Archaeology and Prehistory in Kahikinui, Maui, Hawaiian Islands
by Patrick V. Kirch

The Kahikinui Archaeological Project is a multi-phase, long-term research endeavor initiated in 1994, under the overall direction of Prof. Patrick V. Kirch. The project is geographically situated in the ancient moku (district) of Kahikinui, on the southern, leeward side of Maui, Hawaiian Islands. The Kahikinui Archaeological Project seeks to explore and define the indigenous Hawaiian structures of economic, social, and political organization which had developed during the late Expansion and Proto-Historic Periods of pre-contact Hawaiian history (Kirch 1985), ca. A.D. 1200-1795. This research--critical to understanding the conditions that led to the local transformation of Hawaiian society--is of broad-ranging anthropological significance. Specifically, an investigation of proto-historic Hawaiian society helps to enhance our knowledge of the conditions and processes under which social formations cross a fundamental 'threshold' of organizational complexity.

The Project Area
Our main study site lies within the ancient district (moku) of Kahikinui on SE Maui. Two adjacent ahupua'a, Kipapa and Nakaohu, comprise an area of 8 km2 in central Kahikinui and were the focus of an intensive settlement pattern survey in 1966, by Peter Chapman (affiliated with the Bishop Museum). Building on this 1966 survey, from 1994-99 we accomplished a nearly 100% surface survey of this area, from the coast up to 1200 m above sea level where site density becomes essentially zero. This has resulted in a database including some 1,789 archaeological features. We are developing a Geographic Information System (GIS) for this Kipapa-Nakaohu area, which incorporates the digitized archaeological settlement pattern map, digital elevation model, and digitized low-level color infrared photographic images of the area. Based on our 1996-99 ground-truthing, the latter images have been analyzed for detailed vegetation and substrate patterns, allowing a fine-grained interpretation of settlement distribution in relation to major environmental variables.

Recently, we have expanded survey and excavation into the ahupua'a of Mahamenui and Manawainui, where field research directed by doctoral candidate Lisa Holm has resulted in the discovery and recording an of additional 700 archaeological sites. Survey work has also been carried out in the coastal sections of Lua'a'ilua and Alena ahupua'a.

Major Research Questions
Summarizing the results of his two-decade long research project on Hawaiian society and economy at the period of initial European contact, Marshall Sahlins writes: "Everything looks as if Hawaiian society had been through a history in which the concepts of lineage--of a classic Polynesian sort, organizing the relations of persons and tenure of land by seniority of descent--had latterly been eroded by the development of chiefship. Intruding on the land and people from outside, like a foreign element, the chiefship usurps the collective rights of land control and in the process reduces the lineage order in scale, function, and coherence. Of course, no one knows when, how, or if such a thing ever happened" (Sahlins 1992, Anahulu, Vol. 1, p. 192). What Sahlins refers to is indeed the fundamental distinction between Hawai'i, and most other Polynesian societies in which land and resources were controlled by structures of kinship. In Hawai'i a structure of kingship had emerged by the Proto-Historic Period (A.D. 1650-1795), although some would argue that this was not fully developed until the early post-contact period. Working only from the perspective of comparative ethnography, Sahlins and other ethnologists inevitably confront the problem of knowing "when, how, or if" such a change from kinship to kingship as the organizing principle of society occurred.

The issue cannot be resolved by comparative research with Polynesian ethnographic sources--no matter how refined or sophisticated--because the problem is fundamentally historical, and requires diachronic data. Archaeologists in Hawai'i have contributed significantly to a historical understanding of sociopolitical change in late prehistory. For example, we have substantial information on the demographic context of change, on the intensification of agricultural production, and on labor investments in temple architecture used to symbolically legitimate chiefship. However, archaeologists have yet to combine these varied insights into a convincing model of the emergence of the uniquely Hawaiian sociopolitical system out of an ancestral Polynesian structure. We argue that such an undertaking will require attention to the following specific research issues:
1. Regional variability within the Hawaiian archipelago. At initial European contact (A.D. 1778-79), the Hawaiian archipelago was divided among four great polities, centered on the islands of Kaua'i, O'ahu, Maui, and Hawai'i. In 1795, the Hawai'i paramount chief Kamehameha defeated Maui paramount Kalanikupule, bringing all of the archipelago from Hawai'i to O'ahu under his control. Kaua'i was soon incorporated, so that before Kamehameha's death in 1819, the entire Kingdom was under the effective control of the Hawai'i Island ruling elite. As a result, a Hawai'i-centric bias in the ethnohistoric sources has masked a great deal of variability present among the four great Hawaiian polities prior to their subjugation by Kamehameha in 1795. The more astute ethnographers allude to such variation, but such variability cannot be reconstructed from the ethnohistoric record alone. Rather, the archaeological record of late Expansion and Proto-Historic Periods must reveal the range of variations in production, political organization, ritual systems, household organization, and systems of exchange, which are of the greatest significance to understanding archipelago-wide processes of sociopolitical change. Moreover, it is vital that archaeologists not simply impose the Hawai'i-centric ethnohistoric models onto their data (as has been typical). Variability in the archaeological record must be given primacy.

2. Households: structure and nature of variability. A major advance in the archaeological study of complex societies in recent years has been a focus on the household and on variability in domestic space, artifacts, and depositional contexts. In Polynesia, there is increased interest in the household as a critical unit of investigation, even though monumental architecture continues to dominate most settlement pattern analyses. Analysis of household-level variability plays a key role in our project, stemming from our theoretical position that the early stages of social transformation from kinship- to kingship-based structures will be best evidenced through increased differentiation between households.

3. Internal structure of the ahupua'a. The organizational structure whereby individual households were merged into a public economy--thereby permitting an intensification of rank and chieftainship--was the well-known ahupua'a system. In theory self-sufficient territories that cross-cut the ecological grain of an island (thereby incorporating key resource zones), ahupua'a were chiefly estates often redistributed by the ruling paramount to loyal supporters following the successful conclusion of a war of conquest. Ahupua'a, managed for the chiefs by a specialist class of managers (konohiki), were fundamental to the organizational structure of Proto-Historic Hawaiian society. Moreover, this system replaced the older (and widespread) Polynesian pattern of kin-groups with associated "houses" and ancestral estates. Hommon, Cordy, and others have suggested that the ahupua'a system developed during the Expansion Period (A.D. 1100-1650).

Understanding the organizational structure of the ahupua'a system is key to the larger research questions surrounding Hawaiian sociopolitical change. Yet the ahupua'a as such has rarely been the focus of archeological investigation, because such large units are conceived to be beyond the scope or resources of individual projects (or do not correspond with the development-imposed boundaries of most CRM projects, where resources are frequently more generous). A few projects have been conceived at the ahupua'a level, but in reality involved only partial survey coverage.

The internal organization of ahupua'a units, including the variation in these organizational structures, is a problem that must be tackled empirically through intensive archaeological surveys of several entire ahupua'a units, and requiring attention to: (1) the distribution of residential and production features in relation to environment and resource zones; (2) the distribution and siting of elite versus commoner households; and (3) the imposition of ritually-marked political control through the hierarchy of temple sites (heiau). The temple sites, functionally differentiated and the major settings for ritualized extraction of tribute, are of particular importance in analyzing ahupua'a organizational structure. The Kahikinui Archaeological Project involves four study ahupua'a, each with undisturbed archaeological landscapes.

4. Inter-ahupua'a and inter-island exchange. While ahupua'a constituted the structural units through which the political economy was implemented, they were not independent, despite such portrayal in earlier anthropological discussions of Hawai'i. A reconsideration of redistribution within Hawaiian society and within chiefdoms in general has led to a rethinking of the notion of chiefs as primitive "homeostats" regulating the flow and distribution of economic resources. In complex chiefdoms the tributary flow upwards through the social hierarchy is far greater than any reverse flow or "redistribution." Moreover, certain kinds of critical resources--such as fine-grained
basalt, volcanic glass, large trees suitable for canoe building, fiber and cordage plants (Touchardia; Freycinetia), and others--were unequally distributed over islands, and mechanisms of inter-ahupua'a (and possibly even inter-polity) exchange and distribution were required to move resources from localized sources to various dispersed nodes. Despite recent claims to the contrary, there is mounting evidence that the production and distribution of such a fundamental utilitarian tool as the basalt adz was under chiefly control during the later Expansion and Proto-Historic Periods. In our project we have applied X-Ray fluorescence analysis to lithic assemblages from excavated household sites in Kahikinui, and found that while most specimens are of local origin, a significant component derived from extra-local sources, including some from other islands. Moreover, there is a strong correlation between these non-local sources and sites identified on architectural and faunal criteria as elite residences.

5. The political economy of 'marginal' lands. In anthropological writings on Hawai'i, environmental and resource variability among the islands has too often been downplayed, obscuring a fundamental political dynamism between polities centered on the geologically older, resource-diversified western islands (Kaua'i, O'ahu, Moloka'i, and West Maui) and the those centered on the younger, less resource diverse eastern islands (East Maui and Hawai'i). The argument has been developed at length elsewhere (Kirch 1994, The Wet and the Dry, p. 251-68) and can only be briefly synthesized here: whereas the western island polities were able to follow a pathway of "landesque capital intensification" focused on taro irrigation and fishpond aquaculture, the eastern island polities (those of East Maui and Hawai'i) were constrained by ecological conditions to a pathway of labor-intensive agricultural intensification with increasingly shorter-fallow, permanent field dryland cultivation. "The dryland agricultural regimes of these eastern islands--as they became increasingly intensified through shorter-fallow and labor-intensive methods in late prehistory--put increasing pressure on the political elite for territorial expansion" (Kirch 1994:267). In this model, it is no coincidence that the Hawai'i Island polity developed the Ku-Lono cult cycle to its most elaborate manifestation.

The trajectory of agricultural intensification within the Hawai'i Island polity has been fairly well studied archaeologically. In contrast, the situation on Maui Island--the other great polity which competed with the Hawai'i line for archipelago-wide hegemony--is far less understood. There has been little archaeological investigation of the production systems that underpinned the political economy of Maui and its dominions. Our Kahikinui study region is of particular interest for despite archaeological evidence of a dense settlement landscape in the upland agricultural zone, there are no demarcated field systems as are found on Hawai'i Island.

6. Human dimensions of proto-historic environmental transformations. This research issue follows directly from #5 above: as 'marginal' regions were increasingly brought under highly intensive forms of agricultural production in late prehistory, the impacts of forest clearance and exploitation of biotic resources inevitably led to significant environmental changes. The drier, leeward regions which were the subject of intensive exploitation by the expanding Maui and Hawai'i chiefly polities after ca. A.D. 1400 were especially vulnerable to environmental degradation. For our research objectives, it is essential to understand the reciprocal effects that human-induced environmental change may have had on the political economy. For example, in the early phases of agricultural expansion into leeward regions (in the early Expansion Period, ca. A.D. 1200-1400) the dryland forests would have offered diverse non-agricultural resources such as native birds (for food as well as the highly valued feathers), medicinal plants, fibers, hardwoods, and so on. As these forests were opened up and ultimately eliminated in the lower elevations (below ca. 1200 m elevation in SE Maui) such resources must have become scarce and the subject of increased competition. In some areas, wood itself may well have become a scarce commodity, for the leeward forests are noted for their slow-growing (low biomass) species. Development of this research issue requires inter-disciplinary study of biotic remains from archaeological contexts (e.g., wood charcoal and other carbonized plant remains, avifaunal remains) as well as geomorphological, palynological, malacological and other lines of evidence.

7. Linkages between population growth and density, economic intensification, and sociopolitical change. The larger island groups of Polynesia all witnessed the growth of large, and frequently dense populations during the later phases of their prehistoric sequences. However, the putative causal role played by population growth, both in the intensification of agricultural production systems and in sociopolitical change, has been a matter of controversy. For the Hawaiian Islands, various attempts have been made to estimate actual or proxy rates of population increase in
prehistory; these concur in at least suggesting that the overall shape of the growth curve was sigmoidal, corresponding to a logistic pattern of rapid (high fertility, low mortality) early increase, followed by lowered rates (whether by decreased fertility, higher mortality, or both) later prehistory. These studies also suggest that the Expansion Period (A.D. 1100-1650) was the phase during which the indigenous Hawaiian population doubled most often. Since this period also saw such significant changes as the construction of irrigated and dryland agricultural systems, the imposition of the ahupua'a system of territorial units, and a major phase of temple construction, some causal linkage between increased population and these economic and social changes seems likely.

These questions have been thrown into high relief by Stannard's (1989, Before the Horror) contention that the pre-contact population of the archipelago, as estimated by the accounts of early European voyagers and missionary census reports, has been vastly underestimated. Rather than a maximal population of ca. 250,000, Stannard suggests that a figure of as many as 800,000 is supportable on a re-evaluation of the ethnohistoric evidence, and on a model of catastrophic loss of life in the first few decades following European contact (due primarily to the effects of disease for which the isolated Hawaiian population had little or no resistance). Resolution of these debates requires new data, principally from archaeology. For example, Stannard argues that vast inland areas, especially on Maui and Hawai'i, were overlooked by early voyagers (such as Cook and Vancouver) and held large populations. Our Kahikinui study area is one such region, and we are now in a position to construct reasonably accurate estimates of the pre-contact population size and density; such an empirical study will greatly aid in constraining the competing models of Hawaiian demography.

Local Community Involvement

 Portions of the moku of Kahikinui are currently being resettled by Native Hawaiians under the kuleana homestead program of the Department of Hawaiian Home Lands, in cooperation with Ka 'Ohana o Kahikinui. Since the inception of our project in 1994, the members of Ka 'Ohana o Kahikinui have cooperated closely with our field teams in a spirit of mutual sharing of our perspectives and knowledge of this wonderful 'aina and its history. The Project members wish to express our deep appreciation to Ka 'Ohana o Kahikinui, and especially to Mo Moler, Donna Simpson, Aimoku and Lehua Pali, Gordeen Bailey, Mahealani Ka'iaokamalie, and many others who have helped to connect our project to the ongoing concerns of Kanaka Maoli.

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Publications:


volume presents results from the original Bishop Museum 1966 project.)