

## FUNCTIONAL ASSESSMENT IN ARCHAEOLOGICAL RESEARCH

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*A holistic framework to characterize the functions of archaeological sites involves the concurrent operation of multiple functional dimensions such as technology, economy, social organization, politics, ideology, aesthetics, and communication that occur in any cultural group and time period. The multi-dimensional perspective enables numerous potential anthropological research questions that would otherwise be overlooked. This approach eliminates the crippling problems of economic primacy and mono-functionalism, and it permits comparability of results. This approach also proposes that chronological change arises from the variable ways to fulfill a function in the context of the actual demands on that function. An example from Hawai'i Island illustrates the utility of the proposed paradigmatic approach to functional assessment.*

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**F**unctional assessment is a necessary interpretive analysis in any archaeological study, yet it is too often poorly executed. Archaeologists ask what a person or group of people most likely did with an artifact, architectural remnant, or other archaeological material. This interpretive methodological task stands apart from the objective description of morphological attributes and raw data identified through survey, excavation, and other techniques. Its inescapably subjective nature opens innumerable opportunities for false or at best incomplete conclusions, but at the same time its cultural subjectivity is exactly what potentially brings an anthropological perspective to archaeological investigation.

By and large, archaeologists working in most parts of the world follow an implicit orthodox functional typology that consists of: 1.) habitation (sometimes subdivided as temporary camps versus permanent residences); 2.) cultivation (perhaps subdivided in various forms); 3.) ritual ceremony (however variously defined); and occasional reference to: 4.) resource exploitation (such as a lithic material quarry); 5.) boundary (of a habitation, cultivation, ritual, or resource area); 6.) transportation (such as a trail or pathway); and 7.) defense (such as in a fortification). As long as the limits of this approach are recognized, it can provide a useful beginning point of reference. Unfortunately, it also enables misleading interpretation.

The two main constraints of the prevailing implicit functional typology are: 1.) economic primacy; and 2.) mono-functionalism. Due to the limits of observation in the durable material record, archaeologists are biased in favor of a restricted set of the technological and economic aspects of their subject matter. Technological function (in its strictest sense) is often dismissed as of minor significance toward a meaningful anthropological understanding of the intended cultural purpose of an

archaeological object, so economic function becomes more attractive. In the orthodox approach, failure to identify an obvious function often prompts a 'ritual' assessment. This approach also combines various functions while it ignores others. This mono-functional perspective is blind to the potential for multiple uses and meanings both simultaneously and at different times during the life history of a site.

In Hawai'i and a few other regions, some notable advance has already surpassed the implicit orthodox functional typology, but the specters of economic primacy and mono-functionalism prevail. Based on a comparison of archaeological and ethnographic data from different island groups in Polynesia, Green (1967, 1970, 1986, 1993) proposed a core group of functional types of sites that are common to all Polynesian societies. These 'building blocks' include both domestic and community features. The domestic features refer to the elements of a single household, such as a dwelling house, a cooking house, and possibly a canoe shed. The community features comprise elements used by groups of people beyond the scope of a single household, such as a religious shrine, a community guest house, and a public meeting place. This model was never intended to form an exhaustive compendium of functional types. Instead, the intention was to highlight shared traits in different island groups across Polynesia, interpreted to reflect an ancestral pattern. These *building blocks* therefore refer to elements of Ancestral Polynesian societies that are thought to have existed in West Polynesia perhaps as much as 3,000 years ago (Kirch and Green 1987, 2001), or alternatively they emerged there by the first millennium A.D. (Carson 2002).

In addition to the basic distinction between domestic and community scales of functional operation, more precise functional site types have been proposed rather haphazardly in Hawai'i. These include men's houses, women's houses, temporary shelters, pathways, burial monuments, refuge caves, basalt tool quarries, workshops, agricultural fields, and other site types (for overviews, see Green 1980:50-70; Soehren 1980; Cordy 1981; Clark 1987:193-244).

The above-mentioned functional site types convey important meaning for most Hawaiian people, but they do not necessarily arouse the same feelings in the hearts and minds of most archaeologists. The remains of a house site or abandoned house foundation may imply many things about the people who lived there, such as how many people comprised the household, what these people did for a living, who may have been the social or political leader of the family, and so forth. Simply to refer to this phenomenon as a *habitation site* ignores the diversity of cultural function and meaning associated with the place. Archaeologists are of course aware of this imbalance, although many researchers perform their functional evaluations as if the problem did not warrant a solution.

Perhaps the most serious challenge for functional assessment is to accommodate the coexistence of multiple functions. Let us imagine an artificial terrace feature. This terrace serves a technological function to provide level ground. The terrace may have an economic function as a planting surface for a staple food crop. The design of the terrace may relate to an aesthetic function. Its size and location may reflect functions of social organization, political control, ideological principles, and other cultural values. When observing this terrace in its archaeological context, an observer can most readily assess the technological function (often, as in this case, inferred from the morphology of the object) and perhaps the economic function (in this example, thought to be associated with cultivation). Hence, most archaeologists would aptly describe the feature as a cultivation terrace. Such an assessment may

be correct, but it is incomplete. A more holistic approach affords description of multiple dimensions of particular cultural meanings as noted above, thereby pointing to a multiplicity of potential research topics.

The ease with which archaeologists believe they can assign technological and economic function does not signify that these elements are the primary characteristics or that other functions are somehow of lesser concern. Rather, the inference of any function other than technology and possibly economy would require a logically sound explanatory theory and a satisfactory method to test it. Accordingly, Clark (1939) described an ascending scale of difficulty when interpreting cultural functions based on material archaeological remains. In this model, technology and economy are the easiest to assess, followed by social organization and religious beliefs. Other researchers have elaborated on this notion, such as in Hawkes' (1954) "ladder of inference." A more conservative approach posits that only technology can be identified consistently and accurately, assuming that a technological function can be inferred reliably from the physical form of an object, based on analogy with documented ethnographic use or on experimentation with similar objects. Hence, Sackett (1973, 1977, 1982, 1985, 1986, 1990) advocated the notion of *isochrestic* style to refer to variable ways to meet a technological function, versus *adjunct* style to refer to variation within any other non-technological function. Similarly, Dunnell (1989, 1999) formulated a model of "waste behavior" to refer to cultural activities extraneous to the material existence of a group, in essence encompassing all functions other than technology and economy.

A more liberal view of technology posits that "virtually every activity consists of interactions among people and one or more technologies" (Schiffer 2004:579). In this view, various social, political, ideological, and other functions are conceptualized as technologies or as involving technologies, in the sense that they entail artificial manipulation of the natural world. Walker (2001) has explored this concept in terms of ideological function. This approach often involves the study of the life history, behavioral chain, and/or performance characteristics of archaeological materials to infer how these entities functioned and to interpret possible chronological changes in their functions (Schiffer 1972, 1975, 2001; Schiffer and Skibo 1987, 1997; Schiffer et al. 2001; Skibo and Schiffer 2001). To accommodate such an approach in the present work, its use of the term *technology* may be replaced by *function* as defined below.

The remainder of this work proposes a set of functional elements occurring in every cultural group, followed by a discussion of research implications. The proposed set of cross-cultural functions applies in any part of the world and in any time period. Due to this universal appeal, the following presentation is in general terms, and illustrative examples of each point refer to a single case in Hawai'i Island.

## FUNCTIONAL ELEMENTS OF A CULTURAL SYSTEM

Referring to the general principles of functional structure in human societies, Radcliffe-Brown (1940:2) once articulated:

We can observe the acts of behaviour of...individuals, including, of course, their acts of speech, and the material products of past actions. We do not observe a 'culture,' since that word denotes, not any concrete reality, but an abstraction....But direct observation does reveal to us that...human beings are connected by a complex network of social relations. I use the term 'social structure' to denote this network of actually existing relations.

In this perspective, *social structure* is a group-level regularity or generalization, and the individual expressions of this universal organizing structure are of course variable. In other words, all human communities operate according to the same set of functional principles, although the precise manifestation of each function varies from one case to another. Anecdotally, one could say that the diverse cultural groups of the world do the same essential things but in different ways.

An effective model of social structure identifies universal components that are present in different forms in every cultural group. A satisfactory model specifies what kinds of social behaviors define the human race while recognizing that these behaviors are manifest in diverse ways. Such a model addresses the processes by which people actually generate behaviors and resulting archaeological remains. An appropriate model "should be constituted of a limited number of clearly abstracted parts, the magnitude or constellations of which can be varied, so that one model can be made to produce a number of different forms" (Barth 1966:v).

From the perspective of cultural relativism, all cultures share a set of "particularly organized ways of fulfilling requirements common to all people" (Hammond 1978:12). Taylor (1948) suggested that archaeologists should complete a checklist of cultural functions, such as in the detailed outline of cultural materials proposed by Murdock et al. (1938). Along these lines, Binford (1962, 1965) specified three essential cultural functions that apply to any artifact or other archaeological specimen: 1.) *technomic*, referring to the ability to cope with the physical environment; 2.) *sociotechnic*, pertaining to the social system; and 3.) *ideotechnic*, related to ideology. A similar approach is advocated here, slightly expanding the Binford (1962, 1965) model and considerably condensing the Murdock et al. (1938) model.

At least seven essential functions of a cultural system are: 1.) technology; 2.) economy; 3.) social organization; 4.) politics; 5.) ideology; 6.) aesthetics; and 7.) communication. I offer my own operational definitions for each of these terms, but other definitions are possible. Although unintentional, the seven functional elements closely resemble Hammond's (1978) formulation. This scheme appears reasonable to account for the diverse operations of human culture without over-complicating the model with excessive particularistic categories.

In the present model, style is free to vary within each function. For instance, a cutting implement may be long or short, sharp or blunt, straight or serrated, hard or soft, strong or brittle, and so forth. Some forms are more effective than others. The same principle may be applied to any function and not solely to technology. Hence, researchers can speak of technological style, aesthetic style, etc.

In addition to escaping the traps of economic primacy and mono-functionalism, the proposed generalized approach satisfies at least two other goals. First, it presents functions of archaeological materials in a way that can be understood by the general populace and by indigenous groups who are increasingly involved in academia, cultural resource management, and historic preservation. Second, this approach is ripe for cross-cultural comparison that has been somewhat lacking in archaeological research (Peregrine 2001a).

### CASE STUDY EXAMPLE

The seven functional categories are reviewed below, and each is described first in general terms and then with specific reference to the Hawaiian archaeological record. An illustrative case study refers to a single terrace (Feature 5 of State Site -24055), recorded as one of 94 archaeological features in 4.76 ha of Pu'ukoholā Heiau National Historic Park in Hawai'i Island (Figure 1). Full documentation of this feature and related work is reported elsewhere (Carson 2005a, 2005b).

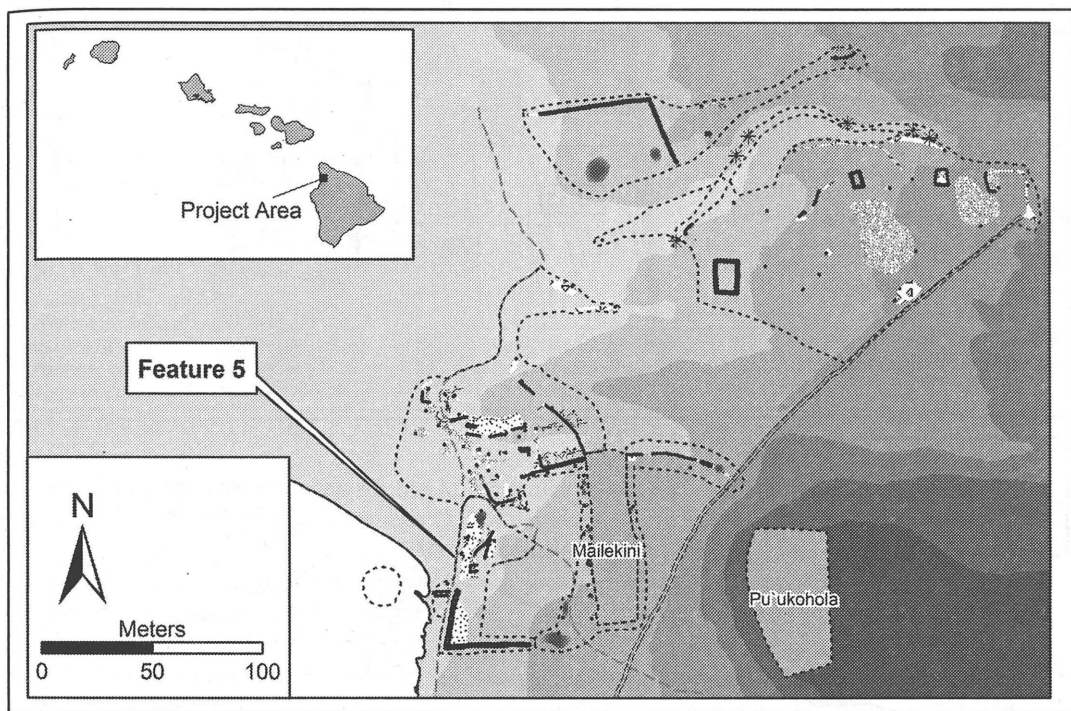


Figure 1: Case study project location at Pu'ukoholā Heiau National Historical Park, with inset showing position in the Hawaiian Islands.

Feature 5 is an elongate artificial terrace, built close to the shoreline on a roughly north-south axis, against the base of a low natural basalt slope edge (Figure 2). Excavations revealed multiple layers of occupation and stone-filled construction (Figure 3), associated with volcanic glass flakes,

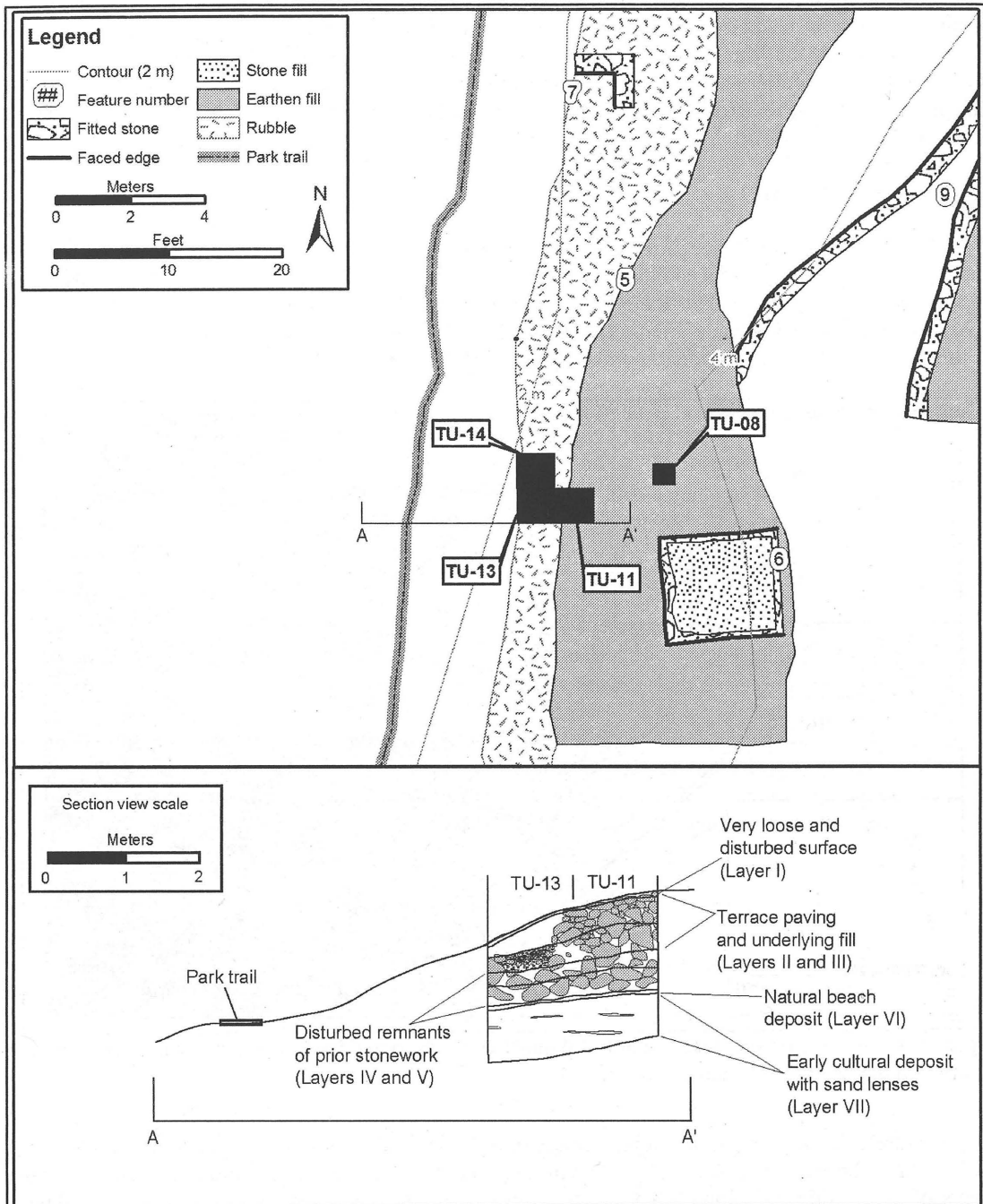


Figure 2: Map of Feature 5 of State Site -24055.

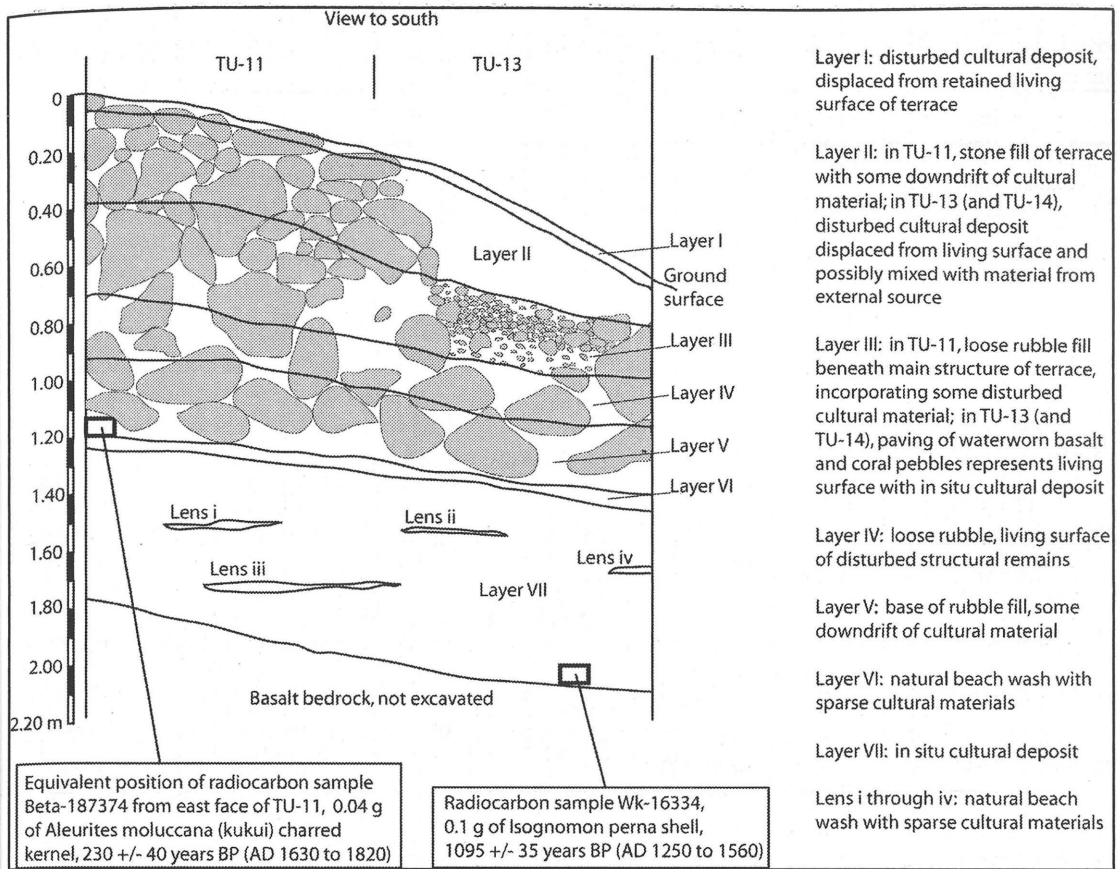


Figure 3: Profile of excavation at Feature 5 of State Site -24055, view to south.

food remains, and other materials (Table 1). The most recent use of the terrace was associated with the residential complex of the Kamehameha Dynasty and attending entourage in the 1790s through 1820s, although initial use of the area occurred some centuries earlier (Table 2). Feature 5 could be codified as a habitation terrace, but this depiction could be greatly improved not only for precision but also for development of significant research topics.

The Feature 5 case study was selected because its form and content are similar to many others in the Hawaiian archaeological landscape, yet clearly its functional associations changed over time. Other potential case studies could offer richer cultural assemblages and more pronounced chronological change, but a more useful case study typifies what is actually encountered in most investigations.

The illustrative example shows how the different proposed cultural functions can be reflected in an archaeological object or entity. The case study demonstrates the richness of the research potential made possible by this holistic approach to functional assessment. This example proposes possible

Table 1: Summary of archaeological materials recovered from TU-11, TU-13, and TU-14 at Feature 5 of State Site -24055.

Material	Layer I	Layer II	Layer III	Layer IV	Layer V	Layer VI	Layer VII
Bottle glass (historic)	29 (31.8 g)	5 (5.5 g)	—	—	—	—	—
Ceramic fragment (historic)	1 (6.6 g)	—	—	—	—	—	—
Metal (historic)	—	1 (19.9 g)	—	—	—	—	—
Volcanic glass flake	12 (13.31 g)	23 (10.58 g)	15 (4.39 g)	6 (3.91 g)	17 (10.01 g)	—	49 (23.88 g)
Calcite flake	2 (1.93 g)	—	6 (8.3 g)	2 (1.85 g)	4 (4.23 g)	—	16 (15.86 g)
Basalt flake	—	—	8 (41.87 g)	1 (7.2 g)	—	—	—
Coral abrader	—	—	2 (11.2 g)	—	—	—	—
Sea urchin spine abrader	2 (2.9 g)	3 (4.5 g)	3 (4.14 g)	—	2 (0.8 g)	—	—
Shell bead	—	—	—	—	1 (0.14 g)	—	—
Worked mammal bone	—	3 (0.77 g)	1 (0.36 g)	1 (0.65 g)	—	—	—
Worked dog tooth	—	—	2 (0.6 g)	12 (4.61 g)	1 (0.88 g)	—	1 (0.08 g)
Shell fishhook	—	—	—	—	1 (0.45 g)	—	2 (0.1 g)
Marine shellfish remains	248.8 g	226.4 g	1705.9 g	758 g	180.8 g	7.3 g	169.9 g
Fish bone	2 (0.5 g)	29 (3.76 g)	155 (53.61 g)	455 (40.69 g)	87 (5.87 g)	—	13 (1.88 g)
Turtle bone	—	—	4 (3.97 g)	—	—	—	—
Bird bone	—	3 (0.6 g)	178 (64.45 g)	226 (85.53 g)	5 (0.77 g)	1 (0.8 g)	3 (0.6 g)
Pig or dog bone	—	57 (50.87 g)	62 (10.39 g)	171 (94.64 g)	6 (3.1 g)	—	7 (3.68 g)
Rat bone	—	—	—	7 (0.12 g)	—	—	—
Misc. unidentified bone	—	66 (9.9 g)	542 (202.72 g)	775 (243.76 g)	71 (10.15 g)	—	19 (2.25 g)

Table 2: Radiocarbon dating results associated with Feature 5 of State Site -24055.

Sample No.	Layer	Material	Conventional Radiocarbon Age	Calibration Curve	Other Correction	2 Sigma Date Range Calibrated by OxCal (Bronk Ramsey 2001)
Beta-187374	V	Charred kernel of <i>Aleurites moluccana</i> (kukui or candlenut)	230 ± 40 years B.P.	Atmospheric (Stuiver et al. 1998)	None	A.D. 1520 to 1580 (7.3%); A.D. 1630 to 1690 (38.4%); A.D. 1720 to 1820 (40.3%); A.D. 1920 to 1950 (9.4%)
Wk-016334	VII	<i>Isognomon perna</i> shell	1095 ± 35 years B.P.	Marine (Stuiver and Braziunas 1993)	Marine reservoir correction (ΔR) 110 ± 80 years B.P. (Dye 1994:56)	A.D. 1250 to 1560 (95.4%)

research questions, but actually pursuing and testing these questions is beyond the scope of the current work. Each potential research question would require its own theory and satisfactory method to test that theory, deserving its own treatment in a separate academic exercise or data recovery project.

### **Technology**

The function of technology is to modify the natural environment, involving the creation or manipulation of physical properties. Although some individuals may have more artistic or technical skill than others, all human beings possess the same inherent ability to create and use technology in a general sense.

Technological function is often inferred solely from the physical form of an object or collection of artifacts. In the Hawaiian archaeological record, a small pit lined with fire-altered stones indicates the generation of heat in an enclosed space, which is typical of a traditional earth oven. Pieces of stone tools may have been used to chop, slice, or pulverize various materials. A stone-filled terrace provides a raised, level, well-drained surface suitable for a variety of purposes.

The case study feature is an artificial terrace, constructed of a rocky fill material covered by a level paving of well fit, rounded cobbles. The stonework retains the down-slope edge of the structure. The internal fill material provides the primary bulk of the structure, and the upper paving creates a finished surface capable of supporting human activities. The perimeter edge holds together the constituent material. The retained surface can support a variety of potential activities.

Excavation revealed that the extant form of the terrace represents only the most recent artificial rendition of this space. A buried cultural deposit had been disturbed and incorporated into the construction fill, and at least two major construction episodes are evident. Thus, the technological properties of this activity area changed significantly around the late 18<sup>th</sup> century.

Volcanic glass flakes indicate that cutting or slicing activities took place here before and after the construction of the terrace. In the later period, bottle glass signifies exposure to a new technological repertoire. A few fishhooks and some manufacturing debris couple with marine food remains to emphasize the ability of local inhabitants to acquire various marine resources, augmented later by increased importance of domesticated animal foods such as pig and dog.

### **Economy**

Economy may be described as the production, distribution, and consumption of goods and services that people require to meet their material needs. Based on Polanyi's (1957) notion of "economy as instituted process," Earle (1997a:224) comments that "institutions have organisational properties that limit what is possible and determine to some measure how and when different institutional forms will arise." In this perspective, at least some aspects of the economic system of any cultural group operate according to a structure that may be detected, described, and possibly predicted.

In Hawaiian archaeology, economic production is partially reconstructed from a variety of studies that are too numerous to specify. Studies of discarded animal bones and shellfish items indicate some of the foods that people ate. Manufacturing debris at lithic quarries and workshops reflects the type and

scale of activities involved in the Hawaiian economy. Regional patterns of land use can be associated with food productivity. Patterns of distribution and consumption of goods may be extracted or hypothesized from ethnographic models, but archaeological evidence shows only the movement and discard of durable materials with distinctive forms or compositions, such as with basalt and volcanic glass. Deposits of discarded food remains potentially reveal economic differences within or between households or communities.

The volcanic glass flakes at Feature 5 came from an unknown source or perhaps more than one source. Access to these materials may have been controlled somehow, but the ability to work with flaking technology was probably not restricted. An overall decrease in the amount of volcanic glass could represent either a change in production or distribution or else a change in the demand for this economic resource.

The faunal assemblage at Feature 5 reveals a chronological pattern of increasing abundance and diversity of animal foods. The early deposit contains a moderate amount of marine foods and little else, as compared to larger amounts of marine foods found with substantial pig, dog, and bird bones in the later deposit. This pattern suggests an increasing demand over time for food consumption at this location.

### **Social Organization**

Social organization is the ordering of relationships of individuals in a group. Inherent organization in human societies includes structuring by age and gender, as these variables are intrinsic to the human experience. Kinship structure (blood-related and otherwise) reveals a large portion of a group's social organization. Social organization may be used in a variety of ways, such as to facilitate the assignment of economic tasks or political roles. The archaeological record in itself does not reveal social organization, but researchers may propose and test hypothetical models.

Observations of different artifactual and architectural forms and their spatial arrangement certainly may relate to social organization. What remains to be proven, though, is the kind of social organization that existed. Modern and inherited knowledge of traditional Hawaiian society suggests a social hierarchy both within and between families in the early post-Contact era, and the precise evolution of this hierarchical structure may or may not be evident in the archaeological record.

In the present case study, the Feature 5 terrace did not exist in isolation. Indeed, other nearby surface architectural remnants date to the same time period in the 1790s through 1820s, and together the ensemble represents an abandoned settlement complex. The spatial organization of surface features reflects to some degree the past social relationships and roles within the community that lived here during the first decades of the Kamehameha Dynasty residence. A similar statement can be proposed for the remnants of subsurface cultural deposits pre-dating the middle 18<sup>th</sup> century.

### **Politics**

The function of politics is to make decisions on matters that affect the livelihood of the group's members. Political organization maintains internal order and regulates external relations. Perhaps more

overtly than for any other functional element of culture, political organization becomes increasingly structured with rules as the population grows and diversifies.

To be successful, politics must be consistent with a group's changing social organization, ideology, and other factors. This situation presents a paradox, wherein structure and stability are desirable to maintain order, yet flexibility and adaptability are necessary to accommodate inevitable changes. Due to this paradoxical tension, many political changes are revolutionary or radical.

In the case study, Feature 5 was associated with a royal court of the Kamehameha Dynasty in the 1790s through 1820s, during the formative years of the historically-known Hawaiian Kingdom. The terrace may have supported the house of a royal family member or of someone in the attending entourage. Prior to this time, the political allegiance and organization of the local residents or temporary campers is unclear.

### **Ideology**

*Ideology* refers to a group's belief system or explanatory model about why the world exists the way it does and how people ought to behave. Ideology tends to be implicit and misunderstood, especially by outside observers. Ideology can also vary considerably from one individual to another and even within an individual's lifetime.

Archaeological research in the realm of ideology typically focuses on religious practices associated with temples or burial sites. These issues can be quite sensitive or controversial, especially when their ideologically charged nature is put to political ends. Also, they do not represent the extent of a group's ideology. Walker (2001) has provided a refreshingly useful examination of ideological function as represented in archaeological sites, questioning if many haphazardly typed "ritual" sites really did have ideological associations after all. In other words, nearly all sites and artifacts have some sort of ideological significance in addition to their more obvious technological and economic functions.

The people who lived, worked, or camped at Feature 5 at different times undoubtedly followed certain ideological principles to explain the mechanics, philosophy, and cultural values of their activities. A much different ideology would apply for a group of self-sufficient fisherfolk than for laborers supporting the royal family or for those supported along with the royal family. An ideological shift likely occurred in the late 18<sup>th</sup> century or earlier, presumably related to political ambitions of rival potential rulers around or slightly before the time of Kamehameha's military campaigning for supremacy over the islands. The establishment and support of the Kamehameha Dynasty relied to some extent on an ideological system that justified its power and authority (Earle 1997b).

### **Aesthetics**

The aesthetic experience embodies notions of beauty in expressions sensed by sight, smell, hearing, taste, and touch. Archaeological study is limited to a miniscule portion of aesthetics. Schiffer (2004:579) notes that "sensory performance characteristics...permit certain objects to interact appropriately in certain activities, such as the American flag at a football game (visual), a roast turkey at Thanksgiving (visual, olfactory, gustatory) and the first clarinet at a concert (acoustic)." At Feature

5, some aesthetic qualities may have included the sound of the surf, sensation of the wind, or scent of flowers.

Aesthetics may be described in terms of design principles and motifs. Design principles set the general programmatic guides within which individual motifs are expressed as singular or repeated instances. For Feature 5, visually detectable design principles include a preference for symmetry and for an elevated living surface. Design motifs include a roughly rectangular plan view, vertical edges, and an outward appearance of well-fit, rounded basalt cobbles. Prior constructions at this location probably exhibited different aesthetics that are presently unknown.

### **Communication**

The function of communication is to allow individuals to share information and ideas. Communication is fundamental to the learning process. Language is the most common medium to communicate, and it not surprisingly forms an important part of the identity of any group.

Today, communication is both rapid and widespread, thanks to radio, television, and internet. Also, written documents provide non-ambiguity of information content and enduring records for future generations. Furthermore, the communication of knowledge has become institutionalized in school systems. Formerly in Hawai'i, communication was by oral accounts and other artistic expressions, and the scope of information exchange was on a more personal level than commonly experienced today.

Communication has not been a major topic of study in Hawaiian archaeology, yet voyaging canoes and overland trail systems certainly influenced the scale and scope of communication between settlement areas. The transportation of basalt tools, volcanic glass, bird feathers, and other materials may imply communication between different places within the archipelago.

In a much different view of communication, Wobst (1977) hypothesized that the visibility of an attribute determines its likelihood to be used to communicate a message. In addition to visibility, other properties (such as scent or sound) may be considered, although they most likely evade the material archaeological record. Yet another theoretical model proposes that stylistic variation can communicate either group membership or individuality (Wiessner 1983, 1984, 1985). These and other models can be tested in ethnographic contexts, but their role in archaeological work is confined almost entirely to the realm of hypothetical explanation that rarely ends up tested by empirical evidence.

Regarding the case study at Feature 5, the mere existence of a distinct terrace communicates some aspects of the identity of the people associated with it. The location conveys an association with the Kamehameha Dynasty beginning in the late 18<sup>th</sup> century, but this association was not possible earlier.

In more practical terms, the setting of Feature 5 along the coast of a protected leeward bay is ideal for the ocean-going travel required to maintain contact with communities around the island and elsewhere in the archipelago. After European contact in the late 18<sup>th</sup> century, such a setting gained importance for receiving and trading with foreign visitors.

## IMPLICATIONS FOR GROUP COMPOSITION AND FORMATION

As presented above, the functions of technology, economy, social organization, politics, ideology, aesthetics, and communication are not necessarily restricted to human groups. However, the diversity of possible expressions is arguably greatest for humankind. On the other hand, this apparent diversity may simply reflect the bias of human beings who are incapable of understanding the intricacies and nuances of other species.

In the sense that all cultures possess the same number and capacity of functional components, the notion of cultural complexity may at first seem either misdirected or else incomprehensible. In fact, cultural complexity is possible only in the degree of structuring within a function. Complexity in one functional element implies similar complication in other elements, but this relationship is not necessarily causal or predictive. When population growth or some other factor increases a group's internal diversity, more rules or structures may become necessary to accommodate the existence of the varied attributes.

Each cultural group has its own threshold values or tolerance limits within which variation can occur without requiring either the creation of a new group or else the creation of new rules or institutions to accommodate diverse sub-groups. In the absence of a way to reconstruct these tolerance limits, archaeologists can evaluate 'groups' in different functional contexts. In an abstract analytical sense, artifacts or other archaeological materials may be associated with one group in terms of technology but with a different group in terms of economy or perhaps some other function. Through the comparative study of contemporaneous household units, the analytically defined technological, economic, and other 'groups' may be discerned as consisting of the same or different individuals.

## ROLE OF THEORY

A recurring theme in archaeological functional assessment is a need for explanatory theory to relate the observed archaeological materials to the cultural functions that are hypothesized. An interpretive theory often takes the form of a hypothetical explanatory model that may or may not be testable. A truly scientific approach, however, has the ability to test and evaluate the accuracy of its conclusions. In this regard, Hunt, Lipo, and Sterling (2001:1) specify two challenges: "First, archaeologists must develop a systematic body of theory to bring explanatory meaning to the archaeological record and the history it reflects. Second, we must be able to generate data that are consistent with that body of theory and its explanatory structure."

Modern archaeology experiences no shortage of explanatory theory, and each theory is appropriate for a particular research question or set of data. A Marxist dialectic approach may be suitable for studies of politics and sometimes of ideology or social organization, assuming that two oppositional forces are indeed present. Optimization behavior theory and cultural materialism focus on issues of technology and economy. Symbolic or iconographic approaches are sometimes deemed effective for studies of aesthetics or communication. Evolutionary theory in its many guises may be applied to the cultural system itself. Significant problems are evident in applying a theoretical explanatory framework to an inappropriate data set, functional element, or scale in a cultural system.

Unfortunately, many intriguing theories about cultural functions are either untested or else poorly tested in archaeological research. This shortcoming is due mostly to the nature of archaeological data that do not reveal obvious functions other than technology and perhaps economy. Even if a logically sound theory and testable method are devised, the raw data may not exist to conduct a convincing test. In this sense, the case study from Hawai'i illustrates the limits of archaeological interpretation and a need for more focused development of testable theoretical models.

The proposed functional perspective needs to be specified as an interpretive methodological framework, and it does not in itself constitute a theory. More precisely, it offers a generalized programmatic vehicle to link technical data with explanatory theory. The exact working or methodological application of that link, however, depends on the actual data and theory in a given situation. For this reason, the proposed framework is intentionally generalized, so that it may be applied in virtually any archaeological investigation.

### ASSESSMENT OF THE MODEL

The success or failure of the present model depends on its ability to solve problems of economic primacy and mono-functionalism, in a manner more useful than the implicit orthodox approach. The case study has shown a variety of simultaneous functions at different time periods, and this holistic understanding in itself is a success in terms of accurate description and also identification of potential research questions. In contrast, the implicit orthodox functional assessment would conclude: 1.) a recurrent short-term fishing camp in the period of earliest site use, associated with a radiocarbon date of cal. A.D. 1260 to 1560; 2.) a long-term habitation area with a stonework foundation, associated with a radiocarbon date of c. A.D. 1630 to 1820; and 3.) a long-term habitation area associated with a stonework foundation during the Kamehameha dynasty royal residence, in the A.D. 1790s through 1820s. Both approaches have their merits, depending on the goal of the investigation.

The multi-functional perspective clearly overcomes the problems of economic primacy and mono-functionalism as demonstrated in the case study, yet other approaches remain possible and indeed more prevalent. Quite simply, the model needs to be tested by more researchers and in more settings before it can be widely accepted. Indeed, more case studies are encouraged. Based on more diverse testing, the model may need to be refined.

The cross-cultural and cross-temporal appeal of the multi-functional approach satisfies the growing need for 1.) indigenous understanding of archaeological work and 2.) comparative analysis in archaeology. In essence, this approach takes the cultural sensitivities and relativism of comparative ethnology and gives them a useful role in archaeological inquiry. In this sense, the advocated approach may be termed *comparative paleoethnology*. However, Peregrine (2004) has proposed "archaeoethnology" to distinguish such an approach from both comparative ethnology and comparative archaeology (see also Peregrine 2001a, 2001b).

Two expected criticisms of the foregoing functional approach deserve at least some discussion. Critics may claim that a functional perspective operates synchronically within a static time-frame and therefore is inappropriate for the chronological dimension of archaeological study, but the

chronological relevance of the case study refutes this allegation. Another potential criticism is that a functional systems approach encounters serious problems when attempting to identify the source or cause of change within the interrelated elements of a system. As a preemptive move against these anticipated critiques, the following postulate may be considered: chronological change or evolution within a cultural system results from the variable ways a group fulfills a function in the context of the actual demands on this function. Increase of population size potentially but not necessarily brings a greater variability of ways to achieve the assorted functions of a group. Numerous social, cognitive, and environmental factors can potentially create greater or lesser demand for any cultural function.

Most archaeologists already employ some kind of strategy toward functional assessment that can work with the framework provided here. Researchers in Hawai'i and elsewhere will undoubtedly continue to assign standard categories such as habitation, cultivation, and ritual. These and other functional types are useful as rudimentary or preliminary assessments, but their usefulness depends on the extent that researchers define what they mean. Furthermore, researchers must recognize that more detailed functional assessments are not only possible but also desirable to realize research potential, preferably in reference to a framework such as presented here.

One productive strategy for functional assessment is to enact a two-step procedure. The first step involves the orthodox functional categorization of economic or other functions that are most easily concluded from superficial observation. Rudimentary assessments of habitation, cultivation, ritual, workshop, etc. can in many cases be proposed on the basis of routine surface inspection and limited subsurface testing typical of an inventory survey or other preliminary evaluation. Exploration of other functional realms requires a research strategy appropriate for both the type of function and the existing data. Detailed functional assessment is therefore in the scope of data recovery or other similar research.

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