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# Polynesian Plainware Sherds from Hivaoa and their Implications for Early Marquesan Prehistory

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## ABSTRACT

Two plain sherds from Atuona Valley, Hivaoa Island, represent the first discovery of pottery from the Southern Marquesas Islands. Morphological and manufacturing attributes support classification of the sherds as Polynesian Plainware, and petrographic analysis of temper indicates a local origin. This new find is discussed in the context of other pottery localities in the Marquesas, and their implications for the earliest phase of settlement in Eastern Polynesia.

*Keywords:* POTTERY, POLYNESIAN SETTLEMENT, MARQUESAS ARCHAEOLOGY, TEMPER.

## INTRODUCTION

Initial settlement of the Marquesas Islands from a Western Polynesian source (Suggs 1961; Sinoto 1979) has been inferred largely from the presence of small numbers of Polynesian Plainware sherds in the earliest Marquesan sites. Suggs regarded his discovery of sherds at Ha'atuatua and Ho'oumi on Nukuhiva Island as "the most startling find" of his work, which "radically changes the complexion of Polynesian prehistory. . . . The pottery tends to support the evidence of other artifact types, which indicates that the proto-Marquesans brought to the islands a cultural inventory with a possible Melanesian overlay from a high-island home, possibly in Western Polynesia" (1961: 95). Suggs's interpretation of a direct Western Polynesian origin for early Marquesan culture is no longer considered revolutionary. However, substantial controversy surrounds the issue of early East Polynesian settlement, including the chronology of the Marquesan sequence, and the problem of whether the earliest settlement phases for other East Polynesian archipelagoes have yet been identified (Irwin 1981; Kirch 1986; Kirch and Green 1987; Sutton 1987). The debate revolves in part around two alternative hypotheses: (1) that there was a phase of regular pottery manufacture and use in Eastern Polynesia, which has yet to be archaeologically attested; or (2) that the handful of sherds recovered from the Northern Marquesas simply represent the vestigial use of ceramics in Polynesia as a whole. An important finding was the

demonstration by Dickinson and Shutler (1974) that some (but not all) of the Marquesan sherds were of exotic, specifically Fijian, origin. The latter hypothesis has been espoused by Sinoto (1983: 65) who believes "that the early settlers brought pottery with them and did not make it locally in the Marquesas." Since ceramic production was in its final stages in Western Polynesia about A.D. 200–300, the interpretation that pottery manufacture did not carry over into the Marquesas fits closely with Sinoto's proposed date of A.D. 300 for initial settlement of the Marquesas (Sinoto 1979, 1983).

Marquesan settlement may have begun as much as 500 or more years earlier than Sinoto has suggested. Suggs's radiocarbon date of  $2080 \pm 150$  B.P. from Ha'atuatua (1961: 20), a reanalysis of the Hane site chronology (Kirch 1986: 22–29), and a recent date of  $2100 \pm 95$  from the Anapua rockshelter site on Ua Pou Island, excavated by Ottino (1985: 227) all suggest Marquesan settlement by c. 200 B.C., if not earlier. In this case, East Polynesia was colonised well before the cessation of Polynesian Plainware manufacture in the west, and sites containing substantial quantities of pottery should be present in the Marquesas. The issue was addressed some years ago by Green, who argued that the sherds found by Suggs and Sinoto on Nukuhiva and Ua Huka were in secondary contexts, and further, that "secure assemblages from the Settlement Phase of Marquesan prehistory associated with the use and manufacture of pottery are present and await excavation" (1974: 246–47). If Green is correct, we should also expect to find more localities with pottery in secondary contexts and, indeed, a wider geographic distribution of pottery in the Marquesan archipelago.

### THE ATUONA SHERDS

In 1985, Edmundo Edwards of the Département Archéologie, Centre Polynésien des Sciences Humaines, Polynésie Française, obtained two small sherds of plain pottery discovered by amateur collectors at a locality on the interior slopes of Atuona Valley on Hiva Oa Island in the Southern Marquesas. Unfortunately, the stratigraphic context of the sherds could not be ascertained: "le site ne soit difficile à cerner parce-que des aménagements de terrain ont été réalisés dans les alentours de la découverte" (Maeva Navarro, pers. comm., 28 February, 1985). Despite the lack of stratigraphic context, as the first discovery of pottery from the southern Marquesas, these sherds were clearly significant. Maeva Navarro, Director of the French Polynesian Archaeology Department, sent the sherds (labelled nos. "4" and "5") to the senior author with a request that they be analysed and compared with those sherds already known from the Northern Marquesas. In particular, we were concerned (1) to determine whether the sherds could indeed be classified as Polynesian Plainware (and not, for example, of historic European manufacture), and (2) to ascertain whether they were of indigenous Marquesan origin, or like other sherds from Ha'atuatua and Hane, of exotic Fijian origin (Dickinson and Shutler 1974). The sherds were subjected to (1) examination of a standard range of morphological and metric attributes (Shepard 1965; Rye 1981; Rice 1987); (2) scanning electron microscope (SEM) examination of paste micro-structure, including extent of vitrification, pore structure, and composition; and (3) petrographic thin-sectioning and determination of the temper mineralogy.

#### SHERD 4

This is a plain body sherd of hand-made, relatively low-fired earthenware, measuring  $28 \times 52$  mm (17.3 g). Exterior surface hardness on the Mohs' scale is 4. Sherd thickness is variable, ranging from 10.23–11.53 mm. This irregularity in thickness is due primarily to

undulations on the interior surface which appear to have resulted from the use of an anvil for vessel wall thinning during secondary forming. Both exterior and interior surfaces have fine subparallel striations indicative of wiping prior to firing; no slip is present. The exterior colour is dark brown (Munsell 7.5 YR 3/2); the interior colour is dark reddish grey (5 YR 4/2). SEM examination (50 X to 600 X) of sherd paste reveals internal fabric micro-structure with closed spherical pores (20–100  $\mu\text{m}$ ) with few microcracks and a dense structure probably reflective of solid-state sintering reached in the pot's firing (see Rice 1987: 93). Open firing of this vessel at a relatively low temperature (probably less than 700°C) and rapid open-air cooling are indicated by incomplete oxidation, revealed in the unoxidised "carbon core" about 6 mm thick. The boundaries of this unoxidised core are abrupt and quite regular, suggesting a relatively coarse-pored clay (Rye 1981: 115–18).

#### SHERD 5

This is a neck sherd, also from a hand-made, low-fired earthenware vessel, and measures 27 × 43 mm (20.07 g). The sherd lacks the actual rim and lip of the vessel, but clearly displays the thinning of the vessel wall and initial outcurving of the rim base. These morphological features indicate that the vessel from which this sherd derives was a medium-sized globular pot with a slightly restricted orifice and outcurved rim. Hardness of the exterior is Mohs' 4. Thickness of the main vessel wall ranges from 16.52–17.80 mm; the reduced neck (rim base) is 12.15 mm thick. As with Sherd 4, the interior surface displays undulations that probably result from paddle-and-anvil thinning. The exterior surface appears to have been burnished, and lacks fine striations. Exterior colour is reddish brown (5 YR 4/4) and interior colour is brown (7.5 YR 5/4). SEM microscopy reveals an internal fabric micro-structure with numerous microcracks (most greater than 100  $\mu\text{m}$ ) that comprise a blocky overall texture (cf. Rice 1987: 348). The paste appears to reflect an earlier phase of sintering, and may be due to a slightly lower firing temperature than that indicated by Sherd 4. An unoxidised carbon core 10–11 mm thick is present in the interior of the sherd, again indicating open firing and air cooling. Oxidation penetrated more deeply on the exterior (3–5 mm) than the interior (2–3 mm), which might suggest that the vessel was fired in an upside-down position surrounded by open flame, a common technique among ethnographically-documented Oceanic potters (e.g., Irwin 1985). The boundaries between the carbon core and the oxidised paste are irregular and diffuse, indicative of coarse-pored clay (Rye 1981: 115–18).

It is not possible to state definitely whether these two sherds are off a single vessel. Given the variation that often results from open air firing, the slight differences in unoxidised cores and surface colour are insignificant. Both sherds were manufactured using the same techniques. However, wall thickness differs substantially and on this criterion alone we incline to the view that two separate vessels are represented.

#### COMPARISON WITH POLYNESIAN PLAINWARE

The Atuona sherds may be compared with a number of excavated assemblages of Polynesian Plainware, including those from various sites in Samoa (Green and Davidson 1969, 1974; Jennings and Holmer 1980; Jennings *et al.* 1976; Hunt and Kirch 1988), Futuna and 'Uvea (Kirch 1976, 1981), Niuaotupapu (Kirch 1978, in press), and Tongatapu (Poulsen 1964, 1967), as well as the Northern Marquesan sherds described by Suggs

(1961: 95–98). In at least five attributes, the Atuona sherds fall within the range of variability exhibited by these Polynesian Plainware assemblages.

- (i) Anvil marks on interior vessel surfaces are very common in all Polynesian Plainware assemblages.
- (ii) Wiping and/or burnishing of exterior surfaces are the two most frequent surface treatment techniques applied to Polynesian Plainware.
- (iii) The thicknesses of the Atuona sherds fall within the ranges for Polynesian Plainware assemblages in Samoa (Green and Davidson 1969, 1974; Hunt and Kirch 1988) and Niuaotupapu (Kirch in press).
- (iv) The presence of inoxidised carbon cores is very common in Polynesian Plainware assemblages.
- (v) The Atuona sherds share with Polynesian Plainwares the common use of terrigenous sand as temper added to coarse-pored clays.

Both sherds, while visibly distinctive in their fabric micro-structure, are comparable to paste differences identified by SEM examination in Lapita ceramics from Niuaotupapu (Kirch in press), and in Lapita ceramics from Fiji and Mussau (Papua New Guinea) examined by Hunt.

The vessel form indicated by Sherd 5, a globular pot with slightly restricted orifice and everted rim, is known from relatively early Lapitoid assemblages in Fiji and Western Polynesia (see Green 1979, fig. 2.9). For example, it is present in Niuaotupapu (Vessel Form 8, Kirch in press) where it spans virtually the entire ceramic sequence. This form is also well represented in the pottery from the Sigatoka Dune site in Fiji (Birks 1973), generally classified as a Late Eastern Lapita assemblage. A variant of this form is also represented at the FU-11 site in Futuna, dating to c. 250 B.C. In Samoa, however, this vessel form is known only from the earliest Mulifanua Lapita assemblage, and is not represented in later, Polynesian Plainware assemblages, which are typified by simple bowls with direct rims (Green and Davidson 1969, 1974).

In sum, on a variety of criteria including morphological and manufacturing attributes, the two Atuona sherds can be best classified as Polynesian Plainware. The vessel form indicated by Sherd 5, however, is not typical of late Samoan assemblages of Polynesian Plainware, and might suggest a somewhat earlier phase in the Polynesian Lapitoid sequence.

#### PETROGRAPHIC ANALYSIS

The sherds were thin-sectioned and examined by Dickinson using standard petrographic methods. The non-plastic inclusions in both sherds are poorly to moderately sorted, sub-angular to subrounded volcanic sand, probably of alluvial origin and probably of local derivation. There are no petrographic grounds to suppose that the temper was obtained other than nearby in Atuona Valley.

The most abundant sand grains are microporphyrific volcanic rock fragments whose fine-grained groundmass is composed of feldspar microlites and glassy matrix in varying proportions; microphenocrysts are mainly feldspar but also include ferromagnesian minerals,

chiefly clinopyroxene. Vitric (isotropic) volcanic rock fragments are also present, but distinctly less abundant. Subordinate single-crystal mineral sand grains include plagioclase feldspar, clinopyroxene (augite), opaque iron oxides, and minor green-brown hornblende.

Previously studied indigenous Marquesan temper sands are placer sands rich in ferromagnesian pyroxene and opaque mineral grains (Dickinson and Shutler 1974). However, these placer tempers of volcanic derivation occur in sherds collected from coastal sites on Ua Huka and Nukuhiva where beach placer deposits would have been readily available to local potters. The alluvial sand present in the Atuona sherds is appropriate to the inland site where they were collected.

## DISCUSSION

On the basis of our analyses, the Atuona sherds are best classified as Polynesian Plainware pottery of Marquesan manufacture and, quite probably, of local inland Atuona Valley manufacture. They are thus significant in extending the known distribution of locally produced pottery in the Marquesas to the southern islands of the archipelago.

Polynesian Plainware has now been documented at four localities on three islands in the Marquesas, and at all of these at least some sherds are of local manufacture: (1) Ha'atuatua on Nukuhiva; (2) Ho'oumi on Nukuhiva; (3) Hane on Uahuka; and (4) Atuona on Hivaoa. Thus, Green's argument (1974: 246-47) that these finds are all in secondary context, and must point to as yet undiscovered primary ceramic-bearing assemblages in the Marquesas, deserves serious consideration. Certainly the occurrence of sherds in such secondary contexts has been well documented for Western Polynesia (Groube 1971; Green 1974; Kirch in press).

To date, virtually all efforts to seek sites dating to the early periods of Marquesan settlement have focused on coastal locations. The presence of pottery in an *inland* context in Atuona suggests that future efforts must not neglect such interior regions. Indeed, the presence of Polynesian Plainware sites in interior valley settings in Samoa (e.g., the Falefa Valley, Green and Davidson 1974) is reason to suggest that early colonisers to the Marquesas might well have replicated such interior settlement patterns.

In conclusion, the occurrence of pottery in the southern Marquesas provides yet another hint that the earliest phases of Marquesan and, indeed, Eastern Polynesian prehistory have probably not yet been archaeologically discovered. The puzzle as to why the Lapita people "lost their pots" so abruptly in Eastern Polynesia could yet turn out to be more of an artefact of incomplete archaeological sampling than of historical reality (Irwin 1981). Certainly the "invisibility" of the first thousand years of Samoan prehistory until the discovery of the submerged Mulifanua Lapita site (Green and Davidson 1974), speaks to the difficulties of early site location. Like Samoa, most of the archipelagoes of central Eastern Polynesia are also subject to relatively rapid submergence and other tectonic and geomorphological processes that could have resulted in the destruction or burial of early coastal sites.

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