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Then and now: W.H. Davenport's 1966 archaeological expedition to Santa Ana with new data on the plainware pottery

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Introduction

When William H. Davenport, curator of the Oceanian Section of the Penn Museum (the University of Pennsylvania Museum of Archaeology and Anthropology, located in Philadelphia, Pennsylvania, USA), went in 1964–66 to the islands of Santa Ana and Santa Catalina in the Solomon Islands to do 13 months of ethnographic fieldwork, he noticed 'a number of promising archaeological sites' and proceeded to excavate several of them on Guadalcanal and Santa Ana (Davenport 1968:31, 1972:165). Excavation costs on Santa Ana were met by the Penn Museum and the materials recovered came to the museum (Davenport 1972:166 footnote 1, 183 footnote 15). The Penn Museum Oceanian collections are almost entirely ethnographic, and Davenport's Santa Ana expedition was one of only two expeditions to the Pacific with an archaeological component ever sponsored by the museum. The first was a field trip to Western Australia in 1930 by D.S. Davidson, then a member of the Penn

Department of Anthropology and later curator of the Oceanian Section, which included an archaeological reconnaissance of the Katherine River – Victoria River region (Davidson 1935:145).

Davenport noted that 'one of the most rewarding results of these small excavations was the discovery of a coarse, friable red pottery in the cave sites' (Davenport 1968:3). Pottery was unknown on the island at that time, and 'the people did not even recognize it as something man-made' (Davenport 1972:182–183). More than 50 years later, Davenport's unexpected discovery of plainware sherds in the Santa Ana rock-shelters remains unique to this area of the Solomon Islands (Walter and Sheppard 2009, 2017). To contribute new data to the *Uncovering Pacific Pasts* exhibition on the history of archaeology in Oceania, petrographic analysis was conducted on four sherds excavated by Davenport at Feru II and Rate. Preliminary results link the ceramic objects to the nearby islands, probably San Cristobal, either as finished objects or clays brought to Santa Ana.

Davenport's excavations on Santa Ana

Davenport's excavations in the Solomon Islands began at the Vatuluma Posovi cave site on Guadalcanal (Davenport et al. n.d.) and continued on Santa Ana, where he excavated one midden (Maworo, near Gupuna Village) and three shallow coastline caves (Feru I and II on the south coast, and Rate on the west coast). On property near Gupuna Village belonging to Geoffrey Kuper, Davenport noted several middens 'associated with previous and present settlement areas'. He could not excavate the largest and most interesting-looking ones because he had no proper earth-moving equipment, but with Kuper's support and local labour he cut test trenches through one small midden (Maworo) (Davenport 1972:165). Geoffrey Kuper was the son of German planter Heinrich/Henry Kuper, who came to Santa Ana in 1912 and married Augusta Kafagamurironga, daughter of a paramount chief. Kuper reported hearing stories from his mother about previous habitation in the area: 'according to Mrs. Henry Kuper, a Solomon Islander who was born on Santa Ana, the midden is believed to have been deposited by a small settlement of people who lived there not long before the establishment of Gupuna Village' (Davenport

1972:169), which 'seems to have occurred no more than a century ago. Some elderly informants place it in their own parents' generation' (Davenport 1972:168).

During the week of 6–12 May 1966 (Penn Museum Archives [PMA], William Davenport Papers. Guadalcanal & San Cristobal Islands – Santa Ana Excavations 1966), Davenport had one central longitudinal and three crosswise 1 m wide trenches cut through the midden and the excavated soil screened through 1/4-inch wire mesh (Davenport 1972:169). Faunal remains recovered included three dog teeth, pig bones, fish bones and shellfish – among which were 18 kinds considered edible and five (including the two considered inedible) used as materials for artefacts (Davenport 1972:169–170). Artefacts found included fragments of men's *Tridacna* arm rings; fragments of women's *Trochus* arm rings; pieces of *Nautilus* and *Conus* shell inlay (one of each); an unfinished *Trochus* shell lure for a composite bonito fishhook; a piece of black-lip pearl shell (possible scraper or peeler); 56 chalcedony flakes (finger-held blades); and more than 96 pieces of volcanic stone, some blackened by fire and all apparently fragmented by heat, probably from stones used in earth ovens (Davenport 1972:169–172).

The following week, during 13–24 May, Davenport excavated a shoreline cave on the south coast of Santa Ana (Feru I) (PMA William Davenport Papers). Feru I is a shallow cave, an undercutting made by the sea at the base of a limestone terrace (Figure 35.1). At the front, Davenport observed a volcanic stone, about 50 cm in diameter with an artificially pitted surface, an anvil on which Canarium almonds had been cracked (Davenport 1972:172). Excavation was by artificial strata. Below 150 cm, evidence of human use or occupation was 'meager' and below a depth of 200 cm evidence of human use ceased (Davenport 1972:174). Later that year, in November, Davenport excavated a second, nearby cave (Feru II). Feru II is another shallow cave, about 25 m west of Feru I. It, too, was excavated by artificial strata. All traces of human use ceased at about 216 cm (Davenport 1972:175). Then, on 17–19 November, Davenport excavated a third shallow cave, Rate, on the west side of Santa Ana, 'about two and one-half miles walking distance along the shore from the Feru sites' (Davenport 1972:178).

Figure 35.1. Excavation of the Feru I cave site, 18 May 1966.
Source: Penn Museum.

Material recovered from the three caves included fish and pig bones, one possible dog bone, 24 species of edible shellfish, crab claws (some charred), charred coral (possible evidence of burning to produce lime for betel), Canarium almond shells, chalcedony flakes (what inhabitants call *neki*), split and cracked volcanic stones (fragments of oven stones), a piece of black-lip pearl shell (possible scraper), three possible whetstones, water-worn pebbles (possible hammerstones), fragments of a *Tridacna* coconut grater blade, two fragments of women's *Trochus* arm rings, a fragment of a man's *Tridacna* shell nose septum skewer, a fragment of a man's pearl shell nose tip ornament and three pieces of shell cut for inlay (Davenport 1972:169–180). The Feru II and Rate sites also yielded, in the lowest levels of the excavations, fragments of pottery (Davenport 1972:176–177, 179).

Davenport suggested that the Santa Ana cave sites 'were probably used only as temporary shelters for fishing and marine collecting along the extensive reefs that ring the island', noting that:

> the midden site yielded the same array of objects as were found in caves, plus a few more personal and household artifacts more closely associated with settled life in a hamlet (as contrasted with the specialized, temporary use of the caves). (Davenport 1968:31)

In fact, however, the cave sites yielded most of the same type of artefacts found in the midden, including fragments of women's *Trochus* arm rings, pieces of shell inlay, possible scrapers of black-lip pearl shell, chalcedony flakes, fragments of oven stones and whetstones. Found in the midden but not in any of the caves were only fragments of men's *Tridacna* arm rings and an unfinished *Trochus* shell bonito lure. And the caves yielded 'personal and household artifacts' associated with settled life such as chalcedony flakes, whetstones and hammerstones, fragments of coconut grater blades, stone adze blades and pottery not found in the midden. As Pamela Swadling (1976:127) put it: 'Coastal fishermen, seafood gatherers, storm refugees or recluses are hardly likely to have produced the large range of artefacts found.'

Many of the archaeological artefacts recovered by Davenport on Santa Ana have counterparts in his ethnographic collection from Santa Ana, Santa Catalina and the adjacent Star Harbour region of San Cristobal, objects that illuminate the cultural significance of the corresponding prehistoric examples. Pieces of *Nautilus* and *Conus* shell shaped like those found archaeologically are inlaid in sacred bonito canoes, caskets for the bones of the honoured dead, serving bowls for commemorative feasts and individual communion bowls (Figure 35.2). A rare man's nose ornament, of a type a fragment of which was found at one of the archaeological sites, was given to Davenport by a Gupuna man who had kept it as a memento of the man for whom it was made, an esteemed forebear. Such nose ornaments were worn in the recent past only on important social occasions by 'men of great prestige' (Davenport 1968:19) (Figure 35.3).

Figure 35.2. Triangular *Nautilus* shell inlay from the Rate cave site (67-33-62, above left), semicircular *Conus* shell inlay from the Maworo midden (67-33-16, above right) and ethnographic ritual bowl with both kinds of inlay (67-5-7, below).

Source: Penn Museum.

Figure 35.3. Ethnographic men's nose ornament (67-5-85, left) and archaeological fragment of similar ornament from the Rate cave site (67-33-101, right).

Source: Penn Museum.

The plainware sherds

Recovered from the cave excavations were a rim sherd and six body sherds from Feru II and a neck sherd from Rate (Figure 35.4). The fact that sherds similar in colour and texture were found at two sites at some distance from each other led Davenport to conclude that 'pottery was in general use on the island' (Davenport 1972:183). Like the chalcedony flakes, which, the inhabitants suggested, had to be imported from San Cristobal (or more likely Ulawa: Green 1976:144), and the red whetstone found at Feru I, which Davenport characterised in his field notes as being 'from San Cristobal' (PMA Davenport Papers), sherds from the Feru sites could not have been locally sourced, but 'could be placed within the mineralogy and geographic nature of San Cristobal' (Swadling 1976:127).

Figure 35.4. Rim sherd from the Feru II cave site (67-33-81, right) and neck sherd from the Rate cave site (67-33-96 and 67-33-97, left).
Source: Penn Museum.

Recent scholarship has expanded the known distribution of historical and archaeological pottery within the Solomon Islands (Carter et al. 2012), but the Santa Ana plainware sherds remain unlike other assemblages (Swadling 1976; Walter and Sheppard 2017). And to date, no Lapita pottery has been found in the Central Solomons (Walter and Sheppard 2017:60–64). Radiocarbon dates of the plainware sherds remain problematic. Early radiocarbon samples, first from Davenport's excavated context and then from Roger Green's re-excavation of Feru II (see Sheppard and Furey, **Chapter 33**, this volume), have provided very different dates. A charcoal sample collected from the level from which the sherds were recovered at Feru II between 70 and 130 cm was dated to 1275±105 BP (Davenport 1972:178). A charcoal sample from the level from which the sherd was recovered at Rate (Sample D, I-2882) was dated as 1910±135 BP (Davenport 1972:179–180). Subsequently, Roger Green revisited Feru II and revised the stratigraphy, dividing it into upper and

lower levels separated by a layer of sterile sand (Black and Green 1975:30; Swadling 1976). He collected 18 additional sherds (Swadling 1976:127) and came up with much earlier dates for the lowest, pottery-bearing deposit. Samples from this layer were dated to 3250±70 BP and 3140±70 BP, indicating that the pottery was much older (Black and Green 1975; Kirch and Rosendahl 1976:235).

To investigate further the Santa Ana sherds excavated by Davenport, we conducted petrographic analysis to determine, if possible, their provenance. Santa Ana's geology is essentially composed of Pleistocene reef limestone (Coulson 1985; Geological map of the British Solomon Islands, 1:1,000,000; Petterson et al. 1999), with volcanic rocks outcropping in a small area on the northern part of the island (Davenport 1972:166; Green 1978:4). According to Davenport (1972:166), the shallow soils are sandy and poor. It seems therefore unlikely that clay, or potting clay, was readily available on Santa Ana for ceramic production of any scale.

Tempering practices in Oceania have been extensively studied by thin-section petrography on prehistoric pottery (Chiu et al. 2016; Dickinson 1978, 1998, 2001; Dickinson et al. 2013; Rye 1976). Dickinson's research on Oceanian tempers is supported by hundreds of samples from island groups in the southern and western Pacific Ocean (Dickinson 1998:263). The lack of good potting clays in the Solomon Islands seems to have led the ancient potters to mix in coarse inorganic additives (i.e. tempers) in their clay paste preparation. Since calcareous inclusions from the reef limestone were commonly used in Oceania but are not diagnostic of a specific location (Dickinson 2006), the focus of the petrographic research has been on the silicate tempers, such as beach sand, alluvial sands and crushed rock, which are more diagnostic. These tempers are characteristic of specific geological settings within an island and between islands, making thin-section petrography the best analytical technique to source archaeological ceramics from Solomon Islands.

Petrographic analysis was conducted at the Penn Museum's Center for the Analysis of Archaeological Materials on four plainware ceramic sherds, including a rim with a serially incised lip from Feru II and a neck sherd from Rate. Preliminary results show that the four sherds can be divided into two distinct petrofabric groups based on the mineralogy of the coarse fraction: (1) Rate Petrofabric, a single-sample petrofabric characterised by calcareous sand temper from reef detritus; and (2) Feru Petrofabric with three samples characterised by weathered volcanic sand and other silicate inclusions (Figure 35.5).

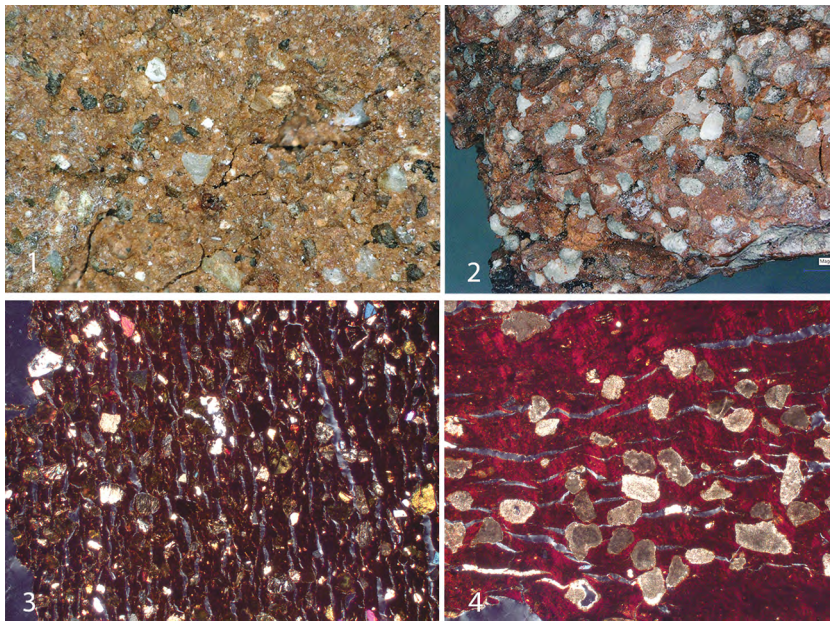

Figure 35.5. (1) 67-33-81 surface and (2) microphotograph in XPL (cross-polarised light) of Feru Petrofabric; (3) 67-33-96 surface and (4) microphotograph in XPL of Rate Petrofabric.

Source: Penn Museum.

The single-sample Rate Petrofabric has well-sorted inclusions with a bimodal grain-size distribution. The coarse fraction is characterised by predominant (over 70 per cent of total coarse fraction inclusions) micritic limestone clasts and rare (2–0.5 per cent) inclusions of fibrous amphibole, pyroxenes, iron oxide opaques, plagioclase feldspars and weathered volcanic rock fragments. It is moderately porous with predominant planar voids strongly oriented parallel to the vessel's wall. This type of microstructure is often observed in petrofabrics of pots formed with a beating technique. The groundmass is bright red to red with strong optical activity and bi-strial birefringent fabrics, suggesting a low firing temperature. The Rate Petrofabric may have been produced on Santa Ana based on the non-calcareous mineralogy derived from volcanic sources. However, the calcareous temper is not diagnostic and the overall mineralogy could match sand tempers from other islands.

The Feru Petrofabric is moderately sorted with a unimodal grain-size distribution and has a coarse fraction characterised by frequent (c. 50 per cent) very weathered volcanic inclusions, along with few (5–15 per cent)

chert, pyroxenes, plagioclase feldspars (both fresh and altered), and iron oxide opaques, less than 2 per cent argillite, mono- and polycrystalline quartz, and traces (<0.5 per cent) of amphibole and chlorite inclusions. It is a fairly porous petrofabric with elongated voids strongly oriented parallel to the vessel's walls, suggesting the pots were made using a beating technique. The rim may have been coiled or attached using a different technique since the pores are equant and randomly oriented. The groundmass is dark brown with weak optical activity and a speckled birefringent fabric. Together these observations suggest a short firing at relatively low firing temperatures. It is also quite possible that the three sherds belonged to the same pot.

The Feru Petrofabric does not match Santa Ana's geology and has a mineralogy consistent with the surficial geology of San Cristobal. The basement sequence of the island is represented by basaltic lithologies interbedded by limestone, basalt breccias, cherts and sandstones, while the cover sequence comprises dacite, basalt, sandstone and siltstone (Petterson et al. 2009). According to Dickinson's division of Oceania into five main petrographic regional temper provinces (Dickinson 1998; Dickinson and Shutler 1971, 2000), Santa Ana, in relation to its major island San Cristobal, belongs to the 'Dissected Orogen' temper province (Dickinson and Shutler 2000:Figure 3). Our results align with Dickinson's analysis of five Feru sherds from Roger Green's re-excavation (Dickinson 1978). The five samples represent four different temper groups, two of which are calcareous, and sample S1 is most like our Rate single-sample petrofabric. One sample, 'DAV' (Dickinson 1978:3), has the same inclusion types (volcanic, pyroxene, quartz and chert) and abundance as the Feru Petrofabric. Dickinson, who also analysed sherds from the Santa Cruz island group, contrasted the mafic inclusions of the Feru tempers, characterised by pyroxene minerals, to those of the Santa Cruz tempers that are characterised by abundant hornblende and olivine (Dickinson 1978:4–5) and concluded that the 'DAV' sample was not from Santa Cruz. We can further eliminate Choiseul and Bougainville based on the ongoing petrographic analysis of pots from these islands (part of the ethnographic collection at the Penn Museum), which exhibit different types of volcanic sand tempers (i.e. abundance of hornblende amphibole and plagioclase feldspars).

In conclusion, but without comparative ceramic material from San Cristobal, we tentatively, like Dickinson for his 'DAV' Feru sample, link the volcanic sand tempered Feru sherds to San Cristobal, and perhaps

Ulawa, which has the same surficial geology as San Cristobal. Roger Green also connected the communities of Santa Ana to those of San Cristobal based on similarities in 'portable artifacts' as evidenced by his excavation at Na Mugha, a Late Prehistoric site in the Star Harbour region, San Cristobal (Green 1976). The new petrographic data presented in this chapter fit well with other studies and suggest that the inhabitants of the Feru II and Rate rock-shelters most likely acquired pottery, along with other goods and raw materials, on nearby volcanic islands.

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Objects highlighted in this chapter were on display at the Penn Museum from August 2020 to December 2021.

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