, houses are abandoned and new buildings are built nearby to create the appearance of complexes. While the first scenario is difficult to verify without radiocarbon dating, it would likely not greatly change the interpretations of the analysis except to reduce the same size to fewer families. It would still indicate the adherence of kapu over generations of what are clearly commoner (maka‘āinana) households. For the second scenario, that complexes of multiple buildings were a gradual accumulation of abandoned buildings, we would expect that buildings within the complexes were more homogenous and a similar range of features associated with each. Rather the presence of multiple buildings of different shapes and sizes and different quantities of midden remains within each complex best fits in the interpretation that buildings were used contemporaneously for different activities.

This being said, it is highly likely that there was an element of accumulation of buildings, as households expanded, different activities were carried out. However rather than abandonment, buildings or building materials were likely recycled into new buildings (Dye 2010:141). Thus the remains we see likely represent the last form the household took before its abandonment.
6.3.1.5 Limitations of analyses

To analyse the practice of *kapu* within households, residential complexes were compared to a number of attributes identified in the traditional descriptions of Hawaiian households (*kauhale*) which reflect adherence to the *kapu* system. One attribute in particular inferred that households should have at least three buildings in order to create the fundamental segregation of eating and sleeping activities within the household. While all complexes identified in this research met this expectation, this approach is clearly biased towards higher status households which are typically considered to have a greater numbers of building structures than lower status households (Clark 1986:202; Cordy 1981:76; Hommon 2013:42; Kirch 1985:252; Weisler & Kirch 1985:148). Further, as the definition of “buildings” did not include natural features this measure precludes the possibility that the practice of *kapu* could be identified in the poorest households.

It is obvious from previous research (O'Day 2001), historical (Clerke in Lebo et al. 2011:10) and ethnohistoric (Handy & Pukui 1958:14; Kamakau 1976:95; Malo 1951:118) accounts that Hawaiian in the past lived within natural features such as caves, lava tubes and rock shelters and incorporated them into households. This was noted within the Manukā survey area too: human activities were identified in rock shelters and lava tubes in Complex 3, Complex 4 and Complex 5, and at least one cave in Complex 6 was likely used extensively as a building. Excluding natural features from this measure biases the identification of *kapu* towards higher status household as it does not account for the possibility that households may rely on natural features to separate activity areas in place of building structures. While it may not be appropriate to incorporate natural features into the definition of “building” (as discussed in section 4.1.2.3 buildings), future research on Hawaiian households should endeavour to incorporate natural features as essential elements of Hawaiian households.

6.3.2 THEORETICAL IMPLICATIONS AND CONSIDERATIONS

Ideologies are thoughts, behaviours and beliefs which create inequalities among social groups that are able to persist through time (Bell 1992:193; Earle 1997:149; Miller & Tilley 1984:14). In order for ideas to be shared and become part of the archaeological record, they must be materialised in a form which promotes a common experience of the ideas (DeMarrais et al. 1996:17). Much of the archaeological research on ideology has focused on the ways the elite materialised the ideals which lent them economic and political power (Baines & Yoffee 1998; Buylaert et al. 2011; DeMarrais et al. 1996; Earle 1997; Hooper 1915; Kirch 1990;
Kolb 1994a; Kolb 1994b; McCoy et al. 2011; Moore 1996). And while these studies advance our understanding of how elite strategies promote the growth of social complexity within a society, they tell us little about whether such strategies were effective in influencing the thoughts and behaviour of the wider community. By taking a bottom-up approach to investigating ideology, we are able to see the end result of such strategies—where ideological values promoted by the elite are incorporated into social practice.

In Hawai‘i, a religious ideological system called *kapu* was described in the ethnohistoric literature (Handy & Pukui 1958:7-13; Kamakau 1976:96; Malo 1951:27-9, 122) and early accounts of European and American explorers to Hawai‘i (Campbell 1817; Golovnin 1979; Stewart 1970). Through a bottom-up approach to archaeological analysis in Hawai‘i, we are able to see how the ideological values of the *kapu* system are practiced by both elite (*ali‘i*) and commoner (* maka‘āinana*) classes. The male-female hierarchy created by the eating *kapu* (*‘ai kapu*)—which Valeri has argued was the lynch pin of Hawaiian social structure—was practiced within the household sphere across all levels of Hawaiian society. The significance of this is that *kapu* appears to be as pervasive as suggested in the ethnohistoric literature and that the religious authority of the elite (*ali‘i*) was backed, not only by the threat of punishment for disregarding the power of the elite (*ali‘i*) class, but also by a deep-rooted belief in the religious ideological system.

However in practice, we can also see that Hawaiian households express a large degree of variation in the way *kapu* and religion was incorporated into the household sphere. While most residential complexes in Manukā had ritual features and men’s houses (*mua*), no two features or buildings looked the same, nor did they incorporate the same architectural features. Further, some buildings reflect potential local variation of *kapu* or representations of religion as we have seen in other studies (Kirch et al. 2010; O'Day 2001; Van Gilder & Kirch 1997). This variation, when interpreted through practice theory, represents the constant interplay between historical structure (i.e., cultural habitus and *kapu* system) and human agency (i.e., personal choices of inhabitants), placing commoners as agents alongside elites in the development of the ideological system.

In Hawai‘i, there is great potential to further investigate the role commoners may have played in the development and transformation of religious ideologies. The rich ethnohistoric and historic descriptions of Hawaiian state at its height provide a level of historical detail that is often not available for other archaic states. Further, the significance of investigations into
the role of the commoner (makaʻāinana) class in the history of the kapu system could have major implications for how we view the development and abolishment of the kapu system. It has been suggested a number of times that the kapu system was a hindrance to elite economic and political control following European contact (Levin 1968:423; Sahlins 1981:49; Seaton 1974:201). Did the practice of kapu by the commoner class play a role in limiting the transformations of the kapu system following European contact and the abolishment of kapu in 1819? Recent research by Bayman (2007, 2009, 2010) would suggest that it probably did. Bayman (2007:9) argued that while elite played an important role in imposing social changes following European contact with Hawaiʻi, commoners resisted social transformations of clothing, housing and work-tools through a number of means. Future research in Hawaiʻi should target these themes by employing detailed survey methodologies of Hawaiian households which explore the role that commoners played in the social transformation of their religion.
From the perspective of the political economy, Hawai‘i’s balance between economic, military and ideological power led to the fundamental shift from ancestral Polynesian society to the state society encountered by Europeans at the time of contact. Ideological control was important to this as the elite’s authority over the economy and military relied heavily on their religious authority (Earle 1991b:78, 1997:169-77; Hommon 2013:258; Kirch 2010:220). Through practice theory, we are able to understand how the practice of both commoners and elite shaped their ideology.

The kapu system was a set of religious restrictions which facilitated the economic and ideological control of the Hawaiian elite (ali‘i) (Kirch 2010:38). Many of these religious restrictions are clearly seen in the way Hawaiian built their houses. For example, the eating kapu (‘ai kapu) mandated the regulation of food consumption and preparation through a separation of activity areas and the segregation of the eating practices of men and women. According to the ethnohistoric traditions (Handy & Pukui 1958:7-13; Kamakau 1976:96; Malo 1951:27-9, 122), Hawaiian households adhered to this kapu through the construction of multiple buildings: with men and women having their own houses to eat in and another to sleep in. Kapu also applied to other activities, and as such, Hawaiian households also had cooking shelters, places to store canoes and fishing gear and other buildings for activities such as tapa beating. Failure to observe kapu not only spiritually endangered those involved, but could result in the death of the offender.

Much of the academic discussion so far about the kapu system has focused on the elite class and some evidence suggests that commoners may not have adhered to kapu at all (Clark 1986; Cordy 1981; Malo 1951). Given how fundamental the kapu system was to the Hawaiian political economy, it is important to understand how the system applied not only to elite, but to commoners as well, and how they may have shaped the political history of the Hawaiian kingdom. Since the practice of kapu is materialised in Hawaiian households, it provides the ideal outlet to investigate whether the kapu system took on characteristics of “high culture” where the ideological system defines a culture and ideologies shared only by the elite (Baines & Yoffee 1998; Brumfiel 2000:131) or whether Hawai‘i’s religious ideologies persist across social ranks and guide the construction and use of religious both commoner and elite households.
A detailed survey was carried out along a coastal segment of Manukā Ahupua’a to record residential complexes in order to address this problem. Five residential complexes were recorded and interpreted as representing one elite (ali‘i) household and four commoner (maka‘āinana) households. An analysis of these households showed that the kapu system was a factor in the initial construction and daily practice of both commoner (maka‘āinana) and elite (ali‘i) households. Further, while the elite complex displayed far greater investment in the materialisation of orthodox religious values, the majority of commoners also materialised these values in a number of ways.

In conclusion, contrary to the accounts of early European explorers described by Cordy (1981:74-5) and Malo’s description of “the people of no account” (Malo 1951:122) this thesis found that the practice of kapu, and Hawaiian religion more broadly, transcended status and rank in the study area. While priests (kahuna) and other elite (ali‘i) held the official positions of power in the state religion, commoners (maka‘āinana) were not simple receptors of state ideologies; they were active participants in the mechanisms that supported the development of the archaic Hawaiian state.

The role that commoners or commoner ideologies may have played in the development of social complexity is as yet unstudied in Hawai‘i, but could have important implications for how we view the strategies employed by elite for ideological control. This is not only of significance to archaeological research in Hawai‘i, but also to the public, particularly the descendent communities of Native Hawaiians, or Kānaka Maoli, who consider these places ‘cultural sites.’ Thus, the application of a bottom-up approach to documenting Hawaiian religion prior to the abolishment of kapu in 1819 is something that has value to archaeologists but also significant cultural resonance with the community today. In future, a larger study like the one presented here should consider both the variation in how ideology was practiced in people’s daily lives and how the results benefit Kānaka Maoli by preserving cultural sites and perpetuating the rich history of the Hawaiian Islands.
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APPENDIX 1 BISHOP MUSEUM SITE LIST

This list of Bernice P. Bishop Museum site records was gathered from the museum's online archaeological site database accessed at http://has.bishopmuseum.org/index.asp. As of 13/02/2014, this website is unavailable and it is not clear whether this is a permanent change or a temporary service outage. However, it is likely with database will be accessible in the future through links on the http://www.bishopmuseum.org/research/onlinedata.html webpage. The site descriptions have been copied from the online records for each site and no alterations have been made.

The data presented in the table below was used to identify archaeological remains in the field and during processing of survey data. Although the places in the “location” column derived from the online database, I suspect that many of these archaeological sites are not in their specified locations.
<table>
<thead>
<tr>
<th>Location</th>
<th>BPBM Site #</th>
<th>State Site #</th>
<th>Site Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manukā Bay</td>
<td>50-Ha-B24-002</td>
<td>50-10-71-3661</td>
<td>Heiau? A probable heiau measuring 18 by 35’ and consisting of two terrace levels and an ahu positioned on the center of the upper level. A path of water-worn stones located immediately inland of the structure.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-001</td>
<td>50-10-71-3660</td>
<td>Holua (toboggan slide). Slide poorly built on rough aa flow; in poor condition. Jeep trail crossed over bottom of slide.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-019</td>
<td>50-10-71-3674</td>
<td>Petroglyphs. Three to four units of lettering.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-020</td>
<td>50-10-71-3675</td>
<td>House platform, 29 x 34 feet, 4 feet high, partially paved with water-worn stones and pebbles. ARTIFACTS, from surface.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-021</td>
<td>50-10-71-3689</td>
<td>Corral. A Large goat corral.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-029</td>
<td>50-10-71-3681</td>
<td>A paved trail over aa lava, extends for about 800 feet.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-030</td>
<td>50-10-71-3682</td>
<td>A partially walled kuleana with at least one platform. South end destroyed by a jeep road. ARTIFACTS.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-031</td>
<td>50-10-71-3683</td>
<td>House platform, seriously disturbed.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-032</td>
<td>50-10-71-?</td>
<td>Platform much disturbed.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-033</td>
<td>50-10-71-?</td>
<td>Water hole 20' S. of the S corner of B24-32; now hole is filled with rubble.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-034</td>
<td>50-10-71-?</td>
<td>Vault. Inside measurements 6' long, 23'' wide, and 4' deep.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-035</td>
<td>50-10-71-?</td>
<td>Walled house site, very crudely built, with a possible platform adjacent to the N side, and ending at the edge of a prehistoric aa flow.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-037</td>
<td>?</td>
<td>Housesite. A walled housesite, walls partially buried under floe or collapsed. At W. end appear pockets of grey ash and sandy soil mixture.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-038</td>
<td>?</td>
<td>Trail. Starts at NW wall of site B-24-30 and continues across aa flow for a distance of about 1800-2000' coming off the flow onto pahoehoe and Kipuka Malua. Trail was once paved with water-worn stones.</td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-040</td>
<td>?</td>
<td>House platform, level with the ground on the W; 4' high on the E. Platform. A rather large level area built up from level to 3' high on N side; a large border area of imbedded rocks could be the beginning of a terraced platform.</td>
</tr>
<tr>
<td>Location</td>
<td>Code</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-043</td>
<td>Platform. A house platform, disturbed. About 170' S, on the E side of jeep road, is a circular ahu.</td>
<td></td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-044</td>
<td>Ko'a on the S side, 14' on the NE and 4' on the SW. Rest of the structure has completely collapsed down cliff edge. Height of structure 3'. Few scattered chunks of coral on top.</td>
<td></td>
</tr>
<tr>
<td>South Manukā Bay</td>
<td>50-Ha-B24-060</td>
<td>Trail. Trail goes both makai and mauka of jeep road. Mauka section goes 400' and then disappears under edge of a prehistoric aa flow. Makai section goes for 2000', is paved with water-worn stones in spots; section also disappears under the same aa flow.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-022</td>
<td>Family shrine. An enclosure, 17 x 22', with walls in good condition. Against the inside NE wall is an upright water-worn stone, identifying this as a family shrine.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-023</td>
<td>Small shelter cave, opening to SE. Inside measurements approximately 15 x 15 feet, and 4 feet high. ARTIFACTS.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-024</td>
<td>Petroglyph. A single petroglyph, a human figure with an open torso and dots across the shoulders.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-045</td>
<td>Enclosure. A walled enclosure, inside of which is a rock pile 4' square and 1' high. Concealed within is a water-worn stone somewhat in the shape of a head of a fish.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-046</td>
<td>House site. A walled house site, with platform, and fireplace towards N corner of platform.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-047</td>
<td>Ko'a/platform. Disturbed. Top surface of rough aa.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-048</td>
<td>House site. A three-sided walled house site with platform. A cache with ash-like material, etc., in a small opening near N corner of platform.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-049</td>
<td>Platform. Rough on the surface.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-050</td>
<td>Platform. A six-sided platform built on pahoehoe lava depression. Outer surfaces are of larger lava rock; top surface rough.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-051</td>
<td>A break in a small lava tube. There are 2 other small shelters in area, one 13' to the SW; the other 11' to the SE.</td>
<td></td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-052</td>
<td>Shelter goes in under jeep road and is blocked up at the end on the other side of the road. Two other shelters in the area.</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Site Code</td>
<td>Coordinates</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
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</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-053</td>
<td>18-01-18-60</td>
<td>Four piles of rocks all the same size 5' x 6', 2' high at the center, edges are lower, having collapsed.</td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-054</td>
<td>18-01-18-60</td>
<td>Enclosure. A walled enclosure depression with a platform. This is part of Reinecke's site #86, &quot;cairn in walled depression mauka&quot;.</td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-056</td>
<td>18-01-18-60</td>
<td>Platform. A rectangular platform, outer edges collapsed; jeep road has disturbed N corner area.</td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-057</td>
<td>18-01-18-60</td>
<td>Shelter. A small, low-walled shelter, shallow surface material of shell, soil, coral, and a few bones. This is one of the two walled shelters reported by Reniecke in his site #87.</td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-058</td>
<td>18-01-18-60</td>
<td>Trail. Leading off from the W corner of platform site B-24-56, in a westerly direction, is a short segment of waterworn stone paved trail.</td>
</tr>
<tr>
<td>Kipuka Malua</td>
<td>50-Ha-B24-059</td>
<td>18-01-18-60</td>
<td>Shelter goes in under lava edge. On each side of the entrance is a small platform. ARTIFACTS.</td>
</tr>
<tr>
<td>Kaiakekua</td>
<td>50-Ha-B24-003</td>
<td>19-01-13-70</td>
<td>House site. A rectangular walled house site with three compartments. One is paved with pebbles and water-worn stones; the others with rough aa. Overall dimensions 112 x 71 feet.</td>
</tr>
<tr>
<td>Kaiakekua</td>
<td>50-Ha-B24-004</td>
<td>19-01-13-70</td>
<td>Platform, 9 x 9 feet, 3 feet high, on pahoehoe. A or shrine?</td>
</tr>
<tr>
<td>Kaiakekua</td>
<td>50-Ha-B24-005</td>
<td>19-01-13-70</td>
<td>House site. A walled house site, paving of ili'ili, with numerous water-worn stones in the walls. 12 x 22 feet, walls 3 feet high. Condition very good; has a fireplace.</td>
</tr>
<tr>
<td>Kaiakekua</td>
<td>50-Ha-B24-008</td>
<td>19-01-13-70</td>
<td>House site. A walled house site, 13 x 17 feet, in fair condition. Interior paved with closely packed lava and pebbles; also present are two fireplaces.</td>
</tr>
<tr>
<td>Kaiakekua</td>
<td>50-Ha-B24-010</td>
<td>19-01-13-70</td>
<td>House site within a walled enclosure, 18 x 19 feet, 3 straight and 1 curved side. Made of lava slabs. Platform nearly indistinct; stock pile of lava nearby,</td>
</tr>
<tr>
<td>Location</td>
<td>Code</td>
<td>Coordinates</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------</td>
<td>---------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Kauna Point               | 50-Ha-B24-007 | 50-10-71-3663 | Shrine, 12 x 14 feet, walls 4 feet high, 2 feet wide. Walls made of lava slabs.  
Three water-worn upright stones on inside of E wall; 3 pieces of coral noted at base of center upright. Interior paved with rough aa and lava slabs. Condition good. Important site, related to Necker and Nihoa. Marked as a heiau on topographic map. Latitude: 19°02' N Longitude: 155°53' W |
| Kauna Point               | 50-Ha-B24-011 | 50-10-72-3669 | Petroglyphs. Lettering (one unit), overlapping lines, circles, figures, etc. Located along a probable trail route. |
| Kauna Point               | 50-Ha-B24-056 | ?             | Platform. A rectangular platform, outer edges collapsed; jeep road has disturbed N corner area. |
| Kauna Point               | 50-Ha-B24-057 | ?             | Shelter. A small, low-walled shelter, shallow surface material of shell, soil, coral, and a few bones. This is one of the two walled shelters reported by Reniecke in his site #87. |
| Kauna Point               | 50-Ha-B24-058 | ?             | Trail. Leading off from the W corner of platform site B-24-56, in a westerly direction, is a short segment of waterworn stone paved trail. |
| Kipuka Kaupua`a, inland   | 50-Ha-B24-018 | 50-10-72-3688 | Shelter cave. A lava tube shelter cave.                                     |
| Kipuka Kaupua`a, inland   | 50-Ha-B24-025 | 50-10-71-3690 | Shelter cave. An occupied cave, inland.                                     |
| Kipuka Kaupua`a, inland   | 50-Ha-B24-026 | 50-10-71-3691 | Corral. A large corral, narrow end ends at B24-25 (cave).                   |
| Keawaiki                  | 50-Ha-B24-013 | 50-10-72-3672 | Three platforms, which may be house platforms.                             |
| Keawaiki                  | 50-Ha-B24-012 | 50-10-72-3670 | Canoe landing. A paved canoe landing ramp.                                  |
| Keawaiki                  | 50-Ha-B24-014 | 50-10-72-3673 | House site. A partially walled house site, platforms and fireplaces.        |
| Keawaiki                  | 50-Ha-B24-015 | 50-10-72-3670 | Trail paved with single stepping-stones along coast.                        |
| Keawaiki                  | 50-Ha-B24-017 | 50-10-72-3687 | Waterhole.                                                                  |
APPENDIX 2 SURVEY RESULTS

How to use this appendix

This section describes each of the buildings and features recorded in the Manukā Archaeological Reconnaissance Survey 2012 (MARS2012). Those found within complexes are described first, followed by those features and buildings not belonging to a complex. Both pre- and post-contact remains are described in this section, and the summaries are arranged based on physical location. With the exception of Complex 6 and the isolated buildings and feature remains, the archaeology is summarised in their respective activity areas from north to south. Components are labelled in the figures below, please refer to the summary tables in Appendix 4 on CD for descriptions and attribute data.

The legend describes the key feature and component types recorded in the detailed maps below. For the measurements in the following descriptions, unless otherwise states all measurements are given in maximum external dimensions and internal floor areas.

![Legend key for following maps](image)

Figure A2.1 Legend key for following maps
Figure A2.2 Locational key map of Manukā survey area (in white) showing location of complexes (in yellow).
Figure A2.3 Location of buildings (black) and features (blue) recorded in the survey near Manukā Bay. (Note also large wall (striped white lines) and trail (double-dash black line) features). See insets for more detail.
Figure A2.4 Location of buildings (black) and features (blue) recorded in the survey on ‘a’ā flows south of Manukā Bay. (Note also large wall (striped white lines) and trail (double-dash black line) features). See insets for more detail.
Figure A2.5 Location of buildings (black) and features (blue) recorded in the survey on and near Kīpuka Malua, south of Manukā Bay. (Note also wall (striped white lines) and trail (double-dash black line) features). See insets for more detail.
A2.2 COMPLEX 1

Complex 1 consists of three buildings (B01, B02 and B03) on a Kīpuka Kaulanamauna about 20 m inland of a coral sand beach overlaying the rocky shore Manukā Bay (Figure A2.6). No prehistoric features were identified associated with these buildings.

**B01** (Figure A2.7) is the largest buildings recorded during the survey. It consists of a large core-filled wall enclosure (max 23.2 m by 17.8 m) with a floor area paved with pahoehoe cobbles (145.9 m²) covering two-thirds of the enclosure. The paved area contains two rooms and three slab lined pits and a two-tiered platform on the NE side. The cleared, unpaved area facing the beach is interpreted as a porch (*lanai*). There is no visible entrance to the enclosure however the enclosure wall is fairly degraded and much of the SW portion of the structure is obscured by *kiawe*. Based on its monumental size, complete absence of midden, high presence of coral and formal architecture this building is interpreted as a ritual structure. In this interpretation, the three slab lined pits likely represent locations where ritual images (*ki‘i*) could be erected.

**B02** (Figure A2.8) is the second largest building recorded during the survey and is located about 45 m NE of B01. It consists of a low core-filled wall enclosure (max 12.9 m by 11.8 m) and the internal floor area (66.3 m²) is paved with a mixture of pahoehoe cobbles and, pahoehoe and coral pebbles. Two internal walls segment the building into two rooms. There are two slab lined pits, similar to those in B01, in the larger room which appear to be aligned with the entrance to the smaller room. Like B01, no midden was found at B02. This building is also interpreted as a ritual structure with slab-lined pits as locations where ritual images (*ki‘i*) could be erected. This building is in poor condition; the walls of the enclosure reach about 0.35 m at the highest point and many of the larger stones have been removed.

**B03** (Figure A2.9) is located about 5 m SW of B02. It consists of a small boulder and cobble, core-filled enclosure (max 4.5 m by 4.0 m) and a floor area of 7.4 m². Like B01 and B02, it appears fully enclosed. No midden is present and there is only a small amount of coral. The small size and simple construction (i.e. no elaboration such as cupboards) suggests that this was likely a storage building and probably for use with the ritual structures.
8.1.1.1 Historic features

Two large stacked walls (F01 and F02) were constructed around Complex 1 enclosing the remains of the three buildings. These walls seem to have been constructed with material taken from B02 and possibly also B03 and B01 based on the poor preservation of B02 and a large rubble pile found nearby, F03. These wall features may suggest historic use of these buildings as kuleana, a typical historic residence with a large enclosing wall. However the removal of material of B02 for the construction of the wall, the placement of walls abutting existing buildings and the lack of evidence for domestic activities indicate a more likely interpretation is that it functioned as an animal enclosure for post-contact farming activities.
Figure A2.6 Map of Complex 1 showing buildings and features.
Figure A2.7 Map of building B01 showing building components numbers.
Figure A2.8 Map of building B02 showing building components numbers.
Figure A2.9 Map of building B03 showing building components numbers.
A2.3 COMPLEX 2

Complex 2 is a group of four small buildings and eight features (Figure A2.10). It is located on a ridge on an ‘a’ā flow overlooking Manukā Bay and lies about 190 m NE of Complex 1. Lack of formal architecture in this complex suggests it was possibly a seasonal fishing camp.

**B05** (Figure A2.11) is a small building consisting of two walls and a modified outcrop creating a small enclosure (max 4.2 by 2.7) with floor area 5.4 m². The doorway opens onto a large clearing in the ‘a’ā to the west of the building. There is a small cupboard in the E corner of the building, and a large cupboard created from the outcrop in the W corner both with light midden (10-100 items). While the size of this building is small, the doorway, and two cupboards suggest it was likely used as some kind of shelter for domestic purposes.

**B06** (Figure A2.12) is an extremely small stacked shelter (max 1.3 by 1.3 m). The roof of this structure is still intact, constructed of stacked ‘a’ā boulders. The small internal area 0.5 m² suggests the only possible use of this building as a small storage shelter. B06 opens onto a small clearing (F06).

**B07** (Figure A2.13) and **B08** (Figure A2.14) are two similarly sized buildings (min 3.9 by 2.9 m and 3.1 by 2.6 m respectively) which consist singly of a cleared floor area (10.8 and 7.3 m² respectively), paved with ‘a’ā pebbles. B07 also has a light scatter of coral in the western corner. The ‘a’ā surrounding these clearings is raised slightly and while is not obviously modified presents a suitable matrix for inserting posts to support a structure. The uniform pavement and rectangular form of the clearings also suggests use of these areas as buildings.

The central focus of this complex appears to be a large clearing (**F09**) bordered by B05 to the east and a two tiered platform structure (**F08**) to the north east. The clearing contains a hearth (**F10**) and a deposit of light midden adjacent to B05. The platform, F08, runs the length of the clearing and has a second tier with two platforms. Associated with F08 is an anchor stone. A paved ‘a’ā pebble trail (**F07**) connects the clearing F09 to the clearing **F06**. About 30 m north of the main cluster of buildings and features is a small clearing (**F05**) and a free-standing cupboard to the north-east of B08.
Figure A2.10 Map of Complex 2 showing buildings and features.
Figure A2.11 Map of building B05 showing building components numbers.
Figure A2.12 Map of building B06 showing building components numbers.
Figure A2.13 Map of building B07 showing building components numbers.
Figure A2.14 Map of building B08 showing building components numbers.
A2.4 COMPLEX 3

Complex 3 lies within ‘a’ā about 200 m to the south-east of Manukā Bay, along F14, a coastal trail paved with water worn boulders (Figure A2.15). It has five buildings which seem to represent a range of activities and a number of associated prehistoric domestic features. Complex 3 also contains a large shrine and thirteen other features. A modern road cuts through this complex, parallel to the coastal trail (F14).

**B09** (Figure A2.16) is a small relatively square building next to the large shrine feature (F15) consisting of stacked ‘a’ā boulder enclosure (max 4.6 by 3.5 m). The floor area (6.9 m²) is paved with ‘a’ā pebbles and is raised slightly above the surrounding ‘a’ā. A doorway is present in the NE wall of the enclosure and a small path paved with water worn boulders connects this building to the coastal trail (F14). This building’s association with the adjacent large shrine (F15), and its similarities to B03 indicates it might have functioned as a ritual storage building.

**B10** (Figure A2.17) is a rectangular building with three rooms. The stacked ‘a’ā boulder enclosure (7.0 m by 4.7 m) includes a section of natural outcrop along the NE side of the building. The three rooms are roughly equally sized and make up a total internal floor area of 15.1 m². The rooms are paved with ‘a’ā pebbles and cobbles and separated by low stacked walls. The NW room is ovular and on a slightly raised terrace, while the other two are low and rectangular. The entrance to the enclosure is to the SW towards a nearby trail. Two water worn stones and a cupboard are found in this building but no midden was present.

**B11** (Figure A2.18) is an irregularly shaped building with two stacked walls (max 6.0 by 4.1m) enclosing a raised floor area (12.8 m²) paved with ‘a’ā pebbles and cobbles. While the walls are in poor condition, the building appears to have two entrances on the W and E sides and associated with a paved ‘a’ā trail **F20** leading to another area of the complex. Along a collapsed section of the Northern wall is a scatter of large pieces of fresh and rolled branch and non-branch coral. Adjacent to the coral scatter were a number of small black basalt, and white coral pebbles typical of those used in playing the konane game. These game pieces have also been associated with healing and the priestly class (Kirch et al. 2010:153). Based on the presence of two entrances (see Kamakau, 1976:103),
the large coral deposit and konane pieces, this building is interpreted as a men’s house (*mua*). Only a single shell and no other artefacts were found in this building.

**B12** (Figure A2.19) is a building with two associated features. The building (max 3.9 m by 3.3 m) is defined by a southern stacked wall and floor (8.4 m²) paved with ‘a’ā pebbles. The northern edge of the building is defined by a free standing cupboard and two rock outcrops. Within the wall are two cupboards, one of which contains a heavy midden deposit, primarily of limpet shells. There is also a scatter of small, worn coral pieces in the eastern portion of the building. Immediately west is a lanai paved with cobbles and two features: **F21** is a small wall and clearing possibly used as a cooking area while **F22** is a stacked structure possibly used as a cupboard, or to small posts.

The last building of Complex 3 is **B13** (Figure A2.20), a small circular stacked ‘a’ā enclosure (max 2.3 m by 2.1 m). The small floor area (1.5 m²) indicates this was a shelter rather than a house. While no midden was present in this shelter, small amounts of midden and coral were present of on the adjacent platform (**F26**).

A number of features were identified in Complex 3. Along to the coastal trail (**F14**) next to B09, is a large two-tiered shrine (**F15**). The shrine has a large core-filled platform formally constructed with ‘a’ā cobbles (10.4 m by 4.8 m) which is 1.7 m high. On top of this is another platform (10.4 m by 2.6 m) approximately 1.25 m high. This second-tier is topped with a cairn (approx. 1.4 m high). The shrine has many modern offerings including shells, glass bottles and other food package items. The shrines excellent condition indicates that it may have been modified or reconstructed at some point however if so, this must pre-date surveys of the region in the early 1930s which recorded this shrine more or less in its present condition (BPBM:50-Ha-B24-002).

A number of clearings were identified in the ‘a’ā flow at Complex 3. The largest clearing (**F24**) is bounded by the platform feature (**F26**) to the east, two terraces (**F23** and **F25**) to the north and south. The size of this clearing and associated features suggest it could have functioned as a focal area for general activities in the complex. Three small clearings (**F17-19**) were also identified south of B10, associated with a short ‘a’ā trail (**F16**).
Two natural features, (lava tube shelters F27 and F28) were also found to the east of the main complex. These were associated with some modern rubbish deposits would have been suitable areas for storage, cooking or temporary shelter.

Complex three has a number of buildings which represent different possible functions. The variety in buildings matches well with what we could expect from the traditional descriptions of Hawaiian households. B10 for example, is large and has an absence of midden typical of the sleeping house (hale noa), B11 has two doors and a ritual component typical of the men’s house (mua), B12 has a lot of midden and a possible cooking structure typical of the women’s eating house (hale ‘aina) and B13 might have been used as a cooking shelter (hale kuhumu) although no evidence for fire features were found.
Figure A2.15 Map of Complex 3 showing buildings and features.
Figure A2.16 Map of building B09 showing building components numbers.
Figure A2.17 Map of building B10 showing building components numbers.
Figure A2.18 Map of building B11 showing building components numbers.
Figure A2.19 Map of building B12 showing building components numbers.
Figure A2.20 Map of building B13 showing building components numbers.
A2.5 HISTORIC STUFF

A group of historic period buildings and features is located along the modern coastal road near a small rocky cove south of Manukā Bay (Figure A2.21). The buildings and features are constructed in a different style to the majority of buildings and features identified in the survey and associated with historic material. This is likely a historic period residence.

**B14** (Figure A2.22) is a large building platform (10.7 m by 8.5 m) constructed of ‘a’ā boulders and a floor area (37.4 m$^2$) that is partially paved with water worn boulders. Also on the platform are one visible posthole and a possible hearth and a small midden deposit. There is a path of water worn boulders which leads from the road to the top of the platform.

Immediately north of this building is **B15** (Figure A2.23), a small semi-circular wall (4.5 m by 3.9 m) shelter with a cupboard. The floor area (9.1 m$^2$) was associated with a small amount of midden. In the area around this building, one basalt flake (**F34**) and a large nail with a square cross-section (**F35**, Figure A2.24) were found.

Three other features, also found along the modern coastal road, are likely to be associated with these buildings. To the south of B14 is another platform (**F36**), a terrace (**F37**) and a two-tiered terrace (**F38**). These are not associated with any components giving a clear indication of their function; however they are larger than other platforms and terraces interpreted as pre-contact. To the north of this group of the buildings is also a wall (**F29**) which travels parallel to an inland trail which may be associated with the historic residential area. Further, a number of goat (more likely than sheep) remains were found in crevices in the ‘a’ā flow in this area which may reflect the post-contact ranching activities in Manukā.
Figure A2.21 Map of a historic period complex south of Manukā Bay showing buildings and features.
Figure A2.22 Map of building B14 showing building components numbers.
Figure A2.23 Map of building B15 showing building components numbers.
Figure A2.24  Photographs of a nail (F35) associated with buildings B14 and B15. Cross-section is square.
A2.6 COMPLEX 4

Complex 4 consists of seven buildings and thirteen features spread over a large area of a pahoehoe flow (Figure A2.25). It is about a kilometre south of Manukā Bay on the coastal edge of Kīpuka Malua. Also found within Complex 4 are three possible burials, and one building and seven features interpreted to be associated with post-contact activities. Overall, the large size and number of buildings, as well as the large complex area points to the fact this was an elite residence.

In the northwest area of Complex 4 is a cluster of three buildings and a large enclosure. **B16** (Figure A2.26) is located in the ‘a’ā flow, just off the edge of Kīpuka Malua. It is a long narrow building with a small entrance towards the coast. The floor (22.0 m²) is paved with ‘a’ā cobbles and enclosed by a low, poorly preserved core-filled ‘a’ā boulder wall (max 10.0 m by 4.6 m). Light midden (10-100 items) is found within this building. While the long narrow shape of buildings and its entrance to the coast suggests a possible function as a canoe shed (*halau*), the small entrance would make it unsuitable for storing large objects. Further, low a’ā boulder walls differ from the more formal walls of other two interpreted canoe sheds (*halau*) in this complex. For these two reasons, it is interpreted as a generic house (*hale*).

Nearby on the pahoehoe are two canoe sheds (*halau*) **B17** (Figure A2.27) and **B18** (Figure A2.28). These are both core-filled wall enclosures constructed of pahoehoe boulders (max 5.7 m by 4.0 m and 6.9 m by 4.1 m respectively) with floor areas (11.1 m² and 12.4 m² respectively) that are partially paved with ‘a’ā pebbles and associated with light midden scatters. Both buildings are interpreted as canoe sheds (*halau*) as they both have a narrow shape and have walls on three sides, the fourth being open towards the coast. B18 is distinguished from B17 by having two walls and a possible second entrance in the northern corner. Nearby are two modern fishing shelters (**F48** and **F49**) with large amounts of midden and modern rubbish, one of which is built onto the side of B18. There also appears to be a path down the rocky cliff to the ocean nearby.

Associated with these three buildings is a large enclosure of stacked pahoehoe boulders (**F45**) with two entrances. Within the enclosure is a cleared area containing a possible burial (**F46**) and a basalt core (**F45**). Another wall (**F47**) adjoins coastal side of
the enclosure. The function of this enclosure is unknown, but the walls seem too low to be for enclosing animals.

Towards the centre of Complex 4 is B19 (Figure A2.29), a large but poorly preserved building with core-filled walls (max 11.2 m by 8.7 m) enclosing a collapsed lava tube. Due to the poor preservation, it is unclear whether there was an entrance to the enclosure. The lava tube is filled in with rubble, possibly as a historic burial. The floor area, including the area of the lava blister is 58.4 m².

This building is adjacent to a large petroglyph field (F50) to the west and a large natural enclosure with a stacked pahoehoe boulder wall (F51) to the north. The petroglyph field contains 37 petroglyphs pecked into the pahoehoe flow. Each petroglyph was traced, photographed and recorded using GPS (see Appendix 3). Most petroglyphs are human figures with triangular bodies, curved legs and small head. Interestingly, while many had no hands or dots for hands, a few petroglyphs had three fingers for hands, and some dots above the shoulders. About a third are oriented to the North East from the viewer’s perspective which is towards Mauna Kea volcano.

B20 (Figure A2.30) is a interpreted as a canoe shed (halau) built into naturally formed enclosure (max 7.5 m by 4.9 m) near the coast. Its three walls were constructed by modifying an existing natural enclosure which was then faced with boulders. The entrance is open to the coast, typical of canoe sheds (halau). The floor (25.6 m²) is paved with ‘a’a pebbles and there is a heavy midden deposit (+100 items) near the wall. The style of construction of B20, built to incorporate a natural enclosure, is seen three other large prehistoric buildings in Complex 4. Thus, the historic material present in this building (i.e. bottle glass) it is interpreted as evidence of the building’s continued use into the post-contact period.

Another building (B21 Figure A2.31) and number of features are found in the immediate vicinity of B20 which are interpreted to derive from the post-contact period. B21 is a formally constructed and well preserved core-filled ‘a’a enclosure with no obvious doorway (max 5.1 m by 4.4 m). Within the floor of the building (11.3 m²) there is a small paved hole and a light scatter of midden (10-100 items). Attached to the coastal side of the building is a small platform (F55) and a few metres away another platform sits near the edge of the bluff. Between B21 and B20 is a large clearing (F53) containing a hearth (F54) a heavy midden scatter (+100 items). The clearing is bounded to the northeast
by a large terrace (F52) containing another lined hole. This hole was larger than other paved holes found within buildings and all indications in the field pointed towards its use as an outhouse. Bottle glass and modern rubbish is scattered across this site attesting to its use for fishing activities in the recent past.

As B20 is interpreted as pre-contact in origin, it is possible that the post-contact period activities have destroyed evidence of earlier activities at this location. The landscape itself is heavily modified—the clearing (F53) and B21 rest upon an area levelled by terracing. Thus, any prehistoric buildings or features associated B20 would have been destroyed during levelling of the area.

At the eastern boundary of Complex 4 is B22 (Figure A2.32) built in a similar style to B19 with two low core-filled walls (max 12.6 m by 11.2 m) enclosing a collapsed lava tube. Within the lava tube is a platform (3.2 m by 2.8 m) containing a number of coral pieces and water worn basalt cobbles indicative of a ritual function. A light midden deposit (10-100 items), partial konane board (papuma) and a number of large cowrie shells were found within the building. The floor area is unpaved pahoehoe (90.7 m², including the area with the lava tube) and it is the largest residential building. At the eastern corner is a cairn and just beyond that, a small shelter F57. B22 is interpreted as a men’s house (mua) due to its large size, the central ritual platform, presence of two entrances, scattered coral and large cowrie shells. A small stacked wall F58 appears to connect this building to a small lava tube F60 associated with heavy midden (+100 items) deposits F59 and F61.

B23 (Figure A2.33) is another building built into a naturally existing enclosure in the pahoehoe. The outcrop is taller on the two eastern sides of the enclosure; those on the western sides are topped by a stacked pahoehoe wall (max 8.6 m by 6.6 m). The floor area (37.8 m²) is paved with pahoehoe cobbles and a number of boulders which may have either derived from disturbed internal walls or fallen from the stacked wall above. The area to the southwest of the enclosure is interpreted as a porch (lanai) due to slightly different paving in this area. The entrance to this enclosure is at the southern corner. On the ridge above B23, a konane game board (papuma) (F62) is pecked into the pahoehoe flow, lending support to the interpretation of this building as a generic house (hale). B23 could have been used as an animal pen in the post-contact period due to disturbance of the walls and floor area, however, no historic material was identified.
Few features were not directly associated with any building. Two isolated walls (F63 and F66) are found in the eastern part of Complex 4. Their original functions are unclear. Two possible burials (F64 and F66) are also located here.
Figure A2.25 Map of Complex 4 showing buildings and features.
Figure A2.26 Map of building B16 showing building components numbers.
Figure A2.27 Map of building B17 showing building components numbers.
Figure A2.28 Map of building B18 showing building components numbers.
Figure A2.29 Map of building B19 showing building components numbers.
Figure A2.30 Map of building B20 showing building components numbers.
Figure A2.31 Map of building B21 showing building components numbers.
Figure A2.32 Map of building B22 showing building components numbers.
Figure A2.33 Map of building B23 showing building components numbers.
A2.7 COMPLEX 5

Complex 5 is a tightly clustered group of buildings and features on an ‘a’ā ridge above Kipuka Malua (Figure A2.34). Its four buildings and five features are connected by five trail features. Two historic period features were also identified within Complex 5.

B24 (Figure A2.35) is the largest building in this complex. Its two exterior walls extend either side of a large outcrop on the northeast side (max 10.2 m by 4.2 m) and the southwest side of the building opens out onto a levelled, paved surface interpreted as a porch (lanai). It contains two rooms, separated by an internal wall, which are paved with ‘a’ā pebbles (total 27.9 m$^2$). There are three large water worn boulders in this building and a single basalt adze flake. The southeast room incorporates part of an overhang of the outcrop and the heavy midden scatter (+100 items) incorporated a number of cowrie shells. In the northwest room, the heavy midden is less dense and there is a possible hearth structure and a cupboard.

Three trails lead to this building. A water worn path (F69) leads from a rock shelter below the ridge (F88) to the porch (lanai). Another water worn boulder path (F74) extends from the eastern side of the building, connecting it with B25 to the southeast. A less formal ‘a’ā pebble path begins near the porch (lanai) and leads to a platform feature (F75) to the south.

B25 (Figure A2.36) is interpreted as a men’s house (mua). It consists of an irregularly shaped core-filled ‘a’ā boulder wall and a large boulder outcrop which has a post-hole shape cut into the surface (Figure A2.37) and creates a large cupboard on the external side (max 9.9 m by 4.3 m). In the southern corner of the building is a core-filled platform (2 m by 1.9 m by 0.5 m) interpreted as a shrine. A heavy midden scatter (+100 items) is found over the floor area (20.2 m$^2$) as well as the shrine. A cupboard in the eastern corner also has a heavy midden deposit including slate pencil sea urchin spines (Heterocentrotus mammillatus). The sea urchin spines are also places in wall crevices. At the northern end of the building is a porch (lanai) area whether the path feature (F74) meets. The large amount of midden in this building and the shrine component indicate that this may have functioned as a men’s house (mua). The sea urchin spines are also known to have been used as abraders {Kirch, 1982@457} which may also be associated with male activities.
**B26** (Figure A2.38) is a small circular core-filled ‘a’ā boulder and cobbled enclosure (max 4.2 m by 2.7 m) at the northern end of B25. The floor (6.8 m$^2$) is paved with ‘a’ā cobbles and pebbles. The Eastern most building **B27** (Figure A2.39) is a small rectangular enclosure of core-filled ‘a’ā boulder wall (max 4.5 m by 3.9 m). The floor area (6.6 m$^2$) is roughly paved with ‘a’ā pebbles and little midden (present, 1-10 items) is found in association with this building. It seems likely with was used as a shelter due to its small size.

There are a number of features in Complex 5. There is a light midden (10-100 items) deposit (**F78**) found slightly east of the men’s house (B25), with a number of sea urchin spines present. Most importantly however are two platforms just west of the men’s house (B25). **F75** is the smaller of the two platforms (3.8 m by 2.1 m by 0.7 m) and is interpreted as a shrine due to the deliberate placement of coral in the corner of the structure and two stone cups (Figure A2.40). **F76** is a slightly larger platform (6.5 m by 5.7 m by 0.7 m) may also be for ritual purposes as it contains a poorly preserved enclosing wall, a small cupboard and a three large pieces of coral. On the western side of the complex is a clearing in the ‘a’ā of unknown function (**F70**) and rock shelter (**F68**) below the ridge with heavy midden deposits (+100 items) including some modern rubbish. Two trails lead out of the complex from the southern and eastern sides of the complex. **F77** is a trail of ‘a’ā boulders leading down to the bottom of the ridge from near B25 and **F79** is a similarly constructed trail leading eastwards from B27.

Two historic features were also identified at Complex 5. Feature **F71** is a large enclosure (8.4 m by 8.3 m) with wire noted at a number of places along the low stacked wall. The enclosure is interpreted as an animal pen which was likely was fenced with wire. Along the trail feature (**F72**) just south of this enclosure is a cairn with a barbed-wire deposit (**F73**). The cairn may have served to hold a fence post used in conjunction with F71 Further, the limited evidence for post-contact domestic activities within Complex 5 suggests that people were not living here on a regular basis. Use of Complex 5 in the post-contact period was likely restricted to agricultural activities such as ranching, and took advantage of the existing structures at this location.
Figure A2.34 Map of Complex 5 showing buildings and features.
Figure A2.35 Map of building B24 showing building components numbers.
Figure A2.36 Map of building B25 showing building components numbers.
Figure A2.37 Photograph of outcrop incorporated into B25, interpreted as a men’s house (*muia*). Note the red depression (natural colour) within the outcrop suitable for a small post.
Figure A2.38 Map of building B26 showing building components numbers.
Figure A2.39 Map of building B27 showing building components numbers.
Figure A2.40 Photograph of platform feature interpreted as shrine (F75). Note placement of cup 1 and coral in corners of platform. Inset shows close up of cup 2.
A2.8 COMPLEX 6

Complex 6 is an interesting cluster of three buildings and twelve features within two natural enclosures within the pahoehoe landscape of Kīpuka Malua (Figure A2.41), roughly 300-400 m inland from the coast. Also within this complex are a historic feature and a number of potential burials. As the majority of the features fall within two major natural enclosures which are not inter-visible I will describe these areas separately.

In the coastal side of Complex 6 is a large open lava tube forming a natural enclosure. The one building and many features within this enclosure all seem to be related to ritual activities and are not visible with many other features or buildings within this complex. B28 (Figure A2.42) is a formally constructed enclosure with no entrance visible in the core-filled pahoehoe and ‘a‘ā cobble and boulder walls (max 8.0 m by 6.6 m). The floor area (14.4 m²) was simply a cleared pahoehoe surface with little midden (present, 1-10 items). A porch (lanai) at the western (coastal) end of the building is indicated by a protruding wall of the enclosure. At the eastern end of the enclosure, a large water worn stone has been erected in upright position (Figure A2.43). Based on the presence of the upright stone and its association with other ritual features within this natural sunken enclosure, this building is interpreted as a men’s house (mua).

The other features identified within this enclosure also seem to have a ritual function. To the west of B28 is a poorly preserved terrace feature (F87) with an upright slab of aa lava and cairn at the southwest end. To the north of this are a small petroglyph field with six pecked petroglyphs (F85) and a low stacked wall with two aa slab uprights (F86). There is also a low cave containing midden (F88) and a couple of historic burials (F89 and F90) nearby. The presence of four uprights within this natural enclosure highlights the ritual nature of this area.

However, there are a number of domestic buildings and features nearby which suggest that these ritual features were part of a larger residential complex. Three features on the northern ridge above this enclosure include a collapsed lava blister modified to form an enclosure (F82), a cave (F83) with heavy midden deposits (+100 items, including shell and bone) across the floor and within wall crevices and another heavy midden deposit (F84) just outside F83. Other features at this end of Complex 6 include a small L-shaped
platform at the western edge of the complex (F80), a midden deposit in a small lava blister (F81).

In the inland part of Complex 6 is another large sunken lava tube enclosure with a large modified cave (F93), a small L shaped platform (F94) and a number of burials (F95-8). The cave is roughly 8.5 m deep and 7.7 m wide and ### high. At the back of the cave were five large pieces of coral arranged in two rows and heavy midden (+100 items) scattered across the cave floor. At the entrance to the cave re two core-filled platforms of pahoehoe boulders and cobble, one either side of the entrance. This cave is not quite tall enough to stand up in but the midden and modification indicate it was likely used on a regular basis. A historic enclosure (F91) was also found in this area. Similar to F71 in Complex 5, this enclosure consisted of a low stone wall incorporating wire.

On the ridge above this natural enclosure are two buildings. B29 (Figure A2.44) is small, poorly preserved rectangular building constructed of core-filled walls of pahoehoe boulders and cobbles (max 5.5 m by 3.7 m). The floor area is unpaved (7.6 m²) and an entrance was tentatively identified in the northeast corner of the building. Immediately to the west is another smaller building B30 (Figure A2.45) consisting of a small circular enclosure of core-filled walls of both ‘a’ā and pahoehoe boulders (max 3.1 m by 2.6 m), again with an unpaved floor areas (3.9 m²). This appears to represent the primary living areas of complex 6.
Figure A2.41  Map of Complex 6 showing buildings and features.
Figure A2.42 Map of building B28 showing building components numbers.
Figure A2.43 Photograph of B28, a men’s house (*mua*) located within Complex 6. Note upright stone along eastern wall.
Figure A2.44 Map of building B29 showing building components numbers.
Figure A2.45 Map of building B30 showing building components numbers.
**A2.9 FEATURES NOT ASSOCIATED WITH COMPLEXES**

Only one building **B04** appeared in isolation of other buildings (Figure A2.46). This is a small, square building with a rectangular enclosure (max. 3.3 m by 3.2 m), a cleared pahoehoe floor (3.9 m²) and a narrow entrance to the southwest. This building was actually recorded outside of the survey area. Nevertheless, there were no other features or buildings identified in the vicinity of this building which might indicate it had a domestic function. This and the small size suggest that it was neither a household nor part of one.

**F40** is an unusually isolated small modified rock shelter with midden situated in the ‘āʻā lava flow. While it may have had some domestic function, it is not likely large enough to have been used for sleeping or other activities that we might associate with a women’s menstruation shelter (*hale pea*).

Five potential burials were recorded outside of the areas that archaeological remains generally clustered into at Manukā. **F04** between Complex 1 and Complex 2 and **F41** near the historical complex are isolated burials. **F31**, **F32** and **F33** are found grouped together off the side of the coastal-inland trail **F30**.

**F13** is a large core-filled wall typical of those surrounding historic settlements (*kuleana*) while **F39** is a large core-filled goat coral associated with historic ranching activities. Another isolated wall, **F67** is found between Complex 4 and Complex 5 and is of unknown function. **F42** is a short trail of water worn stones and ‘āʻā. Despite intensive searching, no archaeological remains were identified in the vicinity of the short trail. Lastly **F43** is a large lava tube cave system with extensive evidence for midden deposits.
Figure A2.46 Map of building B04 showing building components numbers.
Two fields of petroglyphs were recorded during the survey, F50 within Complex 4 and F85 within Complex 6. Each petroglyph was recorded by tracing it onto a plastic bag, along with the GPS location, photographs of the glyphs and orientation from the estimated viewer’s perspective. In this section, maps created from the GPS survey data show the location of individual petroglyphs. The horizontal margin of error in these locations is approximately 0.3-0.5 m. Also reported are illustrations of each of the petroglyphs. These images were modified by highlighting the peck lines in yellow to aid visibility of the glyphs (Figure A3.1). Further, where original photographs did not include a scale, one was inserted to the closest possible estimate. Lastly, the orientations of the petroglyphs are shown using rose diagrams.

Figure A3.1 Example of original petroglyph photo and image after highlighting. Accuracy in highlighting was aided by the use of field tracings of the glyphs.
A3.2 COMPLEX 4 - F50

Feature F50 is a field of 37 petroglyphs is located within Complex 4 (Figure A3.2). It is situated on a pahoehoe flow near the coast called Kīpuka Malua. These figures are mostly human-like figures. Some appear to be parts or beginnings of human figures which were never finished. Others are quite abstract. Individual locations are shown in Figure A3.3 and the petroglyphs are illustrated in figures numbering Figure A3.4 to Figure A3.38.
Figure A3.2 Map of Complex 4 showing location of petroglyph field, F50 (blue dashed line)
Figure A3.3 Map of feature F50, a petroglyph field situated within Complex 4, showing locations of individual petroglyphs
Figure A3.4 Illustration of petroglyph F50-A, scale is estimate only

Figure A3.5 Illustration of petroglyph F50-B
Figure A3.6 Illustration of petroglyph F50-C, scale is estimate only

Figure A3.7 Illustration of petroglyph F50-D, scale is estimate only
Figure A3.8 Illustration of petroglyph F50-E

Figure A3.9 Illustration of petroglyph F50-F
Figure A3.10 Illustration of petroglyph F50-G

Figure A3.11 Illustration of petroglyph F50-H
Figure A3.12 Illustration of petroglyph F50-I

Figure A3.13 Illustration of petroglyph F50-J
Figure A3.14 Illustration of petroglyph F50-K

Figure A3.15 Illustration of petroglyph F50-L
Figure A3.16 Illustration of petroglyph F50-M

Figure A3.17 Illustration of petroglyph F50-N
Figure A3.18 Illustration of petroglyph F50-O
Figure A3.19 Illustration of petroglyph F50-P

Figure A3.20 Illustration of petroglyph F50-Q
Figure A3.21 Illustration of petroglyph F50-R

Figure A3.22 Illustration of petroglyph F50-S
Figure A3.23 Illustration of petroglyph F50-T

Figure A3.24 Illustration of petroglyph F50-U
Figure A3.25 Illustration of petroglyph F50-V

Figure A3.26 Illustration of petroglyph F50-W
Figure A3.27  Illustration of petroglyph F50-X

Figure A3.28  Illustration of petroglyph F50-Y
Figure A3.29  Illustration of petroglyph F50-Z
Figure A3.30 Illustration of petroglyph F50-AA, scale is estimate only

Figure A3.31 Illustration of petroglyph F50-AB
Figure A3.32  Illustration of petroglyph F50-AC
Figure A3.33  Illustration of petroglyph F50-AD
Figure A3.34  Illustration of petroglyph F50-AE
Figure A3.35  Illustration of petroglyph F50-AF
Figure A3.36  Illustration of petroglyph F50-AG
Figure A3.37  Illustration of petroglyph F50-AH

Figure A3.38  Illustration of petroglyph F50-AI
Feature F85 is a field of six petroglyphs located within Complex 6 (Figure A3.39). It is situated on a pahoehoe flow, inland from the larger petroglyph field (F50), but within the same kīpuka, Kīpuka Malua. Again, these figures are mostly human-like figures while two appear to be partial human figures, and one is highly abstract. Individual locations are shown in Figure A3.40 and the petroglyphs are illustrated in figures numbered from Figure A3.41 to Figure A3.45.
Figure A3.39  Map of Complex 6 showing location of petroglyph field, F85 (blue dashed line)
Figure A3.40  Map of feature F85, a petroglyph field situated within Complex 6, showing locations of individual petroglyphs. Also shown is feature F86, a low wall feature with two uprights.
Figure A3.41  Illustration of petroglyph F85-A, scale is estimate only

Figure A3.42  Illustration of petroglyph F85-B, scale is estimate only
Figure A3.43  Illustration of petroglyph F85-C (right) and petroglyph F85-D (left), scale is estimate only

Figure A3.44  Illustration of petroglyph F85-E, scale is estimate only
A3.4 ORIENTATIONS

These orientations were taken in field using a standard compass, from the direction one would stand to view the petroglyph (i.e. viewers perspective). They were then calibrated to true North using a declination of 9.5 degrees East. The diagrams were created online at http://www.yongtechnology.com/yong-lab/online-rose-diagram/.
Table A3.1 Orientations of individual petroglyphs from viewer perspective (corrected to true North)

<table>
<thead>
<tr>
<th>ID</th>
<th>Orientation</th>
<th>Field Notes</th>
</tr>
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<tr>
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<td>F50-AG</td>
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<tr>
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<td>F50-D</td>
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<td>F50-H</td>
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<td>F50-I</td>
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<td>F50-N</td>
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<td>F50-P</td>
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Figure A3.46  Rose diagram showing the orientations of petroglyphs from F50 in Complex 4. Note F50-K and F50-P count twice as each has two figures.
Figure A3.47  Rose diagram showing the orientations of petroglyphs from F85 in Complex 6
Figure A3.48  Rose diagram showing the orientations of petroglyphs from all petroglyphs in the survey. Note F50-K and F50-P count twice as each has two figures.
APPENDIX 4 SUMMARY TABLES

Summary tables of the buildings, components and features recorded in the survey are provided on a CD as excel spreadsheets. Some attributes, in particular the “comment” field were used for in field observations and interpretations by the survey team. As such, these fields may vary slightly from the interpretations expressed in this thesis. For more detailed information about the attributes recorded, please see the metadata in Appendix 5.
APPENDIX 5 METADATA

This thesis includes summary tables of the survey data in excel spreadsheets and the spatial data in three forms: individual shapefiles (.shp), an ESRI ArcGIS map package (.mpk) and a Google Earth map package (.kmz). Manukā Ahupua‘a, Hawai‘i Island, USA. Each map package includes all shapefile data with pre-defined symbols. The ESRI ArcGIS map package contains all shapefile data described below with pre-defined symbols to match the images in this thesis. The Google Earth map package also contains all shapefile data, however symbols have been changed from those used in the thesis to be compatible with the Google Earth software. Further, when viewing in Google Earth, it may be necessary to turn off certain layers, such as the “Codlin_Complex” and “Codlin_Survey_boundary” layers to retrieve the attribute data from building, feature or component layers and view them properly.

Shapefiles contain the spatial data for individual GIS layers used in the analysis and in the creation of the maps in this thesis. Building, feature and component layers derive from the post-processing of the GPS data (see methods section) collected during the 2012 Manukā Archaeological Recording Survey (MARS) of archaeological remains in Manukā Ahupua‘a, Hawai‘i Island, USA. Complex and survey area layers were manually created in the GIS. Each of these shapefiles is described below.

These layers represent the basic levels of analysis and recorded employed in this research and are defined as follows. Buildings are defined as one or more components with the potential to have been roofed in the past. Features are defined as one or more components that represent archaeological activities that were not roofed in the past. Components are most basic level of archaeological remains recorded during the survey, and consist of single elements such as walls, or floor areas, which belong to features or buildings. Complexes are defined as three or more buildings or features which are spatially distinct from other buildings and features.
A5.1 BUILDING SHAPEFILES

Buildings - basic data

Files: “Codlin_Building_Poly”
Data type: Vector-Polygon
Coordinate system: NAD 1983 UTM Zone 5N
Date created (final version): 27/01/2014
Creator: Maria Codlin

Buildings - description

This layer contains spatial and attribute data for buildings recorded during the MARS 2012 GPS survey of archaeological remains of Manukā Ahupua’a, Hawai‘i Island. Buildings are defined as one or more components with the potential to have been roofed in the past. This polygon layer records the entire area that would have been attributed to a particular building in the past. This includes roofed and non-roofed porches (lanai). The layer was created during post-processing—the original GPS data was edited to best fit measurements and sketches of buildings taken in field and ensure each building’s extent encompassed all building components.

Buildings - fields:

GIS_ID: Identification assigned to the building during post-processing, “B##”. This ID is the primary ID used in the thesis and GIS database.
Field_ID: Identification assigned to the building in the field, “B###”. This is a secondary ID, provided to aid the use of field notes and primary GPS data which carried this ID. It is not used to describe any buildings within the thesis.
Period: Interpretation of time period the building belongs to. “Pre-contact” means the building is interpreted to have been used before the arrival of Europeans in Hawai‘i in 1778. “Post-contact” means the building is interpreted to have been used sometime after the arrival of Europeans in 1778.
Complex: Whether the building belongs to a particular archaeological complex, i.e. “Complex 1” means that the building belongs to Complex 1. A “*” denotes a building which is found within the spatial extent of a complex, but was not included within the analysis of that complex because it was interpreted as post-contact period. “No Complex” means that the building did not belong to any complex.
Comments: Any comments about the building which were recorded in the GPS device in the field.
Recorder: Who carried out the GPS recording of the building in the field. “MC” is Maria Codlin, “MDM” is Mark D. McCoy and “HA” is Helen Alderson.
Kipuka: The kipuka or type of flow that the building was located on. All kipuka recorded are pahoehoe flows. “‘A’i” flows are interspersed between kipuka.
Preservation: Subjective assessment of the preservation of the archaeological remains. “Good” is mostly intact, small amount of damage, “fair” is some damage but still
recognisable features and “poor” is badly damaged or destroyed, interpretations are difficult.

**Function:** Interpreted primary purpose of the building. “Ritual” mostly used for ritual purposes, “domestic” used frequently for residential activities, “storage” mostly used to store items for any activities, “domestic ritual” function reserved specifically for men’s houses (*mua*) and “unknown” function of building could not be determined based on survey data.

**Classification:** Interpretation of traditional building types based on components present. See results in Chapter 5 for descriptions of these building types.

**Hawaiian name:** Hawaiian translation of building types in classification field.

**P_comp (Primary component):** Subjective assessment of the focal component of the building, usually an architectural feature.

**N_comp (Number of components):** Number of components recorded for this building.

**Doors:** Conservative estimate of the number of entrances to the building.

**Midden:** Density of midden found within the building. “None present” means midden was absent, “single (1 item)” means a single shell or piece of bone was found, “present (under 10)” means less than ten shells or pieces of bone were found, “light midden (10-100)” means that less than a hundred pieces of shell or bone were estimated and “heavy midden (+100)” means that greater than a hundred pieces of shell or bones were estimated.

**Historic_M (Historic material):** Presence or absence of historic material (i.e. bottle glass, introduced faunal remains, ceramics or metal).

**External length:** Maximum length of building based on outer edges of architectural features measured in the field. As these represent measurements taken in the field, they will differ slightly from measurements taken using GIS using the measurement tool. (Metres)

**External width:** Maximum width of building based on outer edges of architectural features measured in the field. As these represent measurements taken in the field, they will differ slightly from measurements taken using GIS using the measurement tool. (Metres)

**Internal length:** Maximum length inside the building measured to inner edges of architectural features in field. As these represent measurements taken in the field, they will differ slightly from measurements taken using GIS using the measurement tool. (Metres)

**Internal width:** Maximum width inside the building measured to inner edges of architectural features in field. As these represent measurements taken in the field, they will differ slightly from measurements taken using GIS using the measurement tool. (Metres)

**Wall height:** Maximum height of most intact portion of wall. (Metres)

**Floor area:** Maximum area inside of the building that could have been roofed in the past, measured using GIS measurement function from inner edges of the exterior walls or floor areas where appropriate. This does not include the extent of any porch (*lanai*) components. (Square metres)
A5.2 FEATURE SHAPEFILES

Features - basic data

Files: “Codlin_Feat_pnt”; “Codlin_Feat_line”; “Codlin_Feat_Poly”
Data type: Vector-Point; Line; Polygon
Coordinate system: NAD 1983 UTM Zone 5N
Date created (final version): 27/01/2014
Creator: Maria Codlin

Features - description

This layer contains spatial and attribute data for features recorded during the MARS 2012 GPS survey of archaeological remains of Manukā Ahupua'a, Hawai‘i Island. Features are defined as one or more components that represent archaeological activities that were not roofed in the past. Polygon layers were created during post-processing—the original data was modified to remove any obvious errors in feature shape caused by GPS error, and to correct the shape of some features to the descriptions and measurements taken in field. Line and point layers have had little, if any spatial editing. Some features were created during post processing from components.

Features - fields

GIS_ID: Identification assigned to the feature during post-processing, “F##”. This ID is the primary ID used in the thesis and GIS database.
Field_ID: Identification assigned to the feature in the field, “F###”. This is a secondary ID, provided to aid the use of field notes and primary GPS data which carried this ID. It is not used to describe any features within the thesis. Where the field ID is followed by a letter, e.g. F###A, this denotes that the feature was originally recorded in the field as a component, and was converted to a feature during post-processing.
Period: Interpretation of time period the feature belongs to. “Pre-contact” means the feature is interpreted to have been used before the arrival of Europeans in Hawai‘i in 1778. “Post-contact” means the feature is interpreted to have been used sometime after the arrival of Europeans in 1778.
Complex: Whether the feature belongs to a particular archaeological complex, i.e. “Complex 1” means that the feature belongs to Complex 1. A “*” denotes a building which is found within the spatial extent of a complex, but was not included within the analysis of that complex because it was interpreted as post-contact period or as a possible burial. “No Complex” means that the feature did not belong to any complex.
Shape: Whether the feature was recorded as a “polyline” (line), “point” or “polygon”.
Comments: Any comments about the feature which were recorded in the GPS device in the field.
Recorder: Who carried out the GPS recording of the feature in the field. “MC” is Maria Codlin, “MDM” is Mark D. McCoy and “HA” is Helen Alderson.
Kipuka: The kīpuka or type of flow that the feature was located on. All kīpuka recorded are pahoehoe flows. “‘A`ā” flows are interspersed between kīpuka.
Preservation: Subjective assessment of the preservation of the archaeological remains. “Good” is mostly intact, small amount of damage, “fair” is some damage but still recognisable features and “poor” is badly damaged or destroyed, interpretations are difficult.

P_Function (Primary function): Interpreted primary purpose of the feature. “Ritual” means mostly used for ritual purposes, “domestic” means used frequently for residential activities, “transportation” means used for travel, i.e. trails, “possible burial” means the feature likely contains human remains, “post-contact farming” means likely relates to historic agricultural activities, “games” means it was used for entertainment purposes and “unknown” means function of feature could not be determined based on survey data.

Type: Type of feature present, e.g. trail, hearth, wall, based on components present. See results chapter for descriptions of these feature types.

P_comp (Primary component): Subjective assessment of the focal component of the feature, usually an architectural feature. Many features will have only one component, in this case, primary component describes the only component.

N_comp (Number of components): Number of components recorded for this feature. Note that features with only one component are recorded only as features.

Midden density: Density of midden scatter associated with the feature. “None present” means midden was absent, “single (1 item)” means a single shell or piece of bone was found, “present (under 10)” means less than ten shells or pieces of bone were found, “light midden (10-100)” means that less than a hundred pieces of shell or bone were estimated and “heavy midden (+100)” means that greater than a hundred pieces of shell or bones were estimated.

Historic_M (Historic material): Presence or absence of historic material (i.e. bottle glass, introduced faunal remains, ceramics or metal).

Length: Maximum length of feature, recorded in field where appropriate. As these represent measurements taken in the field, they will differ slightly from measurements taken using GIS using the measurement tool. (Metres)

Width: Maximum width of feature recorded in field where appropriate. As these represent measurements taken in the field, they will differ slightly from measurements taken using GIS using the measurement tool. (Metres)

Height: Maximum height of most intact portion of wall. Also used to record the height of platforms, cupboards and other features. (Metres)

Material: The type of stones used in architectural component. Either ‘a’ā (scoria), water rolled basalt, or pahoehoe.

Stone size: Describes the size of the most common stones, pebble (0-7cm), cobbles (7-25 cm) or boulders (+25cm).

Method: Describes the most common construction method of the feature. “Stacked”, “core-filled” “incorporating] natural outcrop” and “piled or heaped” describe the construction of standing stone features such as walls. Floor areas may be “formally” or “informally paved” roughly describing the neatness of the paving. “Single course” refers to a single layer of stones upon the ground, such as paved waterworn trails.
A5.3 COMPONENT SHAPEFILES

Components - basic data

Files: “Codlin_Comp_pnt”; “Codlin_Comp_line”; “Codlin_Comp_Poly”
Data type: Vector-Point; Line; Polygon
Coordinate system: NAD 1983 UTM Zone 5N
Date created (final version): 27/01/2014
Creator: Maria Codlin

Components - description

This layer contains spatial and attribute data for components recorded during the MARS 2012 GPS survey of archaeological remains of Manukā Ahupua'a, Hawai‘i Island. Components are the most basic level of archaeological remains recorded during the survey, and consist of single elements such as walls, or floor areas, which belong to features or buildings. Polygon layers were created during post-processing—the original data was modified to remove any obvious errors in component shape caused by GPS error, and to correct the shape of some components to the descriptions and measurements taken in field. Line and point data of building components have had some spatial editing to ensure they match up with building polygon layers, and other neighbouring components. During post-processing, some components were converted to features.

Components - fields:

Parent: Whether the component belongs to a “building” or “feature”.
Parent ID: The GIS_ID number of the parent building or feature
GIS_ID: Identification assigned to the component during post-processing. For components, this ID consists of the Parent ID e.g. “B01” or “F01” followed by a “-” and a letter (e.g. B01-A). This ID is the primary ID used in the thesis and GIS database.
Field_ID: Identification assigned to the component in the field. For components, this was created by the parent Field_ID followed by a letter, e.g. “F001A”. This is a secondary ID, provided to aid the use of field notes and primary GPS data which carried this ID. It is not used to describe any components within the thesis. Where the field ID is not followed by a letter, e.g. F001, this denotes that the component was originally recorded in the field as a feature or single component feature, and was converted to a component during post-processing.
Shape: Whether the component was recorded as a “polyline” (line), “point” or “polygon”.
Comments: Any comments about the component which were recorded in the GPS device in the field.
Preservation: Subjective assessment of the preservation of the archaeological remains. “Good” is mostly intact, small amount of damage, “fair” is some damage but still recognisable component and “poor” is badly damaged or destroyed, interpretations are difficult.
Type: Type of component present, e.g. wall, floor, platform, artefact
**P_comp (Primary component):** Extra description of component type as required, e.g. whether wall type is an interior or exterior wall component of a building.

**Midden or artefact density:** Density of artefact or midden component, or density of midden scatter associated with another component. For artefacts or ecofacts including uprights, coral and konane pieces, this category represents the specified artefact density. For all other components, including walls, floors or midden components, this category represents the density of midden deposits or scatters associated with the specified component. “None present” means midden was absent, “single (1 item)” means a single item was found, “present (under 10)” means less than ten pieces were found, “light (10-100)” means that less than a hundred were estimated and “heavy (+100)” means that greater than a hundred pieces were estimated.

**Length:** Maximum length of component, recorded in field where appropriate. As these represent measurements taken in the field, they will differ slightly from measurements taken using GIS using the measurement tool. (Metres)

**Width:** Maximum width of component recorded in field where appropriate. As these represent measurements taken in the field, they will differ slightly from measurements taken using GIS using the measurement tool. (Metres)

**Height:** Maximum height of most intact portion of component. Used to record the height of walls, platforms, cupboards and other components. (Metres)

**Material:** The type of stones used in architectural component. Either ‘a’ā (scoria), water rolled basalt, or pahoehoe.

**Stone size:** Describes the size of the most common stones, pebble (0-7cm), cobbles (7-25 cm) or boulders (+25cm).

**Method:** Describes the most common construction method of the component. “Stacked”, “core-filled” “incorporating] natural outcrop” and “piled or heaped” describe the construction of standing stone components such as walls. Floor areas may be “formally” or “informally paved” roughly describing the neatness of the paving. “Single course” refers to a single layer of stones upon the ground, such as paved waterworn trails.
A5.4 COMPLEX SHAPEFILES

Complex - basic data

Files: “Codlin_Complex”
Data type: Polygon
Coordinate system: NAD 1983 UTM Zone 5N
Date created (final version): 27/01/2014
Creator: Maria Codlin

Complex – description

This layer contains spatial data for complexes identified from the analysis of archaeological data from the MARS 2012 GPS survey of Manukā Ahupua’a, Hawai‘i Island. Complex is defined as three or more buildings or features which are spatially distinct from other buildings and features. Complexes were identified visually from the buildings and feature layers and created manually in the GIS to create a minimum bounding polygon encompassing the buildings and features of each complex. This layer was created as a tool for interpretive analysis as part of an MA thesis. “Complex_ID” corresponds to the name given to complexes throughout the thesis. This is different to the “Object_ID” which was created by the GIS program and is not used within the thesis.
A5.5 SURVEY AREA SHAPEFILES

Survey Area - basic data

Files: “Codlin_Survey_boundary”
Data type: Polygon
Coordinate system: NAD 1983 UTM Zone 5N
Date created (final version): 27/01/2014
Creator: Maria Codlin

Survey Area – description

This layer contains spatial data a single polygon marking the estimated boundary of the survey area from the MARS 2012 GPS survey of Manukā Ahupua‘a, Hawai‘i Island. The boundary records where archaeological survey was most intensive. Remains were recorded outside of this boundary when identified, but the area outside the boundary was not intensively searched for archaeological remains. It was created manually in the GIS based on the spatial extent of building and feature layers and natural features identified from satellite imagery. As such, it gives a general indication of survey extent, rather than an absolute survey boundary.