Case Study 4.2: Atituiti Ruga, Mangareva, French Polynesia

Clive Ruggles

Presentation and analysis of the site

Geographical position: Atituiti subdistrict, Rikitea district, Island of Mangareva, Gambier Archipelago, French Polynesia.

Location: Latitude 23º 7´ 58˝ S, longitude 134º 58´ 14˝ W. Elevation 90m above mean sea level.

General description: The plateau of Atituiti Ruga occupies the southernmost part of the island of Mangareva, between the coastal plain (Atituiti Raro) to the south and the peak of Auorotini (Mount Duff) (441m) behind sheer cliffs to the north. There are extensive settlement remains on the plateau, including a large platform identified locally as Te Rua Ra ('the pit of the sun'). The archaeoastronomical data confirm ethnohistoric accounts extending back to the mid-19th century showing that the platform was a key location used for solstitial observations that helped to calibrate the lunar calendar, determine the transitions between the two main seasons of the year, and to make predictions about the coming year's breadfruit harvest.

*Inventory of the remains***:** The Atituiti Ruga plateau contains numerous structures including terraces, walls, platforms, and upright stones. The largest structure, 190-06-ATU-1A, is a stone-faced, earth-filled platform, broadly rectangular in form, with sides c. 23m long, aligned in the cardinal directions. It has clear views out over the Mangareva lagoon to the east, south and west, and sheer 200m-high cliffs to the north, rising up to the peak of Mount Duff.

History of the site: Radiocarbon evidence suggests that the platform was constructed around AD 1450. Traditions describing its use for solstitial observations were first recorded by Catholic missionaries in the mid-19th century, so such observations may have continued right up until traditional practices were abandoned following European contact. As observed from the platform, the cliff of Ana Tetea on the northern end of Agakauitai Island, clearly visible beyond the lagoon, marked the position of sunset on the December (summer) solstice. There was also a clear view out to reefs that may have marked the position of sunrise on the same day. A flat boulder in the centre of the platform may well have marked the exact observing spot. The shadow cast by the peak of Mount Duff to the north passed across the platform around noon on days around the June (winter) solstice, and informants' accounts refer to a stone being set up to mark the farthest limit reached by the shadow on the solstice itself.

The ethnohistoric evidence also attests to the former existence of other specific observing sites from which Margarevans not only observed the range of rising positions of the sun over the islets of the outer reef to the east but also indicated the limits of the sun's course using man-made markers—pairs of stones set up on mountain ridges.

The plateau fell into disuse and became thickly overgrown. The platform remained undocumented until 2001, when it was rediscovered by an international archaeological survey and excavation team.

Fig 4.2.1. Island of Mangareva, Gambier Archipelago: view from the lagoon showing the plateau with Mount Duff and its cliff behind, and Mount Mokoto further away on the right. Photograph © FRED at fr.wikipedia, Creative Commons Licence

Cultural and symbolic dimension: There is a good deal of ethnohistoric and linguistic evidence for the existence throughout Polynesia of local variants of a calendar based on the phase cycles of the moon and divided into two main seasons marked by the heliacal and acronychal rising of the Pleiades. In contrast, there are only a few records of ancient Polynesians using systematic observations of the rising or setting position of the sun to mark the seasons, and virtually no actual sites reliably identified where such observations took place. The platform at Atituiti Ruga is exceptional in being the only surviving structure known unequivocally (from both ethnohistoric and archaeological/archaeoastronomical evidence) to have been used for systematic solar observations in Polynesia prior to European contact.

Documentation and archives: The practice of solstitial observation was witnessed by the Belgian missionary Honoré Laval and recorded in an unpublished manuscript started in 1856, never completed, rediscovered in 1936 in the Archives of the Maison des Pères des Sacrés-Coeurs in Braine-le-Comte, Belgium, and eventually published by the Bishop Museum in Honolulu, Hawaii in 1938. This account describes several aspects of Te Rua Ra in Atituiti district, one of the most important locations where such observations were carried out, including detailed descriptions of foresights. In 1934, the ethnologist Te Rangi Hiroa (Sir Peter Buck) acquired further information from native informants and written accounts, including that observations were made from a flat rock. In 2001, elderly local informants identified the vicinity of the platform as bearing the toponym Te Rua Ra.

Authenticity and integrity: The fact that, as seen from the platform, Ana Tetea cliff does indeed mark December solstice sunset, and the shadow of the summit of Mount Duff does indeed mark noontime on the June solstice, identifies 190-06-ATU-1A beyond any serious doubt as the solstitial observing site described by Laval and Hiroa. The surviving memory of the Te Rua Ra toponym, and the presence of a flat rock in the centre of the platform, in accordance with Te Rangi Hiroa's description, provide corroborating evidence.

Present site management

Present use: Numerous monumental stone structures in Mangareva, including several temples (*marae*), are known to have been dismantled or destroyed by French missionaries in the nineteenth century, the stone being reused in other buildings. Owing, presumably, to its comparative isolation, many structures on the Atituiti Ruga plateau survived. The plateau is largely covered today in dense high vegetation including Java plum and other non-indigenous trees, but much of the eastern façade of the Te Rua Ra platform has been damaged in the last ten years during the construction of a nearby road.

Protection: The sheer cliffs rising up to Mount Duff, and a steep bluff descending sharply down to the coastal plain, provide natural barriers to the north and south respectively.

State of conservation: The site appears to have been largely, if not completely, neglected since traditional practices were abandoned. The horizon in the direction of December solstice sunrise is currently obscured by high vegetation.

Archaeological/historical/heritage research: The island was studied in 1934 by the Polynesian archaeologist K.P. Emory, but the structures on the Atituiti Ruga plateau went unrecorded. An archaeological survey of the area, including test excavations, was carried out by an international team between 2001 an 2003.

Additional bibliography

Hiroa, Te Rangi (P.H. Buck) (1938). *Ethnology of Mangareva*. Honolulu: Bishop Museum Press (Bernice P. Bishop Museum Bulletin 157).

Kirch, Patrick V. (2004). "Solstice observation in Mangareva, French Polynesia: new perspectives from archaeology", *Archaeoastronomy: The Journal of Astronomy in Culture*, 18, 1–19.

Laval, Honoré (1938). *Mangareva: l'histoire ancienne d'un people polynésien*. Paris: Libraire Orientaliste Paul Geuthner.

Case Study 4.3: Wurdi Youang, Australia

Ray Norris

Presentation and analysis of the site

Geographical position: Near the village of 'Little River', between Geelong and Melbourne, Victoria, Australia.

Location: Latitude 37º 52´ 30˝ S, longitude 144º 27´ 28˝ E. Elevation 80m above mean sea level.

General description: The Wurdi Youang site is one of a number of stone arrangements known in the state of Victoria that were built by Aboriginal people before European settlement. It is on land traditionally owned by the Wathaurong Aboriginal people and may be an initiation site.