A Newly Discovered Circular Earthwork in Southeastern Cambodia

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INTRODUCTION

Circular earthworks are large doughnut-like embankments (often larger than 200 m in diameter) distributed mainly in the basalt areas of southeastern Cambodia and southern Vietnam. They are thought to be neolithic settlements (Mourer, 1977, p. 51; Carbonnel, 1979, p. 224). At least five circular earthworks are known to be present in Cambodia (Malleret, 1959). In an inspection of aerial photos, the authors located one more circular earthwork in southeastern Cambodia and confirmed the site by ground reconnaissance. The location, morphology and associated artifacts of the site are reported below. Also, the significance of aerial photos for locating undiscovered circular earthworks is discussed.

LOCATION OF THE SITE

The site is located near Phum Samraong, a village about 7 km southwest of Memot, Kampong Cham Province (Figs. 1 and 2). It lies at the southern end of the rubber plantation of Chalang. The altitude is about 80 m above sea level. Because the site is situated near National Road #7, access to the site is very easy. The bedrock of the area is basalt and the soil color is reddish. A stream channel runs about 500 m to the east of the site.

About 6 km to the northwest of the site and in the same plantation, a similar circular earthwork (No. 16) has been reported by Malleret (1959, pp. 418–419). However, despite ground reconnaissance made by the authors in December 1995, the presence of this site was not reconfirmed.

MORPHOLOGY OF THE SITE

The ground plan of the site is basically similar to that already reported by Malleret (1959, p. 415): it has two concentric embankments. The outer embankment is larger than the inner one, which can be perceived merely as a slight bulge. There is a ditch between the two embankments. Inside of the inner embankment is a circular flat area.

The diameter of the site (measured between the top of the outer embankments) is roughly 150 m. The outer embankment is 3 to 4 m wide. Its height varies from the outside to inside of the earthwork. From the outside of the site, the outer embankment
Fig. 1. The location of the newly discovered circular earthwork. Aerial photo taken by FINNMAP.

appears simply as a slight bulge with a gradual slope. Inside, it measures about 2 m in height from the bottom of the ditch to the top of the embankment. The flat area in the center is about 1 m lower than the ground level around the earthwork.

ARTIFACTS

The present ground surface of the site has virtually no vegetation except for rubber trees planted in even intervals. Despite the absence of surface vegetation, prehistoric artifacts exposed on the surface are very scarce. Eleven potsherds (after refitting) and one polished stone axe fragment (Fig. 3) are the only prehistoric artifacts which were collected by surface inspection of the site at large and its surroundings. That is, cultural layers below surface have not been severely disturbed by planting of rubber trees. Likewise, very few prehistoric artifacts were found scattered on the surface of other circular earthworks located at the rubber plantation of Krek to the west.

All of the sherds except for No. 7 are reddish brown in surface color (inside, outside and cross section). No black band is observable on the cross section of the sherds. No. 7 is black all over including the cross section. Except for No. 5, surface finish is
rough. Both surfaces of No. 5 are relatively smooth. All but No. 8 have fine sand temper. No. 8 is possibly tempered with fine sand and plant fiber, many pores bearing black streak are present on both sides and cross section. Mineral and rock composition of the sand is currently indeterminate. Nonetheless, quartz grains (visible as translucent particles) are not observable in all sherds. This observation is congruent with...
Fig. 3. Artifacts collected from the newly discovered circular earthwork. 1–11: Rubbed copies of potsherds. 12: Drawing of a polished stone axe fragment.

with the background geology (basalt) of the site and enhances the likelihood of on-site pottery production.

Because all of the potsherds are very small, i.e., smaller than 5 cm even after refitting, to which portion of a pot each sherd belongs is not easily determined. Following identifications of portions are therefore tentative; Nos. 1 (two sherds refitted), 2 (two sherds refitted), and 3 may be rim sherds of bowls. Nos. 4 and 5 may also be rim sherds of jars or bowls. No. 6 (three sherds refitted) may be of a neck sherd of a jar.
All others are body sherds of unknown shaped pots (Nos. 10 [two sherds refitted] and 11 [two sherds refitted] may be from the same pot). No surface decoration is present except for Nos. 7 and 8, in which a bulged line is present. Wall thickness of No. 9 is ca. 10 mm, while others are thinner than 8 mm. The thinnest one, No. 3, is ca. 4.1 mm thick. It is probable that small portable pots were produced profusely and the pots having very thin wall like No. 3 may have been made by the paddle-and-anvil technique.

No. 12 is the lower half of a polished stone axe. It is light green in color and made from very weathered sedimentary rock - so weathered that the surface can be easily scraped with a cutter knife. This light green rock is a popular raw material for stone axes in this area; several stone axes and their fragments made from the same material were collected in some sites in the vicinity. Note that the stone is not likely to be from the local area in which volcanic rocks (mainly basalt) predominate. The surface of the axe is bumpy and not well polished; fractures present before grinding or polishing are still visible. No use-wear is observable, at least with the naked eye.

As noted, surface artifacts are generally very scarce in circular earthworks. Notwithstanding, a stone axe fragment was also found on the surface of the other circular earthwork (No. 15) located in Krek to the west (Malleret, 1959, p. 418). It is probable that these axes are the in situ leftover (broken or not) of the very ones which were used for constructing the earthworks.

**SIGNIFICANCE OF AERIAL PHOTOGRAPHY**

The present circular earthwork was discovered by the inspection of aerial photographs (1/25,000) of the area. In Southeast Asia, the usefulness of aerial photography in locating artificial canals (Paris, 1931, 1941) and massive moated sites (Williams-Hunt, 1950; Moore, 1988) has been already proven. Malleret (1959) also used some aerial photos in his first comprehensive study of the circular earthworks.

Although the usefulness of aerial photos for locating undiscovered circular earthworks is evident, caution should be demonstrated as any site located under closed canopy forest cannot be detected on these photos. This is a serious handicap given that a large part of rubber plantations, at least in Cambodia, is covered with a closed canopy of rubber trees. For instance, none of the three circular earthworks in Krek reported by Malleret (1959, pp. 418–419) are at all visible on the aerial photos (1/25,000) of the area, although the sites actually exist under a canopy of rubber trees. The site described in the present article happens to be lying in an area with young rubber trees. Thus, the limited utility of aerial photos in locating undiscovered circular earthworks needs to be kept in mind.
CONCLUDING REMARKS

One of the circular earthworks at Memot was excavated by B. P. Groslier in 1962. Based on the thousands of potsherds and lithics unearthed in the excavation, Groslier proposed a neolithic culture called “Memotian” (Mourer, 1977, p. 51). Because Groslier died before publishing an excavation report of the site, however, it is not known what the Memotian exactly looked like. Given no discovery of metal artifacts and the abundance of pottery and polished stone tools in the excavation, the circular earthworks can be regarded as occupied in the Neolithic Period. Some chronometric dates are obtained from the neolithic sites located in other parts of Cambodia (Mourer, 1977; Carbonnel, 1979). However, the occupational dates of the circular earthworks are currently indeterminate owing to the difficulty in establishing genetic or chronological relationships with the chronometrically dated sites based on the similarity in artifact styles.

In his pioneering study of the circular earthworks in Cambodia and Vietnam, Malleret (1959, pp. 420–423) mentioned a round village (Phum Lovea) located in the Siem Reap Province, northwestern Cambodia, as an example of the circular earthwork. However, the village is apparently not genetically related to the circular earthworks distributed in southeastern Cambodia and southern Vietnam, because of (1) the absence of similar sites in the intervening area (more than 250 km long) between the village and the circular earthworks in Krek and (2) the significant differences in the morphology of the village from that of the circular earthworks in the southeastern Cambodia and southern Vietnam, i.e., the plan of the village is not exactly a round, the central area of the village is not subsided, the diameter (ca. 600 m) of the village is much larger, etc. Phum Lovea is morphologically more similar and located much closer to the moated sites prevalent in northeastern Thailand, which are dated to be from the Late Bronze Age (ca. 1000 B.C.) through the Middle Historic Period (A.D. 1300) (Moore, 1988, pp. 140–142).

The circular earthworks in southeastern Cambodia and southern Vietnam can provide a unique opportunity for reliable reconstruction of prehistoric regional systems in Southeast Asia. The sites are so massive that it has been technically difficult thus far to completely obliterate their trace from the landscape. Most of the circular earthworks are not likely to have been severely destroyed. As a result, the absence of the sites in an area can be almost always understood as representing the past reality, which is hardly possible in distributional studies of other prehistoric sites not only in Southeast Asia but also in other parts of the world. In this regard, locating undiscovered circular earthworks is of prime importance. The present report is a step toward making a complete distribution map of the circular earthworks once distributed in Cambodia and Vietnam.
REFERENCES


