AN ARCHAEOLOGICALLY BASED ASSESSMENT OF THE MARQUESAS AS A DISPERSAL CENTER IN EAST POLYNESIA

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It is appropriate to present our current knowledge of Marquesan prehistoric culture before discussing the role of the Marquesas Islands in the framework of East-Polynesian cultural development. The materials used in this discussion are based on the investigations of Robert Suggs on Nukuhiva Island (Suggs, 1961a), Arne Skjölsvold and Gonzalo Figueroa at Hanapeteo (Skjöslvold, ms. and Carlyle S. Smith's investigation at Pekia (Ms.) on Hiva Oa island and on my own survey and excavations on Uahuka (Sinoto and Kellum, ms.; Sinoto, 1968a), Nukuhiva (Sinoto, 1968a), and Hiva Oa islands.

The Nukuhiva and Uahuka materials were the principal sources for establishing a preliminary northern Marquesas cultural sequence. My last archaeological investigations on the northern coast of Hiva Oa in the southern Marquesas in 1967-68 yielded materials which were comparable to those of the northern islands of Nukuhiva and Uahuka. These together with the results of Skjölsvold and Figueroa's materials and radiocarbon dates and Smith's radiocarbon dates, have made it possible to establish a preliminary outline of the prehistoric cultural sequence for the southern Marquesas Islands. Despite the earlier postulations of occupational sequence for the Marquesan Islands (Handy, 1925:16), it appears at the moment that the earliest, if not the first settlers arrived initially in the northern group and then moved into the southern group. Amazingly, both island groups possessed basically homogeneous material cultures.

The first framework of a Marquesan culture history was established by Suggs in 1961. After the excavation of Hane dune site on Uahuka Island I raised questions regarding the cultural assemblage of his Settlement Period and his interpretations of radiocarbon dates (Sinoto, ms.a). Then, after my own investigation of the Ha'atuatua site in 1965, it became necessary to re-evaluate and reconsider various important points presented and defined by Suggs based on his Ha'atuatua site and its materials. Here it is necessary to clarify my point of view regarding the Ha'atuatua culture complex before I define the cultural stages of Marquesan prehistory.

The Ha'atuatua site is located in an area about 500 meters long. It borders the bay which bears the name of the site. In this area, at least ten major independent cultural deposits were exposed along the back of the beach. Artifacts collected from the surface and from the test pits at each location revealed that this area contained the remains of occupations and burial grounds which dated from early to historic times.

In excavations at Sugg's Location A (Suggs, 1961a:60-64), I encountered a cultural layer which spread inland over the area and also a small pavement (*paepae*) which he had left partially intact. This pavement was interpreted by Suggs as a structure of the Early Developmental Period. Excavation of the remaining pavement and below it yielded several artifacts, including a bone reel and a compound hook similar to those which Suggs used as diagnostic types of artifacts for defining the Expansion and subsequent Periods (Suggs, 1961a:82). Post-contact burials in the same area contained a complete female skeleton and a male skeleton without skull, these were similar to those found by Suggs and designated by him as intrusive burials (Suggs, 1961a:68 burial Nos. 32, 33 and 34). On the basis of my observation of the stratification of the burial pit, the cross-sections of the test pits in the pavement, and the photographs* taken by Suggs at the time he excavated it is obvious that these burials were not intrusive, but contemporary to the cultural layer of the Historic Period, and that the pavement was built about the time of European contact, if not after contact. The rest of the cultural layer, which spread over Loacation A, was best interpreted to be of the Expansion Period at its earliest, and to have continued subsequently into the Contact Period. Under the pavement was a row of flagstones which were aligned exactly with Suggs' simple temple structure, but which were embedded in the

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* Prints were provided by the American Museum of Natural History.

cultural layer near the bottom, not in sterile sand. This fact reveals that this structure also was built in the Expansion Period. The radiocarbon date of a charcoal sample collected from a lens at the bottom of this layer was A.D. 1330 ± 90 (Sinoto, 1966:303). Artifacts from other locations also show similar evidence of later occupation. Therefore, later types of artifacts, such as Sugg's Koma type adzes, compound-shank fishhooks and stone pounders, which were listed by Suggs as intrusive (Suggs, 1961a:Fig. 27, Tables 10 and 11), appear not to be intrusive. However, among Suggs' artifacts from Ha'atuatua were some that were authentically early, such as certain types of fishhooks, potsherds, and adzes. Where then did they come from? Under the cultural layer in Location A there was evidence of an early occupation. It revealed itself in a thin, irregular, wind-deposited layer which had been probably blown in from nearby cultural deposits. In the photographs mentioned above, this cultural deposit at its seaward location was clearly depicted but this portion of the site had been completely excavated by Suggs. Artifacts recovered from an area near the northernmost deposit at Ha'atuatua beach were very similar to those that appeared to be early artifacts from Suggs' excavations. It is most likely that one of Suggs' four radiocarbon-dated samples came from this northern area, although the exact location of the sample's source was not given in his report. It was unfortunate that all the artifacts collected from Ha'atuatua, both from the surface and from excavations, were classified as having come from one of two arbitrarily established cultural layers and designated to be of the earliest periods without consideration for further refinements in the data such as might be revealed in an analysis of the location from which each was recovered. There was apparently considerable diversity in their sources, but there is no way to reconstruct their horizontal and vertical distributions from the materials now on deposit in the American Museum of Natural History in New York, because no vital records of their locations and depths or maps of Ha'atuatua excavations are available. It is my contention that Suggs misinterpreted the Ha'atuatua site and thus confused the definitions of the Settlement and Early Developmental Periods. However, with new evidence from Hane site on Uahuka, the definition of the Settlement Period can be revised.

Although I am agreeable to the use of Sugg's terms for designating cultural periods, his definition of each period and mine do not agree. In order to keep my cultural sequences distinct from those used by Suggs, I use the term "phase" instead of "period". However, it should not be defined in the sense of "phase" used by Golson for his New Zealand Prehistoric sequence (Golson, 1959).

PHASE I (INITIAL SETTLEMENT)

Sites representing Phase I were located at Hane, Uahuka, and probably at Ha'atuatua, Nukuhiva, where, as described above, pinpointing a precise position is difficult.

From the evidence we have at present, the northern Marquesas Islands were initially occupied by people who dwelled on the coastal areas. The earliest evidence of a habitation area in Hane showed rectangular house foundations with post holes. Some of the post holes had stone braces on the walls of the holes. No evidence was found of oval thatched houses with stone braces without holes. Later in this same place, rectangular, single-stone-thick, house-floor pavements were built. There is much evidence of these house floors being rebuilt several times.

A maritime-oriented economy was evidenced by the presence of a large quantity of fishing gear, especially that for hook-and-line fishing. One-piece hooks predominated, but trolling hooks, or so-called bonito lures and points were quite common in this early stage. The material used for making one-piece hooks was mainly pearl shell, but some hooks were made of porpoise bone, a distinguishing feature of this phase (Fig. 1).* The predominant form of the one-piece hooks was the rotating type; either the shank was incurved or the point was incurved. There were two other forms which were significant to this phase. One was a jabbing type of hook with a straight shank and point. The cross sections of the shank and point of this hook are round, with that of the shank being much thicker than the point. The line-lashing device is a single, horizontal groove just below the flat, blunt head (Fig. 1, *g*).

Files used in hook manufacturing were made from pieces of *porites* coral and spines of the slate-pencil sea urchin, but sea-urchin files decreased in number in the later phases. None of

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* See Appendix A for explanation of specimen and site numbers appearing in captions for illustrations.

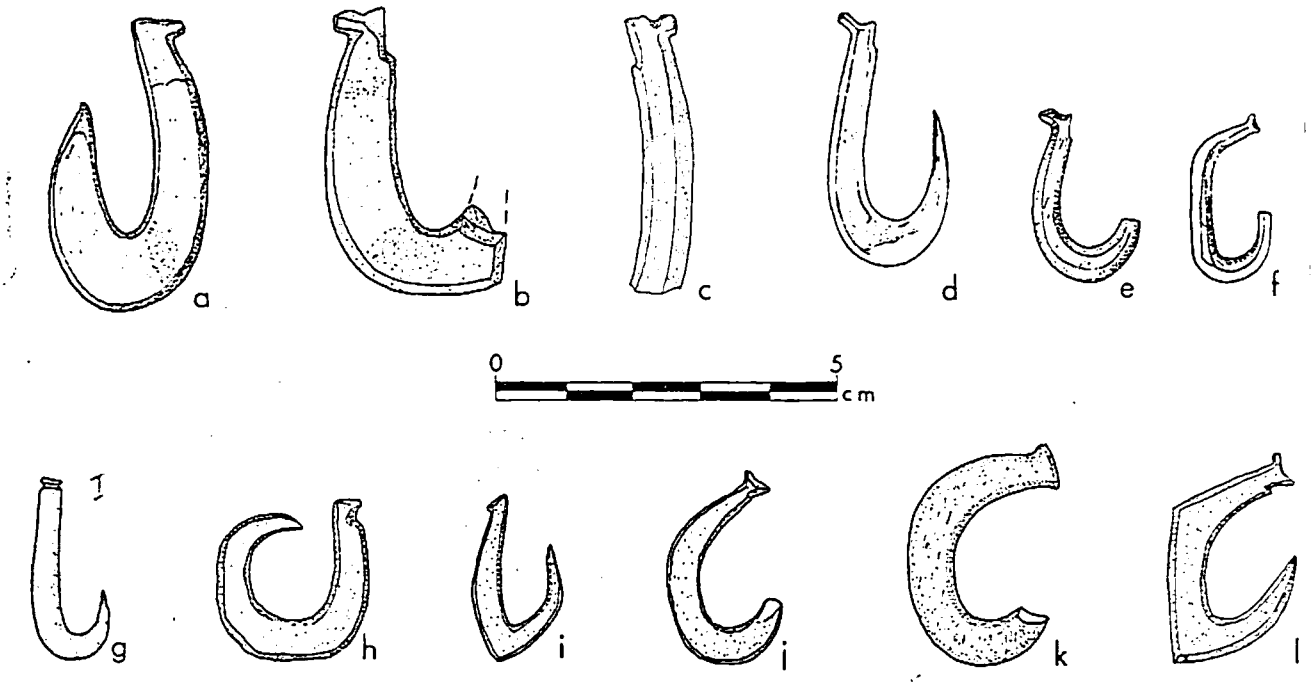

Figure 1. Pearl shell and bone one-piece fishhooks of Phases I and II, Marquesas Islands: *a*, MH4-38; *b*, MH4-16; *c*, MN1 L-6; *d*, MH-1-11 TP9-1; *e*, MH-3-12 G1-8; *f*, MH-3-11 G4-24; *g*, MUH1 K88-8; *h*, MUH1 Q108-50; *i*, MUH1 L80-23; *j*, MUH1 090-36; *k*, MUH1 R108-40 (porpoise bone); *l*, MUH1 L90-27.

the octopus-lure sinkers of the coffee-bean type, which was typical in the later phases, was found, but a sinker form which was ancestral to both the conical West Polynesian type and the coffee-bean type was used in this stage. This sinker had a conical form with one longitudinally flat side.

Adzes were the most common stone artifacts in this phase. The flat quadrangular and flat reversed-trapezpidal untanged adz (Duff's type 2A) and the plano-convexed type (Suggs' untanged Hatiheu type) were also common. Adz forms with the narrow or ridge-front face of the tall trapezoidal and triangular types (Sugg's Koma type) were there in an incipient form, as well as definitely tanged adzes. Tangs were formed only by the pecking technique (Fig. 2, *a*, *b*).

Chisels were made only of cassis shell. The lip of the shell, which is the thickest part, was broken off. The broken edge was ground with one end formed into a cutting edge, and the other end sometimes allowed to retain a curvature which is much smaller but otherwise somewhat similar to that of an umbrella handle (Fig. 3, *a*, *b*). Some of the chisels did not retain this curvature, but they always had only one cutting edge (Fig. 3, *c*).

Pounders did not appear in this phase. Two types of graters, one hand held and the other intended to be attached to a stand, were quite common in this phase, but there were no vegetable-peeling artifacts of any kind.

Small whale- and porpoise-tooth pendants and a thin round disk of *conus* shell with a hole in the center were the characteristic ornaments of this phase. A single example of a dog-tooth (canine) pendant was also found. Pearl-shell pendants of a type peculiar to Hane were also found. The shaped whale-tooth pendants, similar to those of the Maupiti and Wairau-Bar sites, were significant ornaments, but these were made probably near the end of the Phase I. No imitation whale-tooth pendants were found. Cloak pins were made in this phase (Sinoto, 1968b).

Tattooing needles made of bird bone, pearl shell, and shark tooth were also found in this phase. Although very small in quantity, evidence was found that pottery was used and that it

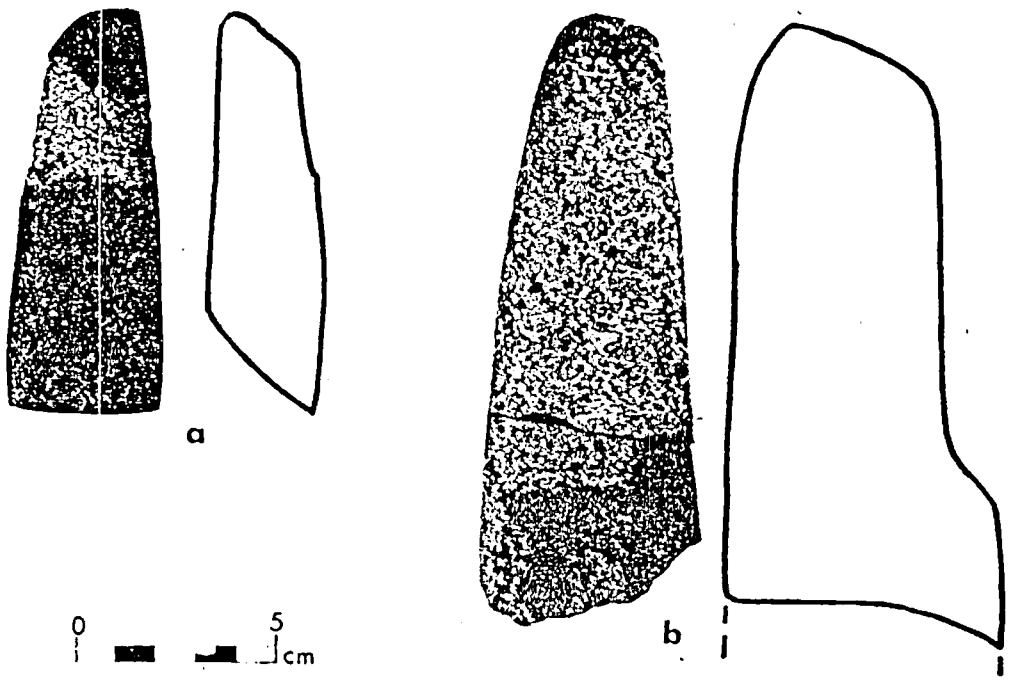

Figure 2. Tanged adzes, Hane sand dune site, Uahuka, Marquesas Islands: *a*, basalt adz with incipient tang formed by pecking, MUH1 0108-41; *b*, basalt adz tanged by pecking, MUH1 L88-7.

was possibly of local manufacture. In a level immediately above the pottery-bearing layer, pieces of clay were discovered. Some were hunks and some were pieces that had been broken from vessels, but they were unlike the usual potsherds. Samples of clay were identified as baked clay, which suggested local production, although there was no clue as to how they were baked.

Dogs were present, but the fact that only dog teeth and no bones were found in the midden materials suggests that they were scarce

No definitely identifiable pig bones were found. This is interpreted to mean that if there were pigs, they were extremely small in number. No chicken skeletal materials have been identified and their presence remains uncertain. Sea-bird bones were plentiful, especially at the beginning of Phase I. There is evidence that rats were there.

Based on the artifacts, it is difficult to determine whether or not breadfruit and taro were cultivated at this time. If the presence of cone-shaped stone pounders and vegetable scrapers would imply the existence of these food plants, the evidence was negative. However, the presence of graters suggests that the coconut was there. Midden-material analysis shows that fish, turtle, and sea-bird were the main sources of protein. Shell-fish remains were unexpectedly small in quantity. Of course, the bones of turtles and birds weigh more and are more bulky than some shellfish remains, so it may take several years of shell-fish midden deposits to weigh as much as the remains of one turtle.

PHASE II (DEVELOPMENTAL STAGE)

Sites representing this phase were located at Hane (MUH1) and Manihina (MUH4) (Sinoto and Kellum, Ms.:29-30) on Uahuka Island and at Ha'atuatua on Nukuhiva Island in the northern group, and at Hanatukua and Hanaui on Hiva Oa Island in the southern group.

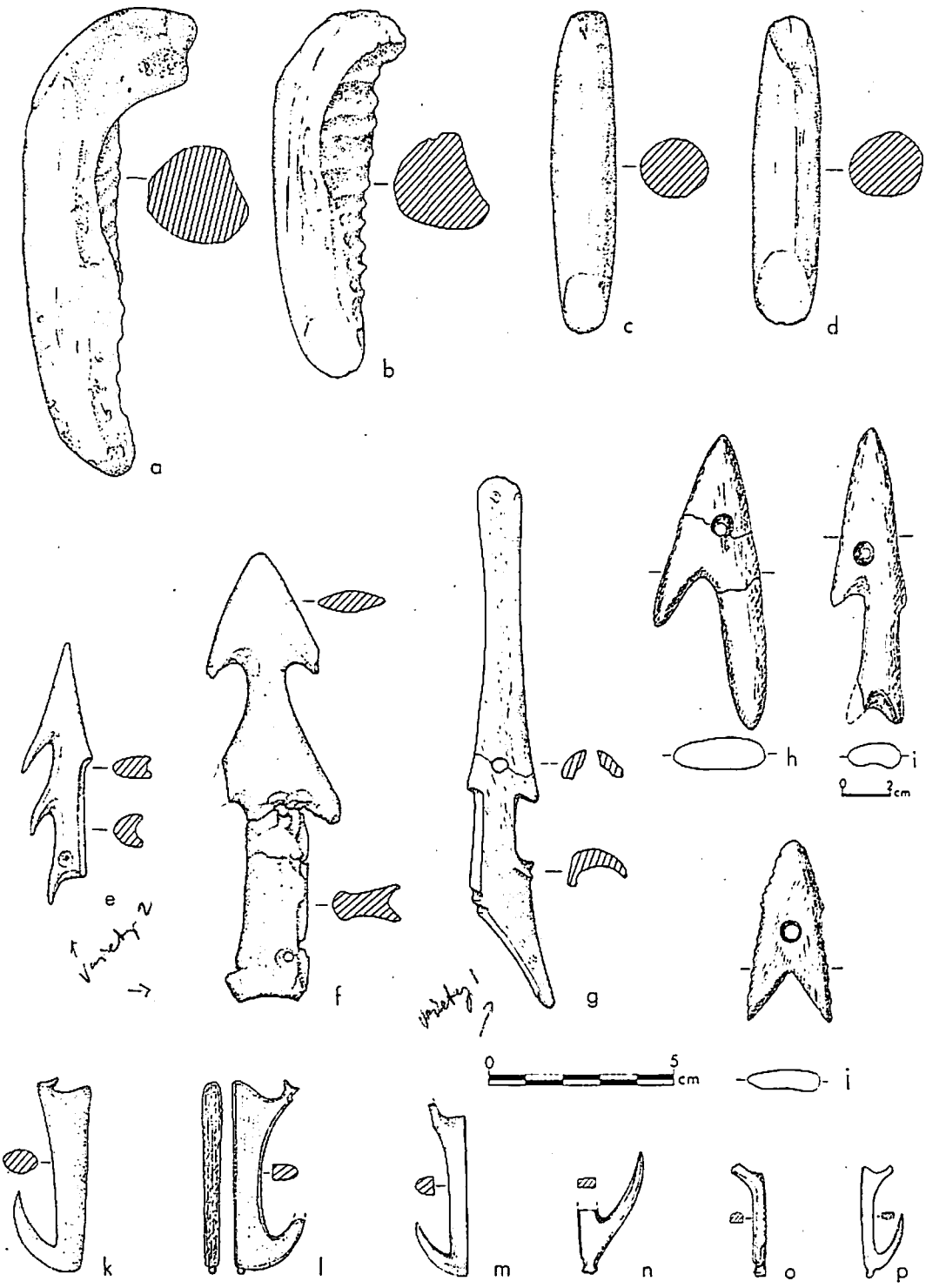

Figure 3. *Cassis*-shell chisels, pearl-shell and bone harpoons, and pearl-shell compound-shank fishhooks: *a-d*, *Cassis*-shell chisels, MUH1 0108-76, MUH1 L96-12, MUH1 M94-51, MUH1 L96-61; *e*, pearl-shell harpoon, Variety 2, MUH1 L88-16; *f*, bone harpoon, Variety 2, MUH1 L92-14; *g*, bone harpoon, Variety 1, MUH1 080-19; *h-j*, bone harpoons, Varieties 3-5 (after Skinner, 1937, Figs. 11, 14, and 18); *k-m*, Phases I and II compound-shank fishhooks, MUH1 M90-31, MUH1 K96-1, MH-3-11 G4-27; *n-p*, Phases III and IV compound-shank fishhooks, MH-1-10 04-15, MH-1-10 I3-21, MH-1-12 C14-94.

In this phase people already had started to spread out, not only along the coastal areas, but also in the valleys and on the plateaus.

The material culture of this phase does not evidence much change from that of the earlier phase.

Fishhooks became larger in size and there was an increase in the relative number of the jabbing type (see Fig. 1, *a-d*). In the northern group only pearl shell was used to make fish hooks in Phase II. In the southern group bone was also used, but in small quantity. The bone hooks were very seldom made with shank barbs. Sea-urchin files were scarce.

In Phase II the number of trolling hooks decreased and the size of their shanks became smaller. The proximal end of the base on trolling-hook points extended upwards and there were two holes for lashing the point to the shank. In the later portion of Phase II, the proximal extention of the base became reduced in size and some points evidenced an extention of the distal end.

The coffee-bean type of the octopus-lure sinker appears in this phase.

At this time there appears in incipient form the typical Marquesan compound-shank hook, which later developed to a double-shank fishhook. There are two parent forms: on one the single shank has a rounded stem (Fig. 3, *k-m*) which does not provide for fastening a second shank stem to it, and on the other the back of the shank is flat (Fig. 3, *m-p*).

Adz types were not much changed; the narrow and high trapezoidal incipient Koma type, and tanged adzes increased in numbers.

Cassis-shell chisels were also present, but they were in a straight, cylindrical form and some of them had cutting edges at both ends (Fig. 3, *d*).

Although conical stone pounders still were not in evidence, there was found a type of pounder which was gripped by both hands and appears to be an incipient form of the Hawaiian stirrup pounder.

Tonna-shell scrapers appeared in this phase in both northern and southern island groups.

Pottery seemed still to be used, but so far the evidence shows up only in the northern group.

Shaped whale-tooth pendants still survived, but shell imitations were also being made, as were pearl-shell disks with one center hole and serrations around the outer edge. In addition a carved stone image of simple design which is unlike those typical of late Marquesan designs (Fig. 4, *b*) was found.

Rectangular, single-course stone-paved house foundations were still being used.

Pigs were definitely in the Marquesas in this phase, but still scarce. A pig burial and a very few pig bones were found in the midden materials.

Evidence of dog burials were found which suggest that they were man's companion rather than his food.

PHASE III (EXPANSION)

Probably with the expansion of the population during this phase and into the beginning of Phase IV, people settled throughout all inhabitable areas on all the islands. Some significant artifacts, such as shaped whale-tooth pendants and *Conus*-shell disks, dropped out of the cultural inventory and new artifacts appeared. Population spread into inland areas coincide with structural changes in the house during this period. There is evidence that the house foundation of the low-platform type with divided sleeping quarters and a front terrace was used in this phase (Suggs, 1961a:159-160), Transitional and Terraced *paepae*). So far, artifacts associated with the inland site are found from this phase on.

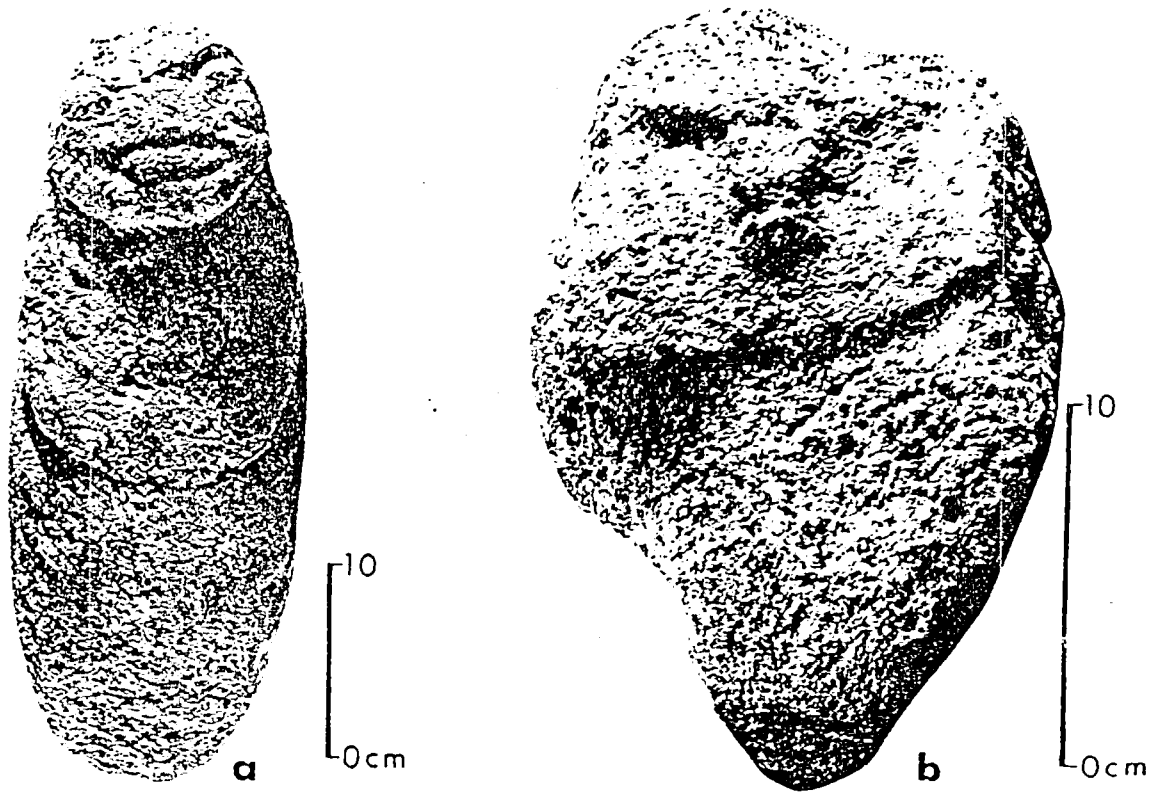

Figure 4. Stone images of Hane Valley, Uahuka: *a*, front view of image (MUH10-6) found on platform of inland religious site (see Fig. 15); *b*, front view of image (MUH1 L90-21) found used as a paving stone in a pavement from Phase II in Hane sand dune site.

A number of sites representing this phase were found on Uahuka, Nukuhiva, and Hiva Oa Islands, and they were quite widely spread out along the coastal and in the inland areas. Use of rock shelters was also common.

Except for the ones of the smaller sizes, adzes showed a marked change and stabilization of forms. The earlier, incipient Koma type adzes developed into a unique form with a high trapezoidal cross section and a definite tang. The pecking technique, previously observed to form tangs, was no longer evident and only the chipping and grinding technique survived.

Cassis-shell chisels were not popular; instead, stone chisels of Duff's type 6 appeared.

Conical type pounders were found in this phase, but the heads were still plain.

Fishhooks were smaller in size and less varied in form. In general, their forms tended to be of the jabbing-hook type and their head types to be those illustrated in Fig. 5. These were the most popular and diagnostic features of the fishhooks in this phase.

The compound-shank hook has a flat-shank to which a flat re-enforcing stem is fastened. The compound-shank hooks appear to be less well formed and finished from this phase on into historic times (Linton, 1923:plate LXXI, 3; Fig. 3, n-p).

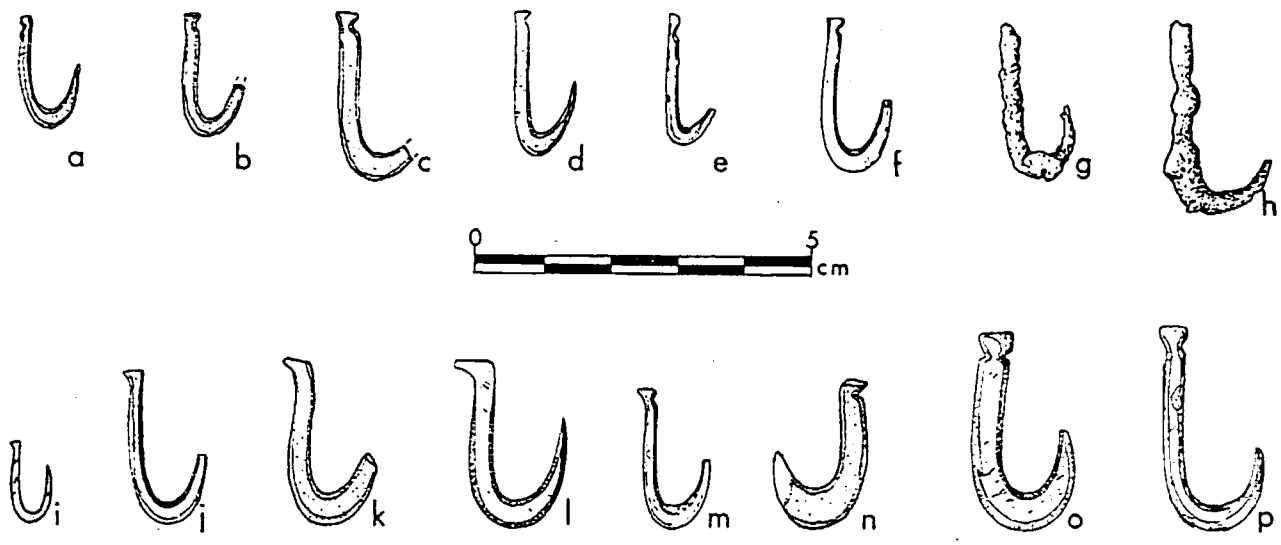

Figure 5. Pearl-shell and metal one-piece hooks of Phases III and IV, Marquesas Islands: *a*, MH-1-10 M2-12; *b*, MUH1 M78-10; *c*, MUH1 O84-21; *d*, MH-3-13 TP13-10; *e*, MH-1-12 B12-14; *f*, MH-1-12 B12-13; *g*, MH-1-12 D17-4 (iron); *h*, M-1-12 D12-8 (iron); *i*, MH-3-13 TP10-10; *j*, MH-1-12 C12-10; *k*, MN1 G-67; *l*, MH-3-11 M3-11; *m*, MH-1-12 E12-32; *n*, MN1-1; *o*, MH-1-12 A14-14; *p*, MH17-3.

Trolling hooks were very scarce everywhere. A scarceness of both large one-piece hooks and trolling hooks seems to indicate that fishing was confined for the most part to inshore fishing (Reinman, 1967:190). Octopus fishing was still practiced and the stone sinkers of the coffee-bean type were thinner and higher than their predecessors. What was formerly a longitudinal groove on the bottom was expanded and the whole bottom became convex.

Cowry-shell vegetable peelers completely replaced *Tonna*-shell peelers in this phase.

Pottery dropped out of the inventory.

Shell fish and human bone dominate the midden. Pieces of bone with charring were found quite often in this phase and suggest cannibalism. The proportion of fish bones to other midden materials is not as high as it appeared to be in Phase III, but judging from the quantity of fishhooks, it would appear that they were catching a great quantity of fish; one small shelter in Hanaui yielded over 500 fishhooks. When we consider the numbers of small, inshore fish which were eaten whole, and a reluctance on the part of the occupants to drop fish bones with sharp spines on the house floor, recovering the skeletal remains of most of the eaten fish would be impossible.

No dog bones were identified in this phase; they might have been near extinction.

PHASE IV (CLASSIC STAGE)

There was no significant change in artifacts from the Expansion to the Classic period as seen in the material culture which was excavated from sub-surface deposits. However, there occurred during this time certain structural developments, especially of religious and ceremonial structures. Also, material culture of perishable materials flourished by the evidence of grave goods found in caves and crevices in late historic time. However, their placement in the cultural sequence may have to wait for further investigations in the Marquesas.

Radiocarbon dates

The four dates from Ha'atuatua by Suggs (1961a:63) have some critical problems which concern their interpretation and utilization in his proposed time scale for the Marquesan cultural sequence. First, there is no identification of locality other than the general areas from which the samples were collected. Two samples were collected from burial pits in Location A, but how these two burials were related to each other, and how they were related to the cultural layers were not clarified. Two samples collected from two fireplaces in Location B, are 80 feet apart according to the report (Suggs, 1961a:63). The excavated area of the site of Location B is only 30 by 35 feet, therefore, one of the samples was collected from somewhere about 50 feet away from the Location B. At Location A the dates from charred bone and charcoal samples were about 800 years apart. This 800-years gap was interpreted by Suggs as indicating the time span of occupation at Ha'atuatua (Suggs, 1961a:63), thus 125 B.C. to A.D. 100 became his Developmental Period. While I object to this interpretation, I do not deny that these dates may indicate the true ages of whatever their archaeological contexts were (Sinoto, ms.a).

The first Hane radiocarbon dates by Gakushuin University Laboratory were unexpectedly young (Sinoto and Kellum, ms.:35; Sinoto, 1966:295). Since then, more Hane samples have been dated by the same laboratory, by Washington University Laboratory (Sinoto, 1968b:31) and University of Pennsylvania Laboratory (P. Stuckenrath, Jr., 1966 personal communication). These and the dates on samples from Hiva Oa sites by the Bishop Museum and by the Kon Tiki Museum's dates (Skjölsvold, ms.) give us fairly reasonal datings of the cultural sequences.*

Phase IV	A.D. 1600-1800
Phase III	A.D. 1300-1600
Phase II	A.D. 600-1300
Phase I	A.D. 300-600

DISCUSSION OF ARTIFACTS AND THEIR SPACE AND TIME RELATIONSHIP

Pottery

A total of 12 small potsherds have so far been found in the Marquesas Islands. Five from Ha'atuatua, Location A and one from Ho'oumi by Suggs; two from Uahuka and four from Ha'atuatua, Location M by myself. Because of the scarcity of sherds, my initial assumption was that they were imported by the first settlers. However, petrographic analysis made by William P. Dickinson, Stanford University, revealed differently. He examined one sherd and three pieces of baked clay from Hane site. The temper sand of all the specimens is virtually identical, and he clearly stated that there is no reason to doubt that the sherd is indigenous and was made locally (Dickinson, ms.). Also similar results were arrived by x-ray diffraction-pattern study of pottery and clay samples from Hane site by I. L. Barnes, University of Hawaii (Sinoto, 1968a: 114-115).

Examination of Suggs' sherd from Ho'oumi indicated the sand was also of the oceanic basalt type which forms the bedrock of all the drainages in the eastern coast of Nukuhiva. Therefore, the sherd was made locally near the site.

Examination of one of Suggs' sherd and two of mine from Ha'atuatua revealed that their feldspathic temper sands came from oceanic basalt magma and such trachyte rocks as are exposed only along the southern and southwestern shores of Nukuhiva. Dickinson states that these sherds probably made in this area between Taiohae and Hakaui because there are no other reported exposures of trachyte rocks in the Marquesas that are extensive enough to provide a feasible source for this type of temper. According to the above study, the potsherds from one site on Uahuka and three locations on Nukuhiva clearly show local origin, despite the fact that the samples were extremely small.

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* Note. See Appendix B for list of carbon-14 dates.

One rim found by Suggs in Location A is 8 mm thick at the rim edge and 6 mm thick below the rim. He says this sherd is from either a bowl or a constricted-neck vessel with a flaring, bowl-like rim (Suggs, 1961a:95-96). One rim sherd from Hane site is 2.5 mm thick at the rim edge and 9.5 mm thick at 21 mm below the rim, which suggests almost any type of form. All the Marquesan sherds were undecorated and any detailed comparison with those of other areas is difficult. Green thinks these sherds show some morphological characteristics that are close to Samoan pottery (Green, 1968:103).

At least one can say that pottery was never commonly used in the Marquesas. If Ha'atuatua pottery were made somewhere in the Taiohae and Hakaui areas, it would seem logical to find pottery in the area between the two places. Also, if the pottery were made locally, there should be more sherds found. Settlers who arrived in the Marquesas apparently had knowledge of pottery making, but somehow the practice was soon discontinued.

The recent archaeological evidence in Tonga and Samoa, where pottery making was extensively common, suggests that settlers to the Marquesas Islands came from these areas. However, Tonga carried on the Lapita-type decorated pottery until about the 16th century (though they produced more undecorated pottery in the later period). On the other hand Samoa's undecorated pottery disappeared sometime around 3rd century (Green, 1968:102, Fig. 1). The causes for abandoning pottery in Samoa have not been well explained, but it appeared to happen rather abruptly (Green, 1969:128). This relatively sudden abandoning of pottery-making reflected other changes in Samoan culture which took place at that time. If given a choice of sources for early Marquesan pottery, it would seem that an area where people had knowledge of, but had abandoned pottery making would be a more likely source than an area in which pottery making continued to flourish.

Adzes

Studies of Polynesian adzes, especially those with archaeological contexts, have been made by Emory (1968), and Green and Davidson (1969) in recent years. A summary of the distribution of adzes in East Melanesia, West Polynesia and East Polynesia in the initial stages was made by Green in his "West Polynesian Prehistory" (1968). It is not necessary to repeat his conclusions here, but the adz complex of the Marquesan Phases I and II most closely relates to that of Samoa.

One point which should be mentioned here is that the grip or tang, which is an East Polynesia characteristic, now appears to be found in its incipient form among the adzes of Samoa (Kikuchi, 1963) and Tonga (Poulsen, 1968:87). Although in these areas, the tanged adz never developed beyond its incipient stage (Poulsen, 1968:87), in East Polynesia it flourished.

Easter Island adzes were studied extensively by Figueroa and Sanchez (1965) and summarized by Emory (1968). They agreed that Easter Island adzes demonstrated a similarity to those of the Marquesas. Although this statement was made on the basis of their study of Easter Island adzes which had no archaeological context, the adzes that have a context show roughly similar results. Figueroa and Sanchez were inspired by Stokes' emphasis on adz manufacturing techniques (Aitken, 1930) which may have possible culture-historical significance. Chipping and grinding, and pecking are the two basic techniques of adz making in Oceania. Figueroa and Sanchez state, "In west Polynesia, pecking is rare and diffused from Fiji" (Figueroa and Sanchez, 1965:200). They also summarized a hypothetical sequence for East Polynesia: "The earlier adz-manufacturing technique uses little or no pecking...Occasional chipped-ground specimens similar to the marginal ones occur in the Society Islands collections. The geographical position of this group suggests that it may have been the dispersal center for those early forms before pecking became locally important..." Then, they state, "Easter Island is hard to include in the sequence, both for the simplicity of its adz forms, and the technique employed in their manufacture. The local predominance of Type 2A indicates Eastern Polynesian relationships, but the Easter Island adz complex as a whole cannot be compared satisfactorily with that of any particular locality. At present, only the Marquesas demonstrate enough similarities to suggest a specific relationship (Duff's Type 4C, IF, 4D)." Figueroa and Sanchez questioned why is it, then, pecking is so important in Easter Island and rare in the Marquesas (1965:200).

Over 100 classifiable adzes of Phases I and II from Hane demonstrate two basic manufacturing techniques of which chipppng and grinding predominate. However, more than half of the adzes are thin-quadrangular to trapezoidal adzes of Duff's type 2A (Duff, 1959) and these adzes were fashioned from thin dike stone. On the others, Duff's type 4D, the whole surface was completely pecked. Tanged adzes are small in proportion, but were formed by the pecking technique.

Similarly, in the adz collection from Maupiti the whole surface or a portion of the tang is pecked on one-third of the adzes. When we look carefully at both Hane and Maupiti adzes made with the pecking technique, we find that they have thick, oval or quadrangular cross-sections with rounded-corners. Controlling such curvatures by pecking would seem much easier than by chipping. The object was to achieve the rounded corners. If the types 4C and 4D, which show the pecking technique, were early adz types in Easter Island, this technique continued to be used and survived. Not only adzes, but fishhooks, even *ahu* segments show persistence in their original forms or types in Easter Island. One factor in this persistence of techniques and forms may be the geographic isolation of Easter Island. The pecking technique, a method which definitely existed early in the Marquesas, and the adz types which were retained and which were particularly easily formed by the pecking technique are two interacting factors.

Hawaiian adzes were also studied and summarized by Emory (1968). He states that "no place in Eastern Polynesia is there exhibited such a steadfast adherence to one form of adz as there was in Hawaii" (p. 162).

Up to recently, Hawaiian archaeology has concentrated on coastal sites, and finding adzes in fishing-oriented sites was an extremely rare occurrence. However, adzes from three major South Point sites, on the Island of Hawaii, show the ratio of the quadrangular adzes to both reversed triangular and trapezoidal adzes is 41 to 6 (15%) in Sand Dune site (H1), 16 to 2 (13%) in Waiahukini site (H8), and 9 to 1 (11%) in Makalei site (H2) (Sinoto, ms.b). These ratios suggest that at least 11% of the Hawaiian adzes found in these archaeological sites do not have a quadrangular cross section and the ratio is slightly higher in the earlier sites. Quadrangular adzes found in Sand Dune site are tanged, but not markedly bent at the shoulder. Reversed-trapezoidal and reversed-triangular adzes are small in size and number, and have an incipient tang. Reversed-triangular and reversed-trapezoidal adzes were also found in the museum collections without provenience as well as in the three South Point sites, but they are small in number. Also found in the early Marquesan assemblages, were adzes ranging from similar to identical with the early Hawaiian types. However, from the evidence we have at present, it seems that the differences between Hawaiian and Marquesan adzes are greater than between the adzes of Easter Island and the Marquesas Islands, or those of the Society and the Marquesas Islands. In Hawaii the manufacturing method used is exclusively chipping and grinding. Here we may ask properly, why wasn't the pecking technique found in Hawaiian adz making? Although we do not know when stone pounders appeared in the Hawaiian cultural inventory, they are made by the pecking technique. Hawaiians knew and used this technique on pounders and other stone objects, but not on adzes. When pounders came into the archaeological sequence, chipped and ground adzes continue to exist. This is an evidence of preferred technique for certain types of artifacts. A quadrangular cross section and the chipping method seem to have a close relationship. The inference of the above observation is that Hawaiians selected the technique of chipping and grinding to make adzes and its use may predetermine the adz form. The reverse may equally be true, that the preferred adz form may require chipping and grinding as a manufacturing technique. I have elsewhere questioned whether the bottom layers of South Point sites H1 and H8 really represent the initial stage of Hawaiian culture. The presence of well-developed two-piece hooks infer that there must be yet older sites in the Hawaiian Islands (Sinoto, 1967:347). If this were correct, some pecked adzes may turn up among the non-quadrangular adz types.

Turning to the Society Islands, adzes from the Maupiti burials were, so far, the earliest known adz assemblage collected from those islands (Emory and Sinoto, 1964). All the adz forms from the burials, had counterparts in the early Marquesan adzes and also in some lenticular, or plano-convex-trapezoidal adzes in Samoa (Green, 1969:123, Fig. 56a), Tonga (Poulsen, 1968:90, Fig. 3, *1* and *3*), and Fiji (Gifford, 1951:Fig. 20). The period between the Maupiti burials and a few hundred years prior to European contact--about A.D. 1600--is still a blank in our knowledge of Society Island culture. During this period in the Society Islands the adz forms that became dominant were the reversed-triangular adzes of the so-called Tahitian triangular adz and to a lesser extent the hoof-shaped (Koma type) adz. Suggs thinks the simultaneous appearance of the Koma type adzes in the Marquesas in the Expansion Period and in New Zealand after Wairau Bar may be the result of contact from Tahiti (Suggs,1961a:111-112). This is one possibility, but the Koma type adz could have developed in both places from a triangular adz with, or without a tang, because it did not have a broad cutting edge, but only a beaked triangular cutting point. Therefore, if the straight ridge, which is the apex of its triangular cross section, was ground down in any degree, it would become the high, trapezoidal Koma type adz. A good example of this was reported from Samoa (Green and Davidson, 1969:28, Fig. 12). If it was during this period that Hawaii was contacted from Tahiti, the Tahitian reversed-triangular adzes certainly did not influence Hawaiian adz types. It is more likely that the type had not been developed by Tahitians before their departure.

Stone pounders

Polynesian pounders in general have a round grip with a flared base, the diameter of which is much larger than the grip. They are usually described as taro or breadfruit *poi* pounders. Although the grip and base have a uniform shape, the head portion of the grip differs through time from island group to island group and between islands within a group.

Marquesan pounders are of the conical type, originally with a head that was simply a rounded knob, and later with a more elaborate head carved with an image. In the archaeological context, such plain, conical knob-headed pounders began to appear in the later part of Phase III, or Expansion Period. One specimen from Level III of the Hane site is an unfinished pounder. Its over-all form is much like a pestle with a base that is slightly longer than the grip, but the reduction of the grip was quite evident. Two pounders found in Manihina dune site (MUH2) (Sinoto and Kellum, ms.:30), are plain, conical knob-headed pounders.

Whether the pounders were an innovation of the Marquesans, or intrusive is still in question. Suggs raised similar questions, but he put the emphasis on Tahitian influence into the Marquesas (1961a:102). The difficulty we have here is, again, a lack of information on Tahitian pounders. We have no evidence which tells us when such pounders appeared in the Society Islands.

If the unfinished pounder from Hane is evidence of an incipient pounder which was to develop into the typical pounder, it would seem to be too late to fit into the picture of East Polynesian prehistory. However, if we take Sugg's view, the Hane pounder would be interpreted as evidence of a possible Tahitian contact during Phase III, or the Expansion Period.

Pounders in Tahiti developed a very elaborate head form with an eared bar on top of the grip. Existence also of knob-headed pounders suggest that they are the predecessors. However, because of the lack of evidence of pounders in New Zealand, Groube (1968:145) implies they were not developed in Tahiti before A.D. 800, in other words, not before the settlers of New Zealand left Tahiti.

In Hawaii, the appearance of the pounder in archaeological context is rather late. This may be because of the concentration on excavating sites in the coastal areas. Here Hawaiians again persistently continued one form, that of the plain, conical pounder with no elaboration or modification. If the pounders were the result of Tahitian influence, the Tahitians who went to Hawaii would have left Tahiti before any elaboration of pounders took place there.

There are two outstanding examples in the Hawaiian Islands, of non-conical pounders: the ring and stirrup pounders, restricted for the most part to the island of Kauai. Although they were used to pound taro *poi*, it has been suggested that the original function of these types of artifacts may be different. Emory's suggestion of another use was based on his observations in the Tuamotus of a pandanus-key cracker, which was held in both hands reminiscent of the way a Hawaiian stirrup pounder was gripped. In the case of the Tuamotu pounder only a simple roughly-shaped coral slab was used instead of a more deliberately formed stone (Emory, Ms.a; personal communication). The ring and stirrup pounders, because of their form, are difficult to hold in one hand, particularly the stirrup pounder. When making *poi*, with a conical pounder one hand adds water while the other operates the pounder. If a pounder had to be gripped with both hands, like the Tuamotuan pandanus-key pounder, the material being pounded might not have been taro, but something else. Even though we only have a surface collection of these pounders from Kauai, there is a strong indication that they went through typological changes from the stirrup form to the ring form.

Two stone objects from Phase II at Hane site strongly suggest an incipient stirrup-pounder form. Although similar objects were not found in subsequent levels, or in ethnological collections, they evidence a strong morphological relationship to the Kauai stirrup pounders.

Harpoon heads

Outside of the Marquesas, bone, whale-tooth, and pearl-shell harpoon heads have been reported from Mangareva (Green, ms.), and New Zealand Archaic Culture. Skinner (1937) classified New Zealand harpoon heads into five varieties. However, there are two basic techniques for securing the harpoon shaft to the head. I have temporarily classified them into two types:

Type A combines Skinner's Variety 1 and Variety 2 (Fig. 3, *e*, *g*). Harpoons of this type are flat, or rounded (Variety 1), grooved (Variety 2) along one side (opposite a distal foot) where the shaft is placed. There is a hole in the mid-section for tying a long line. Type B includes Skinner's Varieties 3 to 5 (Fig. 3, *h-j*). These harpoons have a bifurcate base. The shaft for Type A can be a plain long pointed stick, but for Type B the tip of the shaft must be split to hold the harpoon head. Type A harpoons are found in all three areas, but Type B are only found in New Zealand. There are no adequate stratigraphical records of harpoons in New Zealand that enable us to place them in typological sequence and chronology, but there is no doubt of their antiquity there (Skinner, 1937:72; Duff, 1956:227, Fig. 60). Three Variety-2 harpoons from Wairau-Bar are recorded by Duff (p. 227). Distribution of the types in the three areas suggest that Type A is older than Type B. In the Marquesas, the harpoons of Type A are found in two different phases -- Variety 2 is found in Phase II, and Variety 1 in Phase IV -- and continue to be evident into Historic times. Four harpoons uncovered by Suggs in the Nukuhiva sites are not clearly identifiable from his descriptions. However they are most likely of Variety 1 (Suggs, 1961a:94), except for the one he illustrated (Suggs, 1961a:Fig. 35-1), which came from the surface at Ha'a'au'a'i site. This illustrated harpoon seems not likely a harpoon, but an unfinished fishhook. Although there is some evidence of local variation, it does not seem feasible to view these three places--the Marquesas, Mangareva, and New Zealand--as having independently each developed harpoons of basically the same type. What is more likely is that they are derived from one source, probably the Marquesas. Amazingly similar harpoons are distributed in the areas along the northern Pacific coast (Leroi-Gourhan, 1946:325-412; Watanabe, 1964). Although the shape of the outline of these harpoons is identical, the technique of securing a shaft is basically different. The shaft in the northern Pacific coastal sites is placed into a socket at the base of the harpoon (female type), instead of along the side of the harpoon. Despite such difference, we cannot simply ignore their occurrence in both the middle of the Pacific and in the northern Pacific coastal areas.

Fishhooks and manufacturing techniques

Fishhooks have been used as a diagnostic device for establishing chronology in an area, and for comparative studies between the island groups. I have discussed the subject elsewhere especially the relationships between Hawaii, the Society and Marquesas Islands (Sinoto, 1967). The head forms of one-piece hooks, the materials, the ratio between the lengths of the shank and the point, manufacturing methods, and tools are the main criteria for judging relationships between early Marquesan fishhooks and early Hawaiian, Tahitian, and New Zealand fishhooks. Although only one hook was found in the Maupiti burials, the same type of hook has been found on the main island of Maupiti and now, also, among a few hundred fishhooks collected from surface in the rest of the Society Islands. The existence of this early type of hook on other islands may be expected since new finds of shaped, whale-tooth pendants, with which these fishhooks are allied, have been reported on Raiatea. A bone shank-barbed hook (Fig. 6, *d*) with two other bone hook fragments from Hanatukua shelter (Phase II) is the first discovery of a barbed-shank fishhook in the Marquesas on central Polynesia. The additional discovery of a drill head (Fig. 6, *g*) and chisels (Fig. 6, *i*) made from spindle shells was also made at the same site. The drill head was identical to those found in the H1 and H8 sites (Fig. 6, *h*) Hawaii (Emory, Bonk and Sinoto, 1968: 19, pl. 6, nos. 29-31), and the chisels (Fig. 6, *j*) were identical to those uncovered in H9/1-2 and -7 sites, Hawaii (Tuohy, ms.:62), which had been mistakenly classified as drill heads.

A very sensible interpretation of the Easter Island fishhooks was made by Golson (1965:62-69). Although we do not know much about the hook assemblage of the Early Period, the general characteristics of the head types of the Middle and Late Periods show a relationship to those of the Marquesan hooks of Phase I and Phase II. As Easter Islanders retained the earlier adz types, they seem also to have retained the earlier fishhook forms.

Mangarevan archaeological fishhooks excavated and studied by Green (ms.) demonstrate an amazingly close similarity to the early Marquesan hook types. The one exception is Green's Type I, which was a later, local development. Even Type 4, the wiggly shank hook, was found in the southern Marquesas in Phase II (Fig. 6, *a-c*). These early Mangarevan hooks are the most faithful representations of the early Marquesan hooks in East Polynesia.

Two-piece hooks are characteristic of the fringe areas of Polynesia and no similar hooks are found in central Polynesia, except for one type--a hook with a point tip of bone, pearl shell, or wood fastened to a one-piece wooden shank which includes the bend and the point limb. I have already discussed (Sinoto, 1967:347) the Polynesian, two-piece hooks. Briefly, they

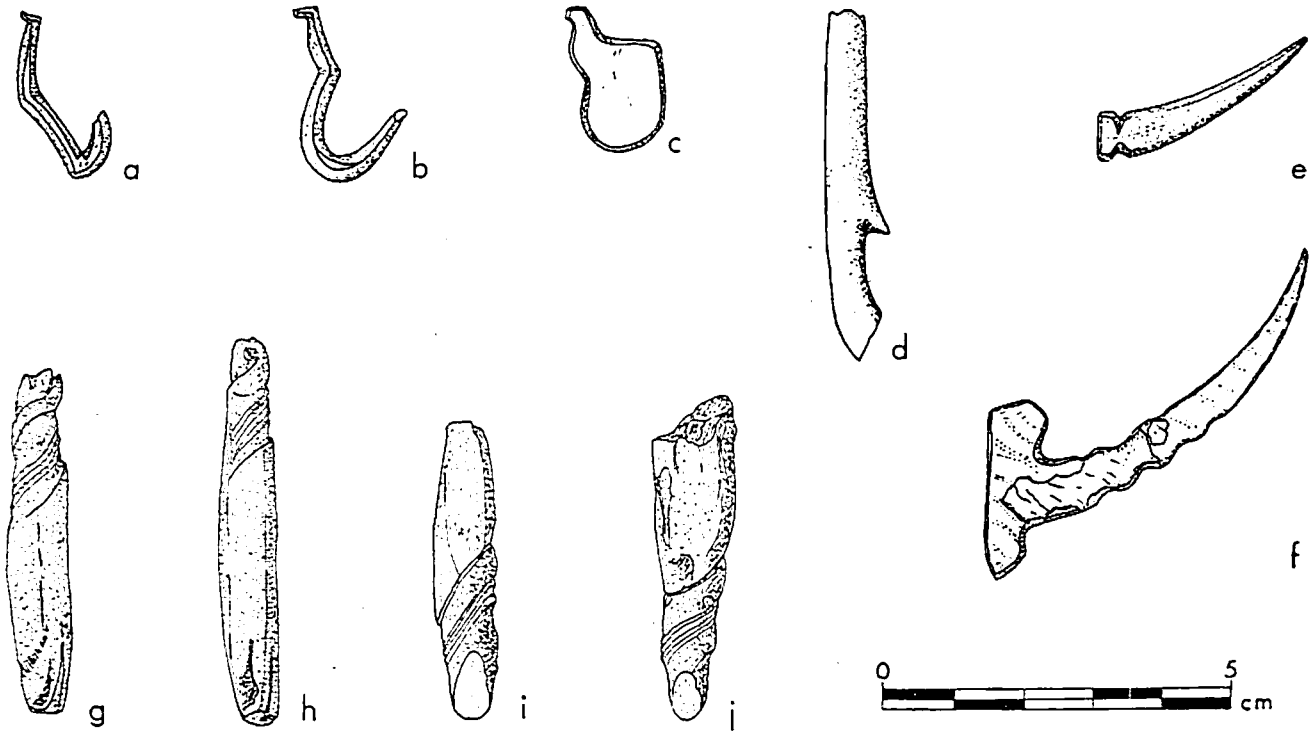


Figure 6. Pearl shell, and bone one-piece hooks, inset hook point, biflanged hook point, shell drill points and shell chisels. *a*, *b*, wiggly shank hooks and *c*, its blank, MH-3-11 H4-2, MH-3-11 F3-24, MH-3-11 I2-7; *d*, bone one-piece hook shank with a barb, MH-3-11 H3-3; *e*, pearl shell inset point, MH-3-11 D4-13; *f*, pearl shell biflanged point, MH-3-11 F3-12; *g*, *h*, spindle shell drill points, MH-3-11 J3-13, H8 G3-18; *i*, *j*, spindle shell chisel, MH-3-11 L2-12, H9/1 7-214.

were apparently developed independently in the three areas, Hawaii, Easter, and New Zealand. Their development was probably triggered by a limited supply or complete lack of pearl shell. The elements on which the two-piece fishhook is based were already possessed by the people in these areas.

Trolling hooks. The subject of trolling hooks has also been discussed elsewhere (Sinoto, 1967:357-360), but some additional discussion is necessary. Trolling hook points with an extended proximal base, the so-called West Polynesian type, have not yet been found in archaeological context in Tonga and Samoa. Davidson thinks pearl shells were originally in Samoa (1969b:245). If pearl shells were a post-European introduction into Samoan waters (Buck, 1930: 498), their pre-European trolling hooks, if any, were either made with imported shell or the hooks themselves were brought in. In either case, the possibility is great that form and manufacture of the trolling hook were initially introduced to the Samoans through the same means. While it is not possible yet to state where this form of hook came from, the distribution of the Samoan type of pearl-shell trolling hooks in the Western Pacific may provide some light (Anell, 1955:158).

Biflanged and inset fishhook points were reported from Ha'atuatua and Nahotoa cave (Suggs, 1961a:84). The latter site is classified as dating from the Expansion through the Classic Periods. Both types of points are also found in Hanatukua shelter on Hiva Oa (Fig. 6, *e*, *f*) from Phase II layers. The biflanged point from Hanatukua is disproportionally long, and has notches near its mid-point which would render it too weak to use for a trolling hook point. It may have been used as a point on the octopus-lure of the Hawaiian type, since a sinker of the coffee-bean type and some cowry lures were also found in the same layer. The inset-type point of pearl shell found at Hanatukua shelter is the same shape as the one illustrated by Suggs (1961a:Fig. 26w) but is shorter and has a notch on both sides near the end of its blunt base. Both biflanged and inset points could be inserted into shanks in a fashion similar to the barracuda hooks of the Archaic New Zealand assemblage.

Present evidence of the distribution of trolling-hook types in East Polynesia rather clearly indicates a Marquesan dispersal. The pearl-shell lure shank of a wide, triangular form with a blunt, proximal end and a perforation for a line attachment is found in Phases I and II in the Marquesas and at Maupiti. The point with a proximal base extension and with two lashing holes is also in the above areas, at South Point sites in Hawaii, at Maupiti, Moorea (Green and others, 1967:192, Fig. 20 h) and at Archaic sites in New Zealand. The lure shank with the flat form of a triangular proximal end and a ventro-dorsal perforation for line attachment is found in Phase II in Hane and in Archaic New Zealand sites. In this case a pearl-shell specimen was uncovered in New Zealand (Green, 1967b). Examples are still small in number, but barracuda-hook points might have followed the same path from the Marquesas.

Ornaments

Among the ornaments in Phase I are two *conus*-shell disks, each with a hole in the center. The apex end of a *conus* shell was carefully ground flat to a thickness of 1.5 to 2 mm, and made into an almost perfectly round disk about 25 mm in diameter (Fig. 7, *a*). Probably these are among the most beautifully and carefully made artifacts from the Hane site. Suggs found pearl-shell disks from Ha'atuatua (Fig. 7, *e*) and related them to *kapkap* ornaments of Melanesia (Suggs, 1961a:133-134). It seems to me that his pearl-shell disks may eventually relate to *kapkap* ornaments, but it is difficult to see any direct morphological connection between them. The Ha'atuatua disks have two holes in the center, and on one surface, grooves are cut radially around the edge but are not visible on the other side. *Kapkap* mounts in Melanesia are round, plain *conus*-shell disks with only one perforation in the center (Reichard, 1933:88). A carved turtle-shell plate is attached to the cone-shell disk with sennit cord. In the Solomons designs are carved directly into a clam-shell disk (p. 111), but even here they are never radially grooved or serrated. Considering the above features, it seems that the Phase I *conus*-shell disks from the Hane site are much closer to the Melanesian *kapkap* mount disks than the Ha'atuatua pearl-shell disks. It is presumed that the turtle-shell pieces had disintegrated a long time ago.

In Phases II and IV at Hane site, pearl-shell disks appeared with serrated edges and a single hole in the center. Phase IV disks (Fig. 7, *c, d*) are thicker and more crudely made than those of the Phase II disks. Some of the latter are almost paper thin and the two holes are as small as the eye of a metal needle (Fig. 7, *b, g, h*). These serrated disks could have been used for the Marquesan head band; although I have not seen them used in this way in the ethnological collections. I found a fragment of grooved pearl-shell disk in a test pit in Location A at Ha'atuatua, and from this evidence, the grooved disks may be assumed to be a later Marquesan development and used as a type of ornament. The serrated disks could have been developed from the grooved disks, or, what is more likely, developed independently along with the grooved ones. Yet both types functioned differently from *kapkap* disks. Much more crudely manufactured than their Melanesian counterparts, pearl-shell disks are found on head bands in ethnological collections from the Marquesas Islands. This may indicate that there is a *kapkap* tradition throughout Marquesan history. In the Solomons the *kapkap* is also mounted on a head band (Reichard, 1933, I:111). How far back *kapkap* in Melanesia go, we have no information. The recent archaeological discovery of *conus* disks identical to the Hane specimens, but as a part of a necklace, made in New Hebrides by Jose Garanger seems to infer their development into *kapkap* late in time. However, until future investigations can provide a similar time depth in the two areas, implying direct connections by using artifacts of different time depths should be avoided.

Pearl-shell breast ornaments and pearl-shell scrapers or spoons were discovered with the Maupiti burials (Emory and Sinoto, 1964:150; fig. 8, *c, d*). The breast ornaments are whole pearl shells which had had the rough exterior surface ground smooth and the iridescent inner shell revealed. The circumference edge was also ground smooth. A small perforation at the beak was made for suspension. The scrapers, or spoons were taken from a center section of the pearl shell which extended from the beak to the ventral margin. They were also well polished. The convex edge is ground to a sharp edge. Specimens identical to these plates and scrapers were found in Hane Phase I (Fig. 8, *a, b*). At Hane they are not from burials, but from the cultural deposits, a situation similar to that of the shaped whale-tooth pendants. This marked resemblance in both areas seems to provide additional data to suggest a link between the Marquesas and the Society Islands.

Shaped whale-tooth pendants are found at Hane (Fig. 7, *i, j*), Maupiti (Fig. 7, *l*), and in Archaic New Zealand sites. In the Society Islands it seems most unlikely that we should find

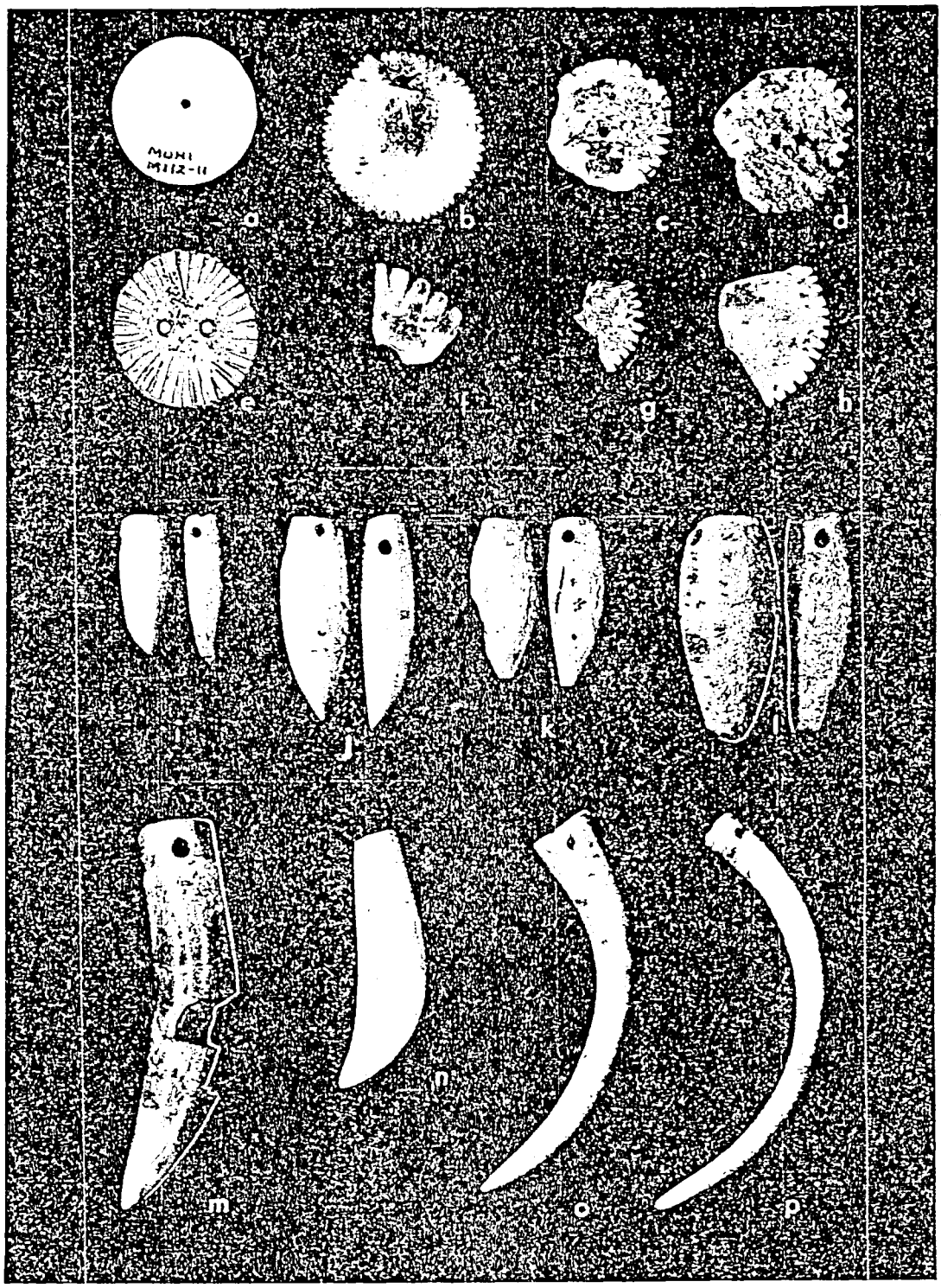


Figure 7. Shell, whale-tooth and pig-tusk ornaments: *a*, conus-shell disk, MUH1 M112-11; *b-d*, *g*, *h*, pearl-shell serrated disks, MUH1 N90-38, MUH1 N84-1, MUH1 N84-2, MUH1 L84-1, MUH1 M90-18; *e-f*, pearl-shell grooved disks, NHaal (85-1264) (after Suggs, 1961a:135, Fig. 35a, Ha'atuatua), MN1 TP4-1; *i-l*, shaped whale-tooth pendants, MUH1 I86-1, MUH1 P110-3, D3648 (Iriru, Raiatea), Ma3 C15-1 (Maupiti); *m-p*, whale-tooth pendant, Variety 2, MUH1 L90-47 and L92-20 (whale tooth), MH-3-13 TP27-17 (shell), H8E5-35, H8E5-36 (pig tusk, Hawaii).

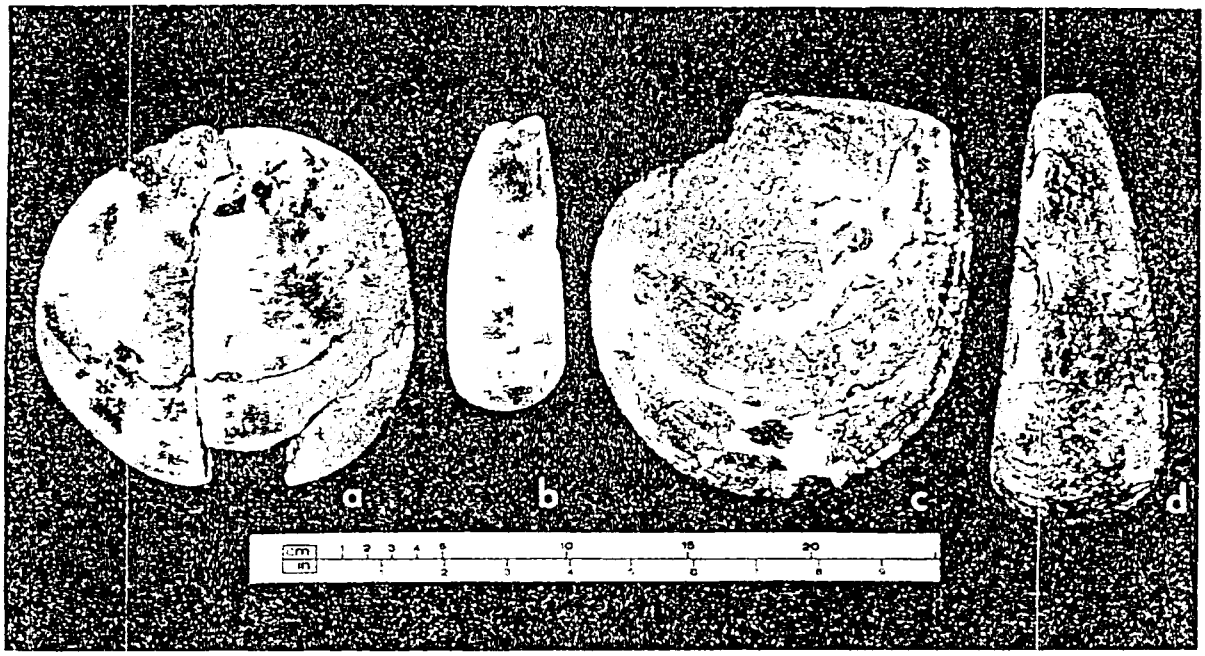


Figure 8. Pearl-shell breast plates and scrapers: *a-b*, Hane sand dune site, *a*, breast plate MUH1 Q108-54, *b*, scraper MUH1 R108-104; *c-d*, Burial No. 2, Maupiti, Society Islands, *c*, breast plate Ma2-9, *d*, scraper Ma2-10.

such burials only on a tiny coral islet, away from the main islands. We have been looking for other sites throughout the Society Islands for years. In 1965, Emory found a small shaped whale-tooth pendant on a small coral islet called Iriru off the coast of Avera, Raiatea (Fig. 7, *k*). Preliminary test excavations did not give us further information, but I believe that a thorough investigation of the islet might yield burials similar to those of Maupiti.

Whale-tooth pendants, excluding shaped whale-tooth pendants, are spread widely throughout Polynesia. These pendants have three major variations. Variety 1: Unmodified whale-tooth, or simulated whale-tooth form made of other material with a suspension hole. Variety 2: Whale-tooth or other material with a long and rounded stem, and a pointed, outward-protruding distal end. Good examples of this variety are from Samoa and Tonga. Variety 3: Usually made of shell, but also of whale-tooth, these pendants have the whale-tooth profile, but are flattened and have side perforations near the top.

Variety 1 is found in Hawaii, Mangareva, Marquesas, Easter, Samoa and Tonga. Variety 2 is from Hawaii (Fig. 7, *o*, *p*), Marquesas (Fig. 7, *m*, *n*), New Zealand, Samoa and Tonga. So far, in the Marquesas, the shaped whale-tooth pendants appeared first in Phase I. Then, in Phase II, variety 2 appeared, but the shaped whale-tooth pendant was still used. Varieties 1 and 3 probably soon replaced the shaped pendant and variety 2, and continued into historic times.

Hanatukua dune site (MH-3-13), Hiva Oa, yielded artifacts of fishhooks and adzes contemporary with Phase II. In a cache containing adz blanks, as well as unfinished adzes of Duff's Type 2A and the high quadrangular type, was a shell imitation of a whale-tooth pendant. Although it is unfinished and without any perforations, its form belongs to variety 2. So far, there is no evidence of shaped, variety 1 whale-tooth pendants in the southern Marquesas Islands.

Hawaii has no evidence of shaped whale-tooth pendant of the Maupiti and Wairau Bar type. Only variety 2 pendants were found at the very bottom of H8 site, one of the oldest cultural deposits in Hawaii. Variety 3 pendants appeared later, but no contexual data is available. Meanwhile, the historically well-known typical Hawaiian whale-tooth pendant (*niho palaoa*) developed locally (Sinoto, ms. c). Distribution of whale-tooth pendants in East Polynesia suggests dispersal from the Marquesas. Here, again the time depth of variety 2 in West Polynesia is still in question.

Fortifications

Two types of fortifications are reported from the Marquesas (Suggs, 1961a:163). One is the cut-ridge fort which was built on narrow ridges surrounding a valley. The other is the high, stone enclosure, some of which have holes in their walls for muskets. The former are long-term fortifications with breadfruit-preserving pits, and the latter are short-term fortifications (Suggs, 1961a:163). On the narrow ridge at the back of Hane valley is a fortification with three ditches cut across the ridge (Fig. 9). Between the ditches are long flat areas, measuring 100 to 130 meters, which have on them terraces for houses and two pits, measuring 10 meters long by 5 meters wide and 3 meters deep which could be used for breadfruit-storage. The ditches are 12 meters to 15 meters deep and 8 meters wide. This fortification is similar to the Taiohae and Taipivae forts (Suggs, 1961a:113) and to those at Luatuanu'u, Upolu (Green and Scott, 1969).

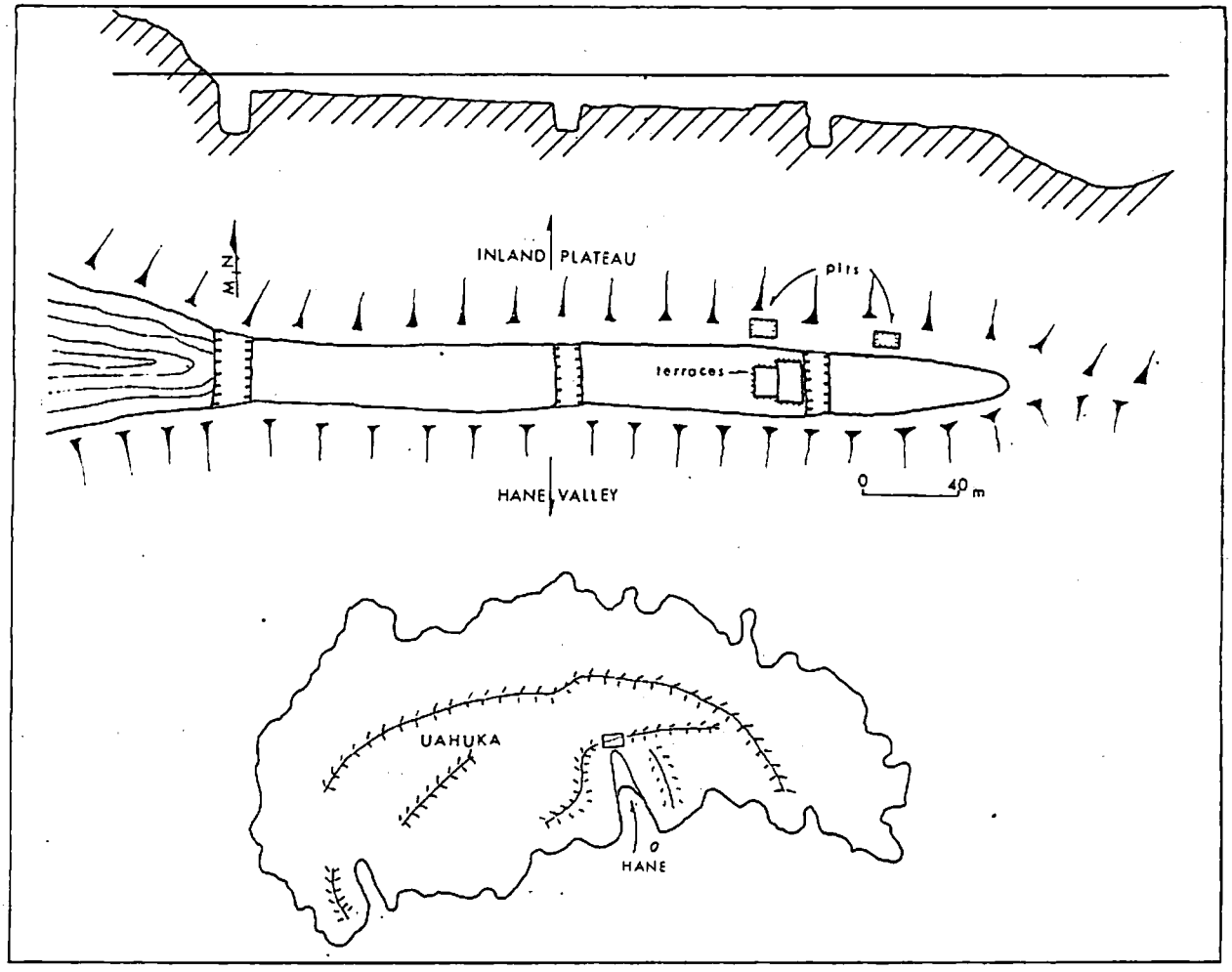


Figure 9. Schematic map of ridge fort at back of Hane Valley, Uahuka, Marquesas Islands.

Good examples of cut-ridge forts located in a position to protect a valley are found at Hanaiapa, Hiva Oa. This valley was well protected on its west side by a high cliff, but on the east side a gradual slope extends to the lower ridges and into the valley from the main ridge. On these ridges are seven ditches cut at six locations (Fig. 10). Only one location has two ditches. Some of them have storage pits. Some of the walls of the ditches are stone faced and over 10 meters deep. One fortification at the northern end of the eastern ridge is a terraced-hill fort (Fig. 11, *a*). The three sides of a square, flat area are stone walls (Fig. 12). The side towards

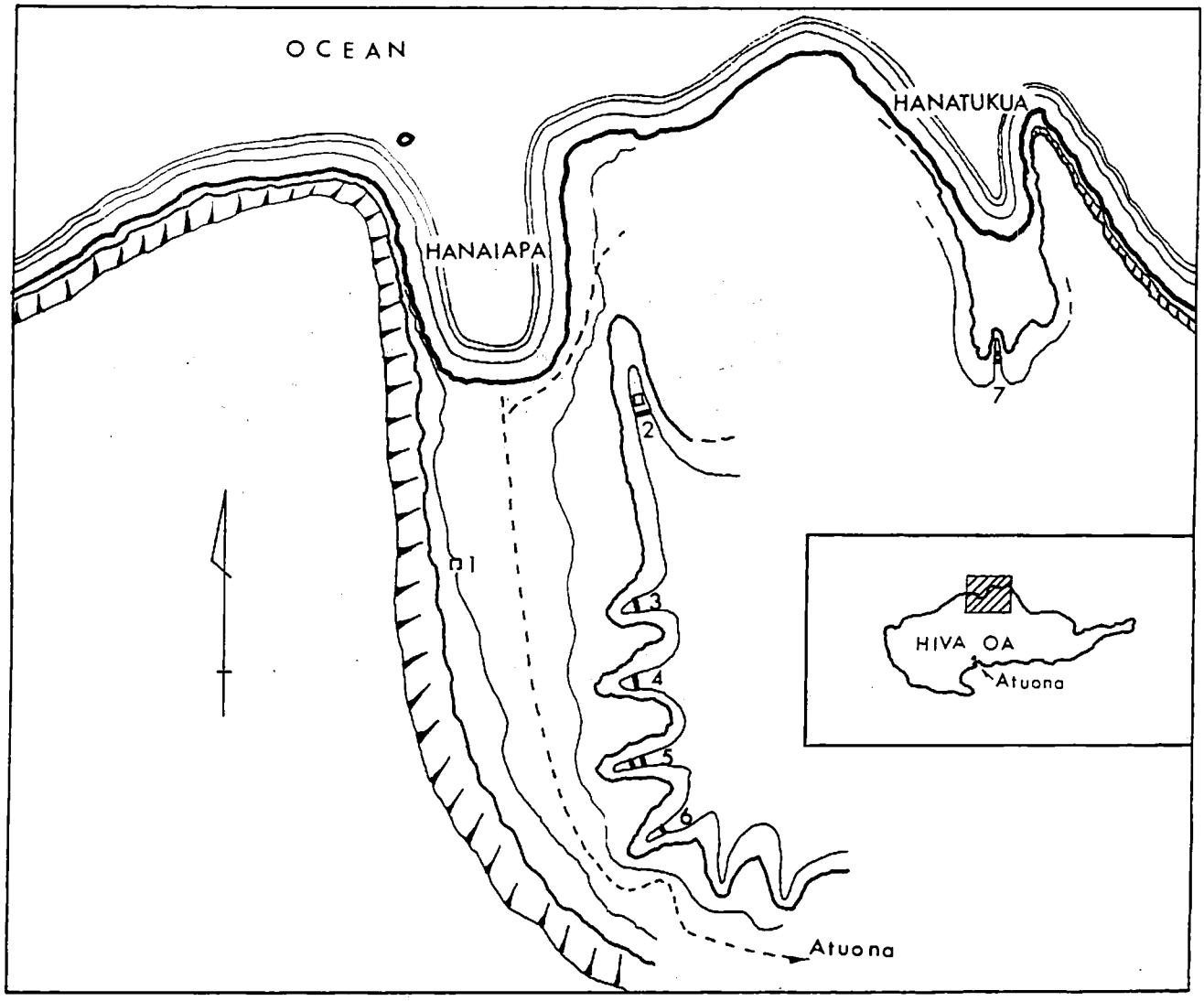
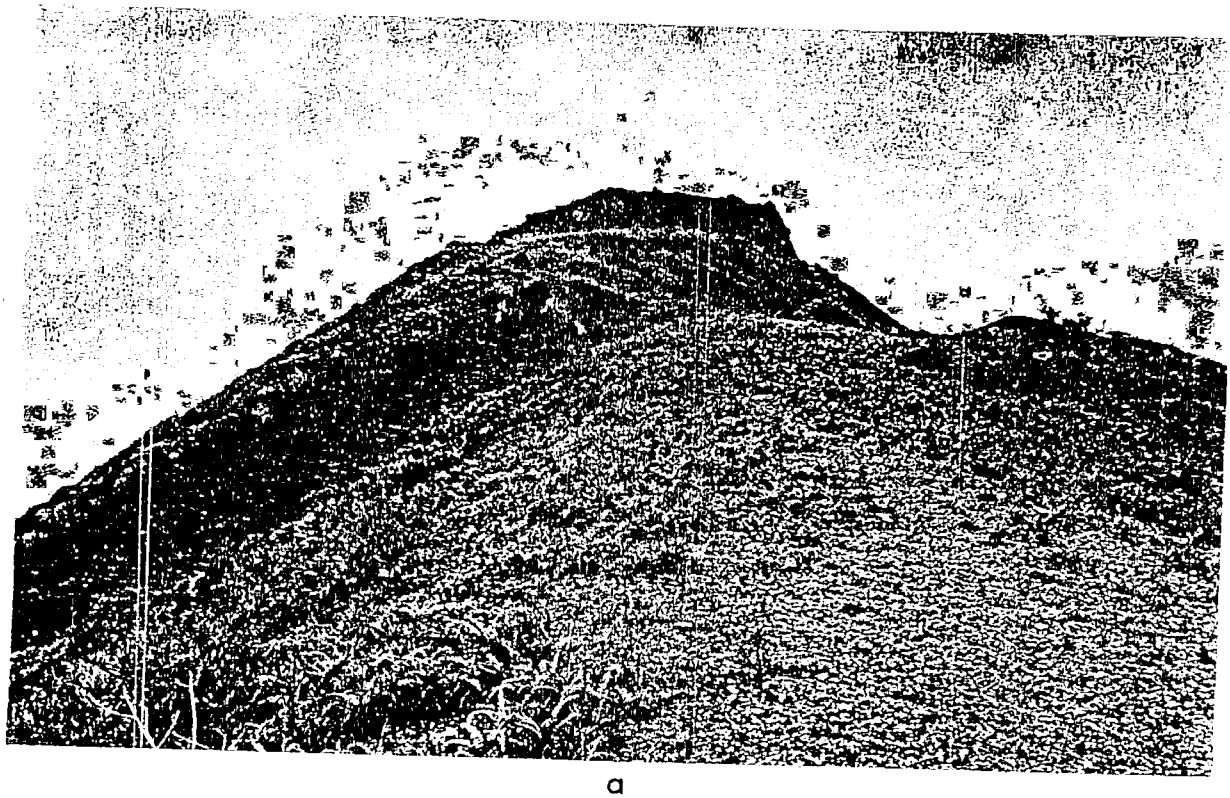


Figure 10. Disposition of fortifications at Hanaiapa and Hanatukua: *1*, stone-wall enclosed fort; *2*, terraced hill fort; *3-7*, ridge fortification.

the south, where the ridge drops suddenly, has the highest wall (Fig. 11, *b*). The eastern wall is actually set back at its northern half and the resulting gap was used as a passage way into the fort. In front of the highest wall is a ditch cut across the ridge. The terraced flat area suggests the use of palisades. Fortifications with palisades were reported by early visitors, but there are no descriptions regarding the foundations (Suggs, 1961a:162; Green, 1967d: 105). In the center of Hanatukua valley is a narrow ridge protruding out into the valley. Near the tip of the ridge are two ditches (Fig. 10, no. *7*). The inland side of the second ditch has three deep pits. An interesting feature here is a 1.5-meter-high stone wall built across the ridge on the valley side of the ditch. This stone wall would seem to be a very effective defense against enemies coming from the inland side. But the existence of the deep pits, if they are breadfruit-storage pits, provide contradictory evidence. However, these pits are as wide as the ridge and 2 meters deep, so that they may have been dug for pitfalls.

Examples of the enclosed type of fort are located in Hanaiapa valley (Fig. 10, no. *1*) and also on the low center ridge at Hanapeteo. These fortifications are characteristic of Polynesia. I have not had a chance to excavate any of them, and therefore do not have a clue as to where to place them in the time scale. Suggs places the ridge fort in the Expansion and Classic Periods, because the transitional *paepae* was found within a fort compound (1961a:27). In at least two



a

b

Figure 11. Terraced hill fort: *a*, view from south (inland side). Note a ditch in front of the fort platform; *b*, platform wall. The left side was disturbed.

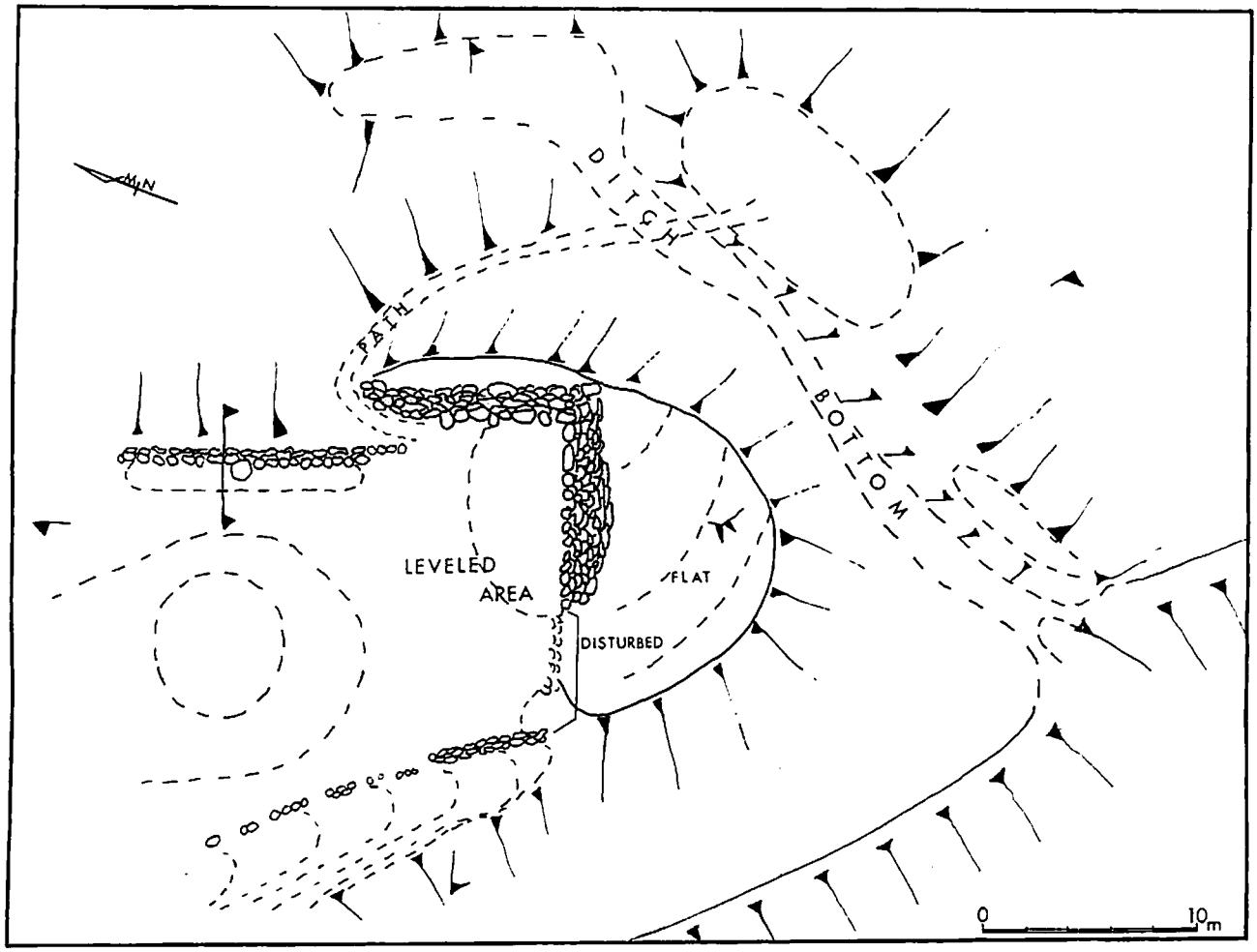


Figure 12. Plan of terraced-hill fort on east side of ridge at Hanaiapa, Hiva Oa, Marquesas Islands (mapped by P. Bellwood, Auckland University).

places we found several natural, water worn, round-to-oval stones of egg size at the foot of the hill near the forts. They are foreign to the surrounding area, and there is little doubt that they are sling stones. Green summarized Polynesian fortifications and states in his conclusion "...a far more economical explanation would be to posit an origin for Maori fortification in East Polynesia as well, with the Marquesas being the most likely source on present evidence." (1967d:109). The examples of forts on Hiva Oa island give additional data to support his contention.

Burial customs

There are several reasons to believe that descriptions of burial methods, defined by Suggs as being representative of the Settlement Period, are misleading. Most likely the majority of the burials found by him at Location A, Ha'atuatua, belong to the Expansion Period. There may be earlier burials, like the dated ones, but he is not able to identify them. First of all, there are no descriptions or illustrations which clearly relate the burials to the Settlement Period cultural layer. The primary burials and secondary burials found are about equal in number. Interment of dorsally extended burials was more frequent than of flexed burials. Removal of the male skull and pig skull offerings were practiced (Suggs, 1961a:168-169).

When the burials found in Level IV of Hane site, Area B (Phase III), of the main mound, are compared with those of Ha'atuatua site, the following should be noted: 1) all the burials were primary burials; 2) positions of the 9 flexed (Fig. 13, *b*) and 1 extended (Fig. 14) skeletons

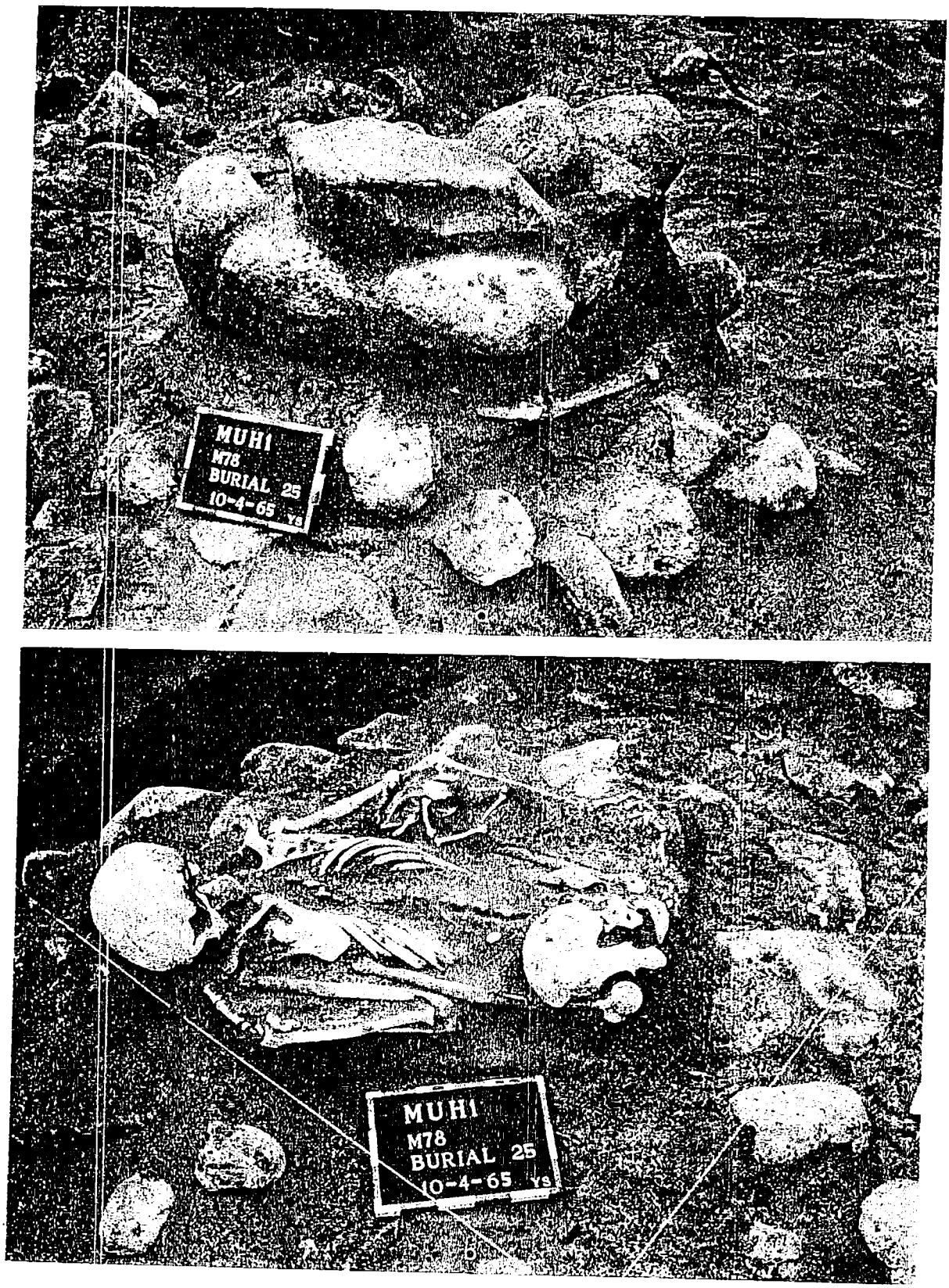


Figure 13. Burials exposed at Hane site, Uahuka, Marquesas Islands. *a*, stone covered burial, Burial No. 25; *b*, after taking off the covering stones. The interment is flexed and in a prone position. Note the complete bird skeleton under the right arm.

Figure 14. Extended, prone interment. Burial No. 15, Hane sand dune site, Uahuka, Marquesas Islands.

were 4 prone, 3 side, and 3 dorsal; 3) no evidence of skull removing; 4) no burial offering except Burial No. 25 (Fig. 13, *b*); 5) two burials, both prone, but one flexed and one extended, had stone mounds (Fig. 13, *a*) covering the skeletons. All other burials were without extra features. A trace of a layer of thin organic material surrounded each skeleton, indicating the body had been wrapped with tapa or mats. If the removal of male skulls for ancestral worship or trophy collections had been practiced from the time of the Settlement Period to Historic times, this practice would have been observed in the Hane burials. Flexed burials, the dominant feature with prone and side positions in Hane, were little practiced in Ha'atuatua. As has been described, the pig population increased rapidly in the Phase III or Expansion Period. Burial offerings and also scattered pig bones found in Location A burial area at Ha'atuatua suggest (Suggs, 1961a:62, Fig. 21) that pigs were readily available. With these observations in mind it would seem appropriate for a comparison of Ha'atuatua and Hane burials to reveal that burials at the former site reveal customs which survived until Historic times, and burials at the latter site show evidence of more prototype burial customs.

Hane burials from Area B, main mound, were made after Phase II and before Phase IV. One burial in the western portion of the main mound (test pit area) was found closer to the surface than the others, and erosion had displaced many of its bones and disturbed its interment evidence. It can only be assumed that the interment was an extended burial. A crudely made, pearl-shell trolling-hook shank and a whale-tooth reel were found close to the bones, and it is assumed that they were burial goods. The layer in which the burial was found is above Phase III, but there is no definite clue that it could be placed in Phase IV because no layers with cultural contents remained above the burial. A guess of its placement sometime in the later part of Phase III is reasonable, because the layer above the burial is shallow and the difference between the level of the Phase IV layer and that of the burial is great enough to suggest that the burial was made probably before Phase IV commenced. The only secondary burial found was comtemporary with the above burial. Possible Phase II burials are found in Area A as a mass burial of 22 individuals, including male, female, and young people without individual interment, but all simply tossed into a small pit. However, at the center of this burial was a stone image and two small whale skulls as offerings (Sinoto and Kellum, ms.:28). If more Phases I and II burials are to

be found, shaped whale-tooth pendants, breast ornaments, trolling hooks, and adzes could be expected, as were found with burials in the Maupiti and Wairau-Bar sites. The inference here for burial customs in the Marquesas is that in the initial periods, certain burial offerings were made for status people, until other offerings of pig's skulls or fish became common practice. In Phase IV, or from the Classic Period into Historic times, offerings of goods besides food became widely practiced. The skull-removing custom began as early as Phase III, or in the Expansion Period, but it may have started in the late part of that period. Probably the same could be said for the secondary-burial custom.

Burials with offerings have turned up in Tonga (pearl-shell breast-plate and shell ornaments, Kaeppler, personal communication), Vaitupu, Ellice Islands (trolling-hook shanks, Kennedy, 1931:285-288), Fanning island (trolling hooks, Emory, 1934:16), and Rotuma (whale-tooth ornament, *cassis*-shell chisels in the Fiji Museum coll.). Burials with other types of burial goods in Futuna (Shutler and Shutler, 1966), in Tongoa, New Hebrides (Garanger, ms.:20), and some indication of burial goods offerings in Samoa (Davidson, 1969b:230) have been reported. There is no doubt that such burial customs are widely spread in West Polynesia and its neighboring islands, but clarifying their contextual relationships should be expected of future investigations.

Religious structures

Finally, religious structures. Emory's paper in this symposium will discuss the subject in detail and unquestionably he is the most capable person to do so. The religious structures in the Marquesas are very complicated in their physical layout and in their functions. Very few detailed studies have been done using modern archaeological methods. There is no contextual proof that the religious structure described by Suggs in Ha'atuatua was of the earliest East Polynesian type (Suggs, 1961a:63, 161). A religious structure or *me'ae* with elaborated structures could have existed in Phase III. *Me'ae* Pekia at Atuona, Hiva Oa, was surveyed and excavated by Carlyle Smith, Kansas University, in 1963. Radiocarbon dates of the samples collected from the *me'ae* structure are A.D. 1300 ± 200 (Gak-1423, a sample from Trench 30, lower pavement, -120 to -130 cm.), A.D. 1390 ± 100 (Gak-1422, a sample from Trench 30 above the lower pavement, -100 cm.), A.D. 1720 ± 80 (Gak-1115, a sample from Trench 30, -78 cm.) and A.D. 1730 ± 80 (Gak-1113, a sample from Feature 1, just under the upper pavement, -86 cm.). These dates fit well into Phases III and IV. Smith wrote in his letter, "I interpret the useful dates as follows: The oldest datable construction occurred in the 14th century. Construction was also carried out in the 15th century. Major expansion and rebuilding occurred about 1700" (personal communication).

A structure found deep in Hane Valley, Uahuka, was the farthest inland structure and its elevation was the highest of all the structures in Hane valley. Although there were some terraces and retaining walls across the axis of the slope, at the back end of this structure in the center of the court was a low rectangular platform which, on its inland side, was incorporated into the upward sloping aground. On top of this platform in the center was an image of dark, reddish-tuff stone. This 39-cm-high oblong, round stone image has eyes, an open mouth, and both arms rest on the stomach. Although it was found lying down, the image most likely stood originally on this platform (Figs. 15 and 4*a*). It is unlike most Marquesan images, and is similar to typical Tahitian in style. However, while the emphasis has been put on the discovery of this image on the platform, the platform itself has features, without the upright stones, which are reminiscent of the Necker Island *marae* structures (Emory, 1928) and also of those of Easter Island. The earlier form of Society Island *marae* was discovered inland where there was less destruction of the earlier structure caused by later rebuilding or stylistic changes. If this is applied to the Marquesan case, the Hane inland structure could have been a survival of an earlier form, a variation of which is found on Necker, Easter and Tuamotu islands. If this is the case, *marae* structures, or more precisely the relative position of the *ahu* and image, found in the Marquesas could have some relation to those found in other parts of East Polynesia. Evidence of use of this Hane *me'ae* structure could be placed in Phase III and later, because of the unusually large pig skulls, of which there were over ten excavated from under the surface deposit at the foot of the platform where they were probably placed as offerings. With these skulls was an unfinished, small image with a squarish body form which was remotely similar to the Necker Island images.

Figure 15. Stone image found in Hane inland religious site. Stone image (MHU10-6) standing on a platform. The image was found lying on platform.

In view of the above discussion, there is fairly good evidence on which to evaluate the role the Marquesas played in East Polynesian prehistory. There is still the question of line-fishing gear, which does not have immediate connections with West Polynesia, mainly because of the lack of information, especially in Samoa. However, recent archaeological shell hooks from Tonga (Poulsen, 1968:87), a surface hook in Tonga found by Golson (personal communication), and one example of an unfinished turbo-shell hook (Davidson, 1969b:244) from Samoa are encouraging discoveries. Especially Golson's hook is most promising for future investigation of fishing gear in Tonga. Lack of pearl shell in Samoa seems to be one of the reasons for the lack of fishhooks. Perhaps for that reason line fishing there was limited, but it is possible also that some perishable materials were used in a limited way. When Samoans, for instance, came to a place where pearl shells were easily available, utilization of such raw materials was probably unpredictably extensive.

The *kapkap*-type of ornaments, whale-tooth pendants, trolling hooks, and the custom of burial offerings are all present in the initial phase of the Marquesas. However, they are still unknown in archaeological context in West Polynesia. Despite these unsolved problems, we still have evidence which indicates a direct link between West Polynesia, and East Polynesia, and probably it was between Samoa and the Marquesas Islands. Within East Polynesia, if the evidence presented here is acceptable, dispersal from the Marquesas to other island groups took place quite early. Probably all the initial departures took place sometime in Phase II, and no significant movements were made in the subsequent phases, although there is a possibility of a later movement to New Zealand (Emory and Sinoto, ms.:102). There is good evidence of people occupying almost every valley in the Marquesas and the population density could have been higher than we estimate. These ruins in the valley belong mostly to Phase III and subsequent phases. The population probably reached its climax in the early part of Phase IV. If the islands could support such a large population, then why was it that people who settled there for a short while had to move out again? There should be some reasons other than those concerned with the limited economical potential of the islands. This early dispersal to the Society Islands, Hawaii, and Easter Island probably took place between A.D. 650 and A.D. 800 (Emory and Sinoto, ms.:75; Emory and Sinoto, 1969; Golson, 1965:77), and to Mangareva about A.D. 1200 (Suggs, 1962:92).

Appendix A

Specimen numbers in the figure captions come after site numbers. The site locations are listed below:

Site No.	Location
MH4	Manihina shelter, Uahuka, Marquesas
MUH1	Hane sand dune, Uahuka Marquesas
MN1	Ha'atuatua, Nukuhiva, Marquesas
MH-1-10	Hanaui shelter (East), Hiva Oa, Marquesas
MH-1-11	Hanaui sand dune, Hiva Oa, Marquesas
MH-1-12	Hanaui shelter (West), Hiva Oa, Marquesas
MH-3-11	Hanatukua shelter, No. 1, Hiva Oa, Marquesas
MH-3-12	Hanatukua shelter, No. 2, Hiva Oa, Marquesas
MH-3-13	Hanatukua coastal, Hiva Oa, Marquesas
Ma2	Maupiti Burial No. 2, Maupiti, Society
Ma3	Maupiti Burial No. 3, Maupiti, Society
H8	Waiahukini, Hawaii, Hawaii

Appendix B

I. Hane Site MUH1 Radiocarbon Dates

Cultural level						
Phase IV		GaK-528, MRC-41	Area B	<280	<A.D. 1670	
		GaK-933, MRC-74	Area B	<250	<A.D. 1700	
Phase III	IV	MUH 2 Gak-532, MRC- 55		A.D. 1635 ± 90		
		MUH 7 GaK-937, MRC-117		A.D. 1330 ± 80		
		MN 1 Gak-874, MRC-~~119~~/20		A.D. 1330 ± 90		
		GaK-1961, MRC-121		A.D. 1110 ± 110		
Phase II	V	GaK-934, MRC- 79	Area B	A.D. 1570 ± 150		
		P-1123, MRC- 50	Area B	A.D. 1293 ± 66		
		GaK-531, MRC- 51	Area A	A.D. 1235 ± 100		
		GaK-529, MRC- 47	Area B	A.D. 850 ± 100		
		WSU-492, MRC- 91	Area B	A.D. 570 ± 160		
	VI-a	WSU-512, MRC-139 (MRC- 83)	Area B	A.D. 740 ± 195		Shell
		WSU-491, MRC- 83	Area B	A.D. 275 ± 195		
Phase I	VI	GaK-930, MRC- 6~~8~~6	Area A	A.D. 1420 ± 80		
		GaK-931, MRC- 68	Area A	A.D. 1290 ± 80		
		WSU-490, MRC- 68	Area A	A.D. 605 ± 195		
		WSU-524, MRC-138	Area B	A.D. 200 ± 140		Shell
		WSU-516, MRC-136 (MRC- 68)	Area A	A.D. 35 ± 200		Shell

P - University of Pennsylvania

WSU - Washington State University

GaK - Gakushuin University

Appendix B - continued

II. Radiocarbon Dates Obtained from Sites on Hiva Oa Island

Phase	Site*	Cultural Layer**	Date (A.D.)	Sample No.	Laboratory No.
Phase V (Historic)	MH-1-12	III	1670 ± 90	MRC-187	GaK-1967***
Phase IV (Classic)	MH-1-10	II	1630 ± 110	MRC-183	GaK-1965
Phase III (Expansion)	MH-1-12	IV	1510 ± 90	MRC-190	GaK-1968
Phase II (Developmental)	MH-1-10	VI	1020 ± 80	MRC-186	GaK-1966
	MH-3-11	IV	690 ± 100	MRC-153	GaK-1963
	MH-3-11	IV	20 ± 80	MRC-154	GaK-1964
	MH-3-11	VI	640 ± 90	MRC-150	GaK-1962

* MH-1-12, Hanaui Shelter (West) contained Cultural Layers I-V.
MH-1-10, Hanaui Shelter (East) contained Cultural Layers I-VI.
MH-3-11, Hanatukua Shelter, contained Cultural Layers I-VIII.

** Designations from top to bottom are not mutually synchronous.

*** GaK - Gakushuin University

III. Four Charcoal Samples from Hanapeteo Shelter, Hiva Oa, collected by Skjölsvold. These samples were dated by the National Museum in Copenhagen (Skjölsvold, ms.)

Level V,	Sq. 1 (lowest charcoal layer)	A.D. 1840 ± 100
Level IV,	Sq. 2 (second lowest charcoal layer)	A.D. 1780 ± 100
Level III,	Sq. 2 (third lowest charcoal layer)	A.D. 1660 ± 100
Level VI,	Sq. 21 (lowest charcoal layer)	A.D. 1730 ± 100

Material culture from this shelter is typical Phase IV and early Historic, and the dates of the shelter are within the range of the Bishop Museum dates for these phases.