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TOMBS, TUNNELS, AND TERRACES
A CULTURAL RESOURCES SURVEY OF A FORMER AMMUNITION SUPPLY POINT IN OKINAWA, JAPAN[1]

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BACKGROUND

U.S. forces serving at military bases on foreign soil are obligated to act as good stewards of the cultural and natural resources under their control. However, cultural resources management presents special challenges at U.S. bases in other countries where cultural properties laws differ in emphasis and detail from those in the United States and issues of land ownership and occupancy are not always clear. Where status of forces agreements (SOFAs) exist, environmental governing standards bridge the gap between U.S. and host nation cultural priorities. In Japan, the *Department of Defense Japan Environmental Governing Standards* (JEGS) fill this function. Under Criteria 12-4.2 and 12-4.3 of the JEGS, U.S. Forces Japan commit themselves to inventory and protect cultural properties found on the lands they control or use. Cultural properties include archaeological sites, tombs, historic buildings, and shrines. Natural monuments, such as landscape features or plant and animal species, may also be designated as cultural properties. As part of this commitment, in February 1999 a cultural resources inventory was conducted in Area 1, part of Kadena Air Base (AB), Okinawa, Japan. Area 1, the former U.S. Army Ammunition Supply Point 1, is currently used primarily for training exercises and recreational paint ball.

Located in the middle of the Ryukyu Island chain, Okinawa has a settlement history that stretches back at least 30,000 years. The Paleolithic foragers who first settled the island were succeeded by the more affluent foragers of the Shellmound Era about 10,000 years ago. The Shellmound Era, which lasted until about A.D. 1000, was a time that saw important foreign contacts and the introduction of agriculture. There is evidence of contact between the peoples of Okinawa and the Japanese Archipelago by 4500 B.C. and of trade with China by 300 B.C. Rice agriculture was introduced from Asia by about A.D. 200. Ranked chiefdoms appeared during the subsequent Gusuku or "castle" period (A.D. 1000-1450), and an independent city-state, Chuzan, unified the island politically by A.D. 1429, beginning the Sho Dynasties (A.D. 1429-1879) (Pearson 1996). Trade with both Japan and the Fujian province of China was important to Okinawa. Fujian cultural imports include burial practices and tomb architecture. Within the context of these external influences, the Okinawans developed their own culture. In 1609, Okinawa, while professing allegiance to the Chinese emperor, came under the control of the Satsuma domain of Japan. This situation eventually led to the incorporation of Okinawa into the Japanese Empire in 1879. Excluding a period of American rule (1945-1972), Okinawa has remained a Japanese prefecture.

Area 1 at Kadena AB is a relatively remote 63 hectare (156 acre) parcel of land with restricted access. It is composed of a series steep-sided ridges separated by winding ravines. The sides of these ravines are forested with an immature canopy of Ryukyu pine and have an open understory. In these areas the ground surface is readily visible. Ravine bottoms are forested as well and include watercourses and wetlands. Ravine floors vary in width, with the wider ones often accommodating agricultural terraces. The

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widest and least steep ravines open into marshy wetlands and ponds. Most ridge tops were scraped and leveled during the U.S. military use of the area and thus little potential exists for the presence of cultural resources predating the Second World War in these areas. The ridge tops currently are in various stages of revegetation. Thickly vegetated edge communities characterize forest margins, particularly along the roadways.

SURVEY METHOD AND RESULTS

The topography and vegetation dictated our survey strategy. Areas of open understory, mostly ravine sides and bottoms, were surveyed by walking parallel transects 15 to 20 m apart following the topography of the ravines. Ridge tops were checked to verify that they had been disturbed, and freshly scraped areas were examined. Fresh road cuts and cut-banks were examined for buried strata. Sites were plotted on detailed topographic maps, photographed, and recorded on standardized site forms developed for this survey. For the most part, a non-collection strategy was followed and artifacts were left *in situ.*

Although Area 1 lies along a traditional trade route of some antiquity, the cultural remains encountered there all appear to be no earlier than Japanese dominance of the island. Four main categories of sites were encountered in the survey: domestic/agricultural sites, agricultural terraces; tomb sites; and dug out military features.

Traditional Okinawan Sites

The traditional Okinawan sites encountered in Area 1 form a domestic agricultural complex. They include possible farmsteads, terraced agricultural fields, excavated tombs, and possible *ad hoc* bombardment shelters. The domestic sites were found exclusively in areas of mature forest, and with the exception of a few field terrace systems, all sites were located in the southern, somewhat more level, half of Area 1. The presence of traditional Okinawan sites exclusively in mature forest areas reflects the value that traditional Okinawan places on preserving trees around homes (Hall 1975:119, 123) and tombs, both for shelter and for aesthetic reasons.

Traditional Agriculture

The traditional Okinawan agricultural system was well adapted to the island's steep, mountainous, land-poor environment (Imamura 1996:198). Rather than tilling a single contiguous parcel of land, the traditional Okinawan farmer worked a number of small, scattered plots of varying type and productivity. This practice allowed each farm family to diversify its resource base, thus spreading its risk, and prevented any single family from monopolizing the good soil. The small fields delimited by raised paths, boundary walls, or terraces also helped reduce the erosion of precious topsoil (Glacken 1955:111-117).

Most of the field remains encountered in this survey seem to have been associated with wet rice agriculture. Rice has been grown in Okinawa since at least A.D. 200, and ravine bottoms, such as those found in Area 1, have often served as rice-producing areas. The terraces constructed in ravine bottoms served a dual purpose. They both created agricultural pondfields or paddies and controlled runoff and erosion. Where a series of terraces was constructed, gaps were left at alternating ends of the terraces, resulting in an even flow of water from terrace to terrace (Glacken 1955:133). Ravine slopes were probably intentionally cleared to make the pondfields on the ravine floors more productive and were planted with grasses suitable for roof thatch.

Traditional farmsteads consisted of a dwelling and outbuildings clustered around an open courtyard. Farm dwellings were rectangular frame structures with thatched roofs, usually facing south and built low to minimize typhoon damage. These houses tended to be located at the back of the courtyard, with animal pens and other outbuildings along the sides. A line of banyan trees or large bamboo often formed a protective boundary for the farmstead area (Haring 1969:30). Swine, an important source of cash, received special treatment. Pigsties were sturdily built. They had stone walls and floors able to withstand typhoons and were often roofed (Glacken 1955:62ff, 157).

Area 1 seems to have been sparsely inhabited even before the war; however, the remnants of farmsteads, agricultural terraces, and occasional isolated artifacts indicate the area was used. The most complete farmstead in Area 1 is part of a complex of traditional Okinawan sites found at the southern end of the area, just under the eaves of the forest canopy. The site had been intentionally leveled prior to building. A cut-bank where the lower edges of the hillside were removed marks the northern end of the site. Mature Ryukyu pine on either end of the site and a mature stand of bamboo on its western edge suggest that this was a habitation site. The site consists of the foundations of two structures and a circular pit. On the eastern end of the site are the foundations of an almost square (2.6 × 2.7 m) stone and rammed earth structure. A squared stone pillar originally stood at each corner. Two remain standing and the other two lie fallen. The preserved northern and western walls are of rammed earth. The structure's small size suggests some type of storage structure. Just over a meter to the west, and parallel to it, are the stone foundations of a second structure. This 2.4 × 1.75 m structure was built of roughly shaped coralline stones. It appears to have had a stone floor and something of a veranda on the southern side. It has been suggested that these are the remains of a sturdy pigsty. Apart from some modern trash, artifacts at the site include only rice bowls and the sherds of a terra cotta jar. The remainder of the site was apparently destroyed during the construction of a nearby post-war storage building.

Occasionally isolated artifacts giving evidence of domestic agricultural use were encountered in the ravine bottoms. The base of a two-part basalt rice mill was found at the head of a ravine. Identical mills were in use within the memory of one of the authors, and are currently on display in the Yomitan Museum. A second find was a glazed porcelain rice bowl about 10 cm wide at the rim. It was decorated with four large brownish splotches; each surrounded by a series of blue dots. This motif may still be seen in the Yomitan Pottery Village, where traditional Okinawan methods of ceramic production are preserved. This vessel may have been taken to the field as part of a midday meal.

Field Terraces

Systems of agricultural terraces built across the bottoms of the wider ravines are the most distinctive and widespread type of site found in Area 1. The terrace walls were constructed of local basalt or slate cobbles laid in irregular courses. Most often the stones were laid horizontally, but in some cases they were laid vertically. The terrace walls are of variable height, ranging 25 cm to 3 m, although most stood less than 1 m high. A gap was left at one end of each terrace wall to allow water to flow to the field below. The distance between terraces varies with the grade of the ravine floor, from 5 to 50 m, creating pondfields in a variety of shapes and sizes. The number of terraces in a given reach of a ravine varies from a single dam to systems of up to 14 field terraces. The largest systems are found in the central ravines. Single terraces and smaller terrace systems are scattered throughout Area 1.

It is difficult to determine the age of the terraces. Thick deposits of soil are present in many of the ravine bottoms. Such deposition would have occurred when the slopes of the ravines were largely unvegetated, as for example, during World War II. When slope soils were exposed, the steep denuded slopes were subject to severe mass wasting, gully erosion, and sheet flow during typhoons and other episodes of heavy precipitation. Many of the terrace walls may have been inundated with silt during these periods. With the development of a forest canopy, the process of erosion from the slopes has slowed, and a more typical hydrologic regime has been re-established. A new, downward cycle of channel cutting is removing the sediment from the ravine bottoms and is working down to bedrock. In some locations, gullies in the ravine bottoms have exposed previously buried terrace walls. Earlier episodes of silting are not precluded. Thus, the date of terrace construction cannot be determined precisely without excavation and the discovery of associated datable remains, combined with further investigation into historical records of agriculture in the area. Similar systems of rock-faced agricultural terraces found at nearby Camp Butler have been dated to the dynastic through modern periods (Allen and Nees 1998).

Tombs

With good soils at a premium, Okinawans traditionally have used nonarable land for the disposal of the dead. Tomb clusters were situated close enough to the family residence that proper funerary rituals could be conveniently performed at the tomb site, but far enough away that the influences of any malicious spirits could be avoided (Lebra 1966:165f; Haring 1969:75ff). Each tomb served either a family or a wider kin group. A multiphased funerary system, that included both primary and secondary burials, similar to practices in the Fujian province of China, was used. In this system, each tomb accommodated a single primary interment. After a period of decomposition, bones were ceremonially placed in bone jars, or ossuaries, that were in turn placed on shelves running along the interiors of the tomb chamber (Haring 1969:77, Lebra 1966:166; Kaneko 1964:25). While their basic features remain constant, tombs vary in scale and complexity with the wealth and status of their owners.

Eighteen earth-cut *fuso* tombs were encountered within the fences of Area 1 — all of them in the southwestern corner of the site, not far from the traditional farmstead described above and a stone built tomb complex located just south of the facility fence. All the tombs are cut into prepared earthen bluffs. The face of the bluff where the tomb was to be excavated was first shaved smooth and flat, angled slightly backwards toward the top of the prepared face. While some façades consist of a simple flat cut, in other cases the doorway area is set back between two buttress-like architectonic features. Walled forecourts enclose the entries of the more elaborate tombs. The preserved walls are low and made of earth. They may originally have supported a superstructure of some perishable material. While setbacks, niches, and courtyards are features shared with the more elaborate rock-cut tombs, none of the Area 1 tombs displays the curved roof of the "omega" or "turtleback," *kamekokata* tombs found elsewhere on Okinawa

Tomb interiors also vary in size and complexity, although exterior complexity does not necessarily correlate with interior elaboration. In all cases where interior features are preserved, there is a central clear area just inside the doorway for placing the coffin. One or more benches or shelves for ossuaries surround the central area. Single benches raised 15 to 30 cm above the central area are located along the back and side walls. Tiered benches occur only along the rear of the chamber. All tombs in Area 1 are empty, their doorways left open. In some cases bone jars were broken and left behind, while in others offering vessels remained. Of the 18 tombs recorded in Area 1, six had bone jars associated with them, while offering vessels were found at five. It seems likely that in some cases, bone jars have been moved to new locations. When U.S. forces were required to restrict access to a particular area where tombs were present, it was the practice to compensate tomb owners for their loss and to pay for a new tomb.

Surroundings and viewshed have always been important considerations in selecting sites for tombs on Okinawa. Today, all of the tombs found in Area 1 overlook the same marshy pond. It is likely that when the tombs were carved into the bluffs, the marsh was an open pond or lake. Subsequent erosion and sedimentation has to a large extent filled the lakebed. There are indications that a path (now submerged) was constructed along the lakeshore and that red hibiscus and magnolia were planted near the tombs. All the tombs are located in areas of mature forest. Trees surrounding the tombs have not been cut. In general, it seems that an effort was made to make the necropolis a peaceful, beautiful place.

Military Tunnels and Dugouts

In addition to the tombs, considerable evidence of military excavation and tunneling was found within Area 1. The tunnels and some of the dugouts are almost surely remnants of the Japanese defense of the island during World War II and are similar to Japanese defensive positions encountered in the Aleutians. On the other hand, some foxholes may be of more recent origin. Typical of Japanese defenses are tunnels excavated into the sides of the ravines. In all cases these tunnels have been excavated at the heads of ravines slightly below the ridgeline. In some cases, pairs of tunnels 4.5 to 5 m apart face each other across the ravine, perhaps controlling access to the high ground most suitable for defensive positions. When tunnels are paired, one is shallow, either a false entrance or a sentinel post, and the other tunnel slopes downward at a 45° angle for about 9 m before making a 90° dogleg either right or left. In one case,

there is evidence that steps were cut into the floor of the tunnel. In another, handholds are evident in the walls. In some instances, the stable soil of the tunnel walls still preserve the pick marks made by the excavators.

In addition to these tunnels, and sometimes associated with them, 19 shallow circular pits were found. These "foxholes" tend to be located in positions that overlook ravine entrances or the junction of two ravines. These pits are 1.0 to 1.5 m in diameter and are now partially filled with sediment and organic debris. They seem to be guard or sentry positions. Most are cut into the soil, but at least two are rock-cut. These pits may well form a complex of military features associated with the tunnels. However, similar features are also found on U.S. Air Force bases in the United States, where they are explained as the results of recent military exercises.

A smaller number of rectangular dugouts were also found in Area 1. Some of these features are pits, and at least one looks like a latrine trench. Others are areas where the natural slope of the hill has been squared off to form an open platform. Taken together, these features suggest a bivouac area. The age of these features is uncertain. One sandbagged dugout suggests that they are either of recent origin or that earlier excavations have been reused during recent exercises.

Another group of tunnels, located close to the necropolis or tomb area, appears to be war-related, but is seemingly of civilian construction and use. During the Allied bombardment of Okinawa in 1945, civilians took refuge in tombs, caves, and excavated shelters (Bull 1958:16). Three tunnels located in the southwestern part of the area lead to chambers much larger than standard military tunnels or traditional tombs. Their proximity to existing tombs suggests that these chambers were either enlarged tombs or were new excavations exploiting an area where stable underground chambers could be exhumed with relative ease. They are relatively close to the farmstead described earlier.

MANAGEMENT RECOMMENDATIONS

An initial survey, such as the one reported here, begins the process of cultural resource management. The Kadena AB Cultural Resource Manager now has documentation of the various features present in Area-1. As in the United States, consultations with local authorities are the next step. In Japan, cultural properties are regulated by the Social Science Divisions of local Departments of Education, in this case the municipalities of Yomitan and Onna. The Kadena AB Cultural Resource Manager is consulting with local authorities regarding to the importance of the identified resources for the people of Okinawa. The possible significance of, and suggested management considerations for, the resources found in Area 1 are discussed below.

Tombs

The structure and use of traditional Okinawan tombs provide important information regarding Okinawa's historical and cultural ties with Asia. These earthen tombs likewise add to the understanding of traditional Okinawan culture and the development of the Onna/Yomitan area. The Yomitan Museum has a sizable collection of ossuaries, or bone jars. However, the ossuaries found in Area 1, which are in some cases very ornate, are distinctive from those displayed at the museum, which are predominantly glazed. The museum may have an interest in those recorded in this survey. Destruction of these tombs should be avoided until consultations with local authorities are completed, but no extraordinary preservation is required unless mandated by local authorities.

Terraces

Terrace fields have played an important role in Okinawan agriculture for centuries. The terraces in Area 1 are important remains of traditional agricultural practices. The terraces encountered in Area 1 have been plotted, recorded, and reported to the Social Science Divisions of the Onna and Yomitan municipal Boards of Education. It is expected that these boards will provide important input with regard to the significance of these terraces in understanding local Okinawan traditional culture. Destruction of these

terraces should be avoided until local authorities comment on the importance of these sites. Most terraces are well away from ongoing military activities, and while they should continue to be avoided, no special preservation is required at this time.

Tunnels

The tunnels preserved within Area 1 are physical remnants of one of the most important events in the history of Okinawa, the Allied invasion during World War II. Some of the tunnels are in relatively good condition, but because they are cut into the earth with no internal supports, are subject to collapse and could present a potential danger to anyone exploring them. They have been reported to the Onna and Yomitan municipal boards of education. No extraordinary preservation is required at this time. If the local municipalities determine that these features are of historic importance, further recordation may be required.

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