Archaeology of Calumat Open Site: Dating the Burial and its Archaeological Implication

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Abstract

The Calumat Open Site (COS) is in the Municipality of Alubijid, Province of Misamis Oriental, Philippines. The site, situated on top of a hill, was considered the first settlement of the people in Alubijid. The 2019 archaeological excavation conducted by the University of the Philippines – Archaeological Studies Program addressed the chronology of the site's antiquity. Relative dating indicated that the area may have been occupied as early as the Neolithic period (ca. 3000 BC) until the coming of the European Recollect missionary in 1622. One of the interesting archaeological finds was the discovery of the human burial in Trench 2. Grave goods (celadon bowl, metal blade and worked shell artifact) were found associated with the burial along with dental modification. These grave furniture or "pabaon" were thought to accompany the deceased into the afterlife and ensure the safety of their spiritual journey. In this study, collagen samples were extracted from the bones, found in the burial, by gelatinization. Bones were subjected to radiocarbon dating using accelerator mass spectroscopy. The result suggested that burial may be dated between 774 and 1030 AD with reference to the relative dating of the funerary goods and dental modification, which are significant in interpreting and understanding the socioeconomic activities in the first millennium AD. The findings from the COS contribute to the knowledge of the archaeology of the island of Mindanao and the archipelago in general.

***Keywords**:* archaeology, *Calumat*, relative and absolute datings, radiocarbon dating, grave goods

1. Introduction

The municipality of Alubijid is one of the coastal municipalities of the province of Misamis Oriental in Northern Mindanao, Philippines (Figure 1). The word Alubijid comes from Alubijid tree or *"alubihod"* (*Spondias pinnata* (L.f.) Kurz Anacardiaceae).

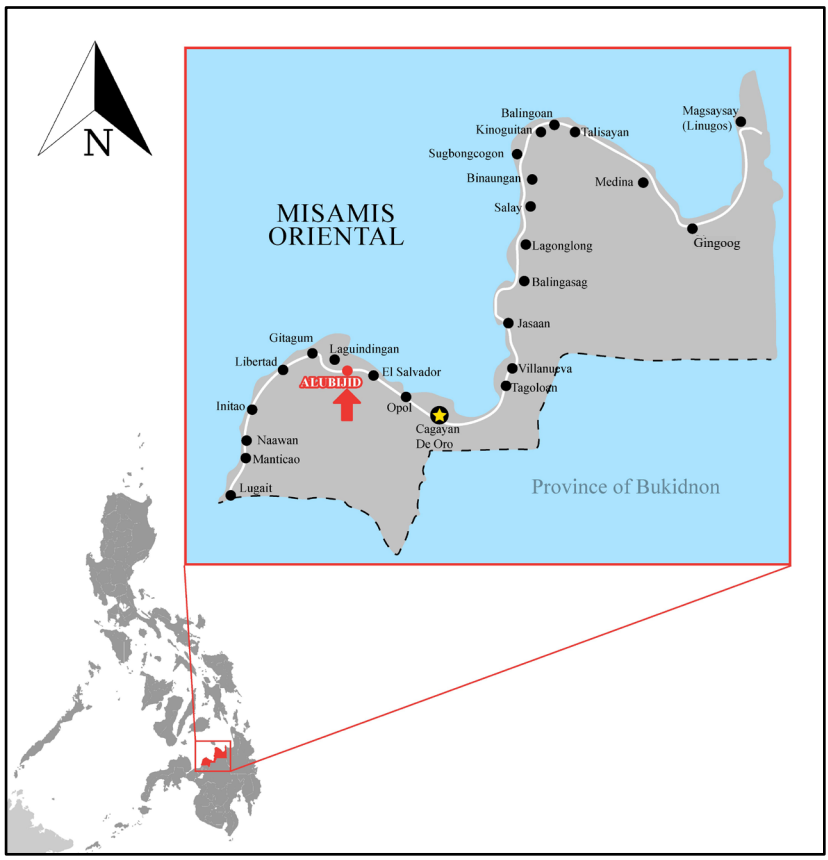

Figure 1. Map of the province of Misamis Oriental showing the Municipality of Alubijid

It was believed that *"alubihod"* was commonly found in a coastal area, which is presently the Barangay Baybay. According to a historical account, traders used Alubijid trees as markers for their commercial activities (Municipality of Alubijid, n.d.). At the same time, it was also believed that the settlement of the people in Alubijid was originally located in a promontory hill or *"ilihan"* near and overlooking Macajalar Bay. This hill is locally called *Calumat* in

Barangay Poblacion. The word "*Calumat*" is a password that stands for "*cauban, lukso, mamatay, tanan*" (companion, jump, die, everyone) (Gapuz, 1948; Municipality of Alubijid, n.d.). This password was used by the coastal people to distinguish themselves from the Moro raiders. Thus, the *Calumat* hill was used by the littoral community as a protection and defense against these devastating slave raiders.

The first religious order that spread Christianity in Alubijid was the Order of Augustinian Recollects (OAR). They founded Alubijid as a parish in 1865 as another ecclesiastical mission in Mindanao (De la Asuncion and Fidel, 1910; Jose, 2008). The missionary built their *visita* or *casa parroquial* on the *Calumat* hill made of coral stones. In 1878, the Jesuits took over the evangelical work in Alubijid (Javellana, 1991; Cabonce, 1995; Demetrio, 1995; Bernad, 2004). Eventually, the town of Alubijid gradually transferred its central government to the present site in Barangay Poblacion. The Jesuits built another church, known as the Parish of the Holy Cross, made of bricks to accommodate the increasing population in Alubijid in the 1890s (Arcilla, 2000). In 1903, during the American occupation, Alubijid together with other municipalities of Iponan, Opol and El Salvador, under Executive Order No. 96, was annexed as Barangays of Cagayan de Oro (Vance, 1980). Alubijid was created as a new municipality on April 5, 1940 under Executive Order No. 266 signed by President Manuel L. Quezon. This newly created municipality was inaugurated on July 1, 1940, and Timoteo Balacuit, Sr. was the newly appointed municipal mayor of the town.

In 2019, because of the historical and archaeological significance of *Calumat* in Alubijid, the University of the Philippines – Archaeological Studies Program (UP-ASP) initiated research excavation that dove-tailed as a venue for the graduate level field school of ASP students. Through the cooperation of the Local Government of Alubijid, archaeological investigation and excavation were conducted to test the veracity of its historical accounts (Archaeological Field School, 2019). The site is called *Calumat* Open Site (COS) with an assigned National Museum Site Code of X-2014-0. It has geographic coordinates of 124° 28' 39" E longitude and 8° 34' 07" N latitude with an average elevation of 42 m above sea level (masl). A total of five trenches were opened and each of these has its specific objectives (Figure 2).

A total of 3,163 pieces of artifacts were recovered from the 2019 field season (Archaeological Field School, 2019). These artifacts were composed of

ceramics, lithic materials, shells, metals and animal bones. Ceramics, including both earthenware and porcelain, dominated the assemblage. The majority of the ceramics were earthenware and were utilitarian goods (water containers and cooking vessels).

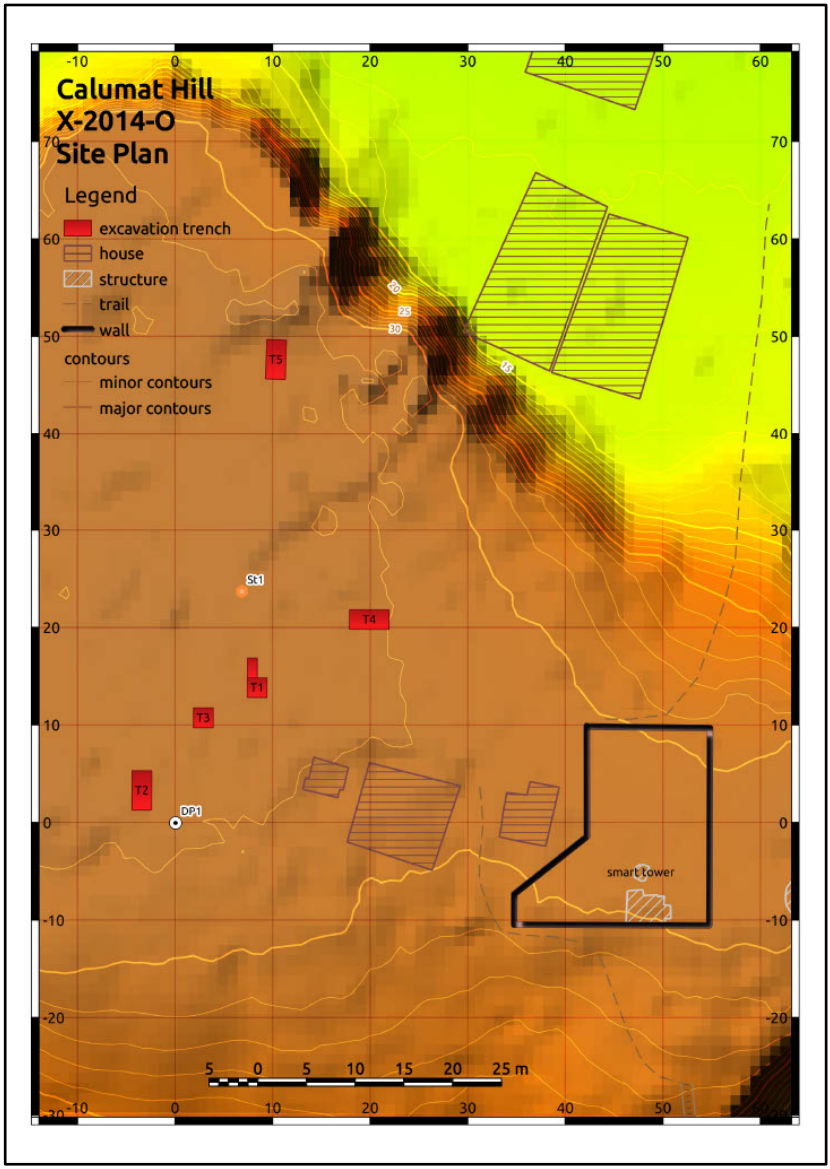

Figure 2. Map of the COS showing five trenches opened in the 2019 excavation (Archaeological Field School, 2019)

On the other hand, porcelain may only be obtained through trade since there are no historical production areas of high-fired kiln in Alubijid or in Northern Mindanao in general. Because of the unavailability of local production, porcelain was considered a prestigious item (Barretto, 2003). Lithic materials/stone tools were also recovered at the COS. The technology of stone tools has prehistoric precedence and its production and utilitarian use may have continued to the late historical period. Lithic materials recovered included chert, andesite and obsidian. In addition, multiple site functions were identified at the COS, namely habitation, settlement, refuge, sacred space and burial.

Trench 2 of the five excavated trenches revealed significant findings at the site. The trench had a measurement of 4 x 2 m and its primary objective was to investigate the old structure made by the early Recollect Missionary in late 1800. Further excavation of the said trench exhumed a disarticulated human skeleton at 30-50 cm from the surface. It was an adult male skeleton with dental modifications in gold pegging on the maxillary teeth. The skeleton was oriented towards the south in a possibly flexed position based on the relative distance of the femur to the radius/ulna fragments and the skull. In the process of exhuming the skeletal remains, the team was able to uncover grave goods composed of a celadon bowl, metal blade and a worked shell artifact associated with the human remains (Figure 3). These mortuary artifacts are understood to accompany the deceased into the afterlife (Fox, 1970; Barretto, 2003; Valdez, 2003). This ritual has been practiced by the early people in the Philippines before the coming of the Europeans (Junker, 1999). This religious practice was believed to help the deceased in their journey to the afterlife. According to Barretto (2003) and Valdes (2003), this is an indigenous practice in the Philippines where significant objects were buried with the dead to ensure their safety in their afterlife journey. At the same time, these grave furniture were considered as the personal possessions of the deceased (Fox, 1970). Thus, these materials found in Trench 2 must be culturally valued by the person while he was still alive since these were buried together with the corpse. Once interred with the grave, the utilitarian object has been transformed into a ritualistic or religious entity (Barretto, 2003).

Aside from these artifacts and dental modifications, archaeological dating is also an important discussion in archaeology. After the systematic archaeological excavation, recovered cultural materials revealed different phases of habitation or occupation at the site. Based on relative dating, *Calumat* may have been occupied as early as the Neolithic from ca. 3000 BC

based on previous studies of obsidian in Mindanao (Neri, 2019; cf. Reepmeyer *et al*., 2011), continuing through the Metal Period (ca. 500 BC), Age of Tradeware Ceramics (ca. 1000 AD), until the arrival of the Recollect Missionaries in the 17th century (Neri, 2011; Archaeological Field School, 2019). Thus, the site has been continuously occupied through time.

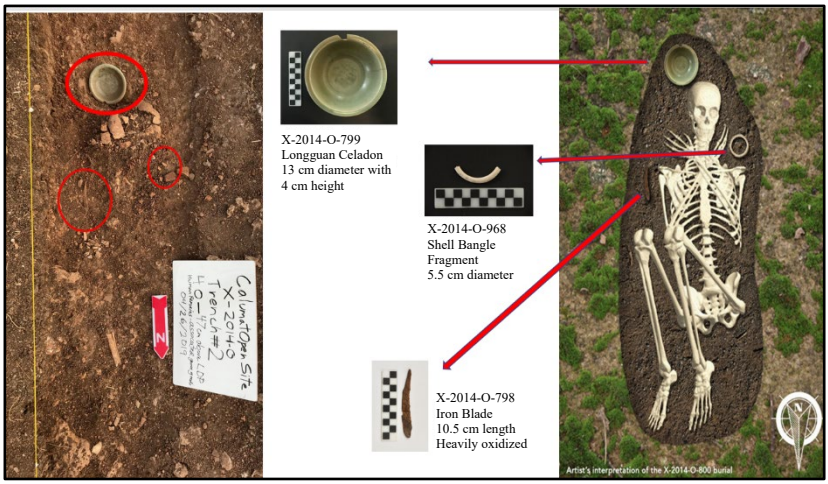

Figure 3. The orientation of the skeleton and grave goods found associated with the burial (X-2014-O-800)

This paper presents the radiocarbon dating of the skeleton in relation to the relative dating of the ceramics (celadon bowl), associated with the burial as funerary goods and the practice of dental modification. These different dating techniques are discussed in the next section to determine if the absolute dates buttress or support the relative dates. In identifying these dates, this research may answer the burial practices of *pabaon* or grave goods in Northern Mindanao in the pre-colonial period. What are the implications of these funerary materials to the social status of the deceased? Furthermore, the dating of the skeleton may shed knowledge on the practices of aesthetic dental modification or gold-pegging in Mindanao. Like the funerary ritual practiced of *pabaon*, teeth modification may also provide inference on the socioeconomic status of the individual. This economic and cultural understanding, coupled with the absolute and relative dates, contributes to archaeological interpretation, historical knowledge and understanding of the history of the people of the island of Mindanao.

2. Methodology

Archaeological dating is an important aspect in understanding the passage of time or chronology of an archaeological site. Dating allows archaeologists to determine the date of material culture as the excavation unfolds. Archaeological dating can be classified into two: absolute and relative dating. Absolute dating establishes the exact date of the archaeological material compared with relative dating that forms the date of the materials in relation to the other materials.

The relative dating of the site was the result of the initial archaeological assessment. It was necessary to apply an absolute dating method to secure the chronology of this important site. Fortunately, through the initiative of the Philippine Nuclear Research Institute (PNRI), a chronometric dating on the recovered human skeleton was available for radiocarbon dating at the Micro Analysis Laboratory Tandem Accelerator (MALT) at the University of Tokyo, Japan.

2.1 Absolute Dating

The absolute dating, also known as chronometric dating, is a type of dating that identifies the accurate date of the material. It can provide numerical dates and is dependent on laboratory analysis or advanced equipment. In establishing its absolute dates, radiocarbon dating method was used in this study. The principle of radiocarbon dating method is that carbon-14 (^{14}C), a radioactive isotope of carbon ($T_{1/2}$ = 5,730 years), is continuously being incorporated into bodies of living organisms while these are living. However, this incorporation process stops upon death. Therefore, by measuring the remaining amount of ^{14}C, the organism's time of death can be determined using the principles of radioactive decay. Through the kind initiative of the PNRI, a bone sample with an accession number of X-2014-O-800 from the left femur of the male skeleton near the proximal end was sent to the MALT, the University of Tokyo for dating using accelerator mass spectrometry (AMS) (5UD Pelletron^{TM} Tandem Accelerator, National Electrostatics Corporation, United States).

2.1.1 Collagen Extraction for C-14 Dating

In many radiocarbon laboratories, archaeological bones are routinely dated through collagen extraction (Brock *et al*., 2013). In this study, collagen from the bone samples (i.e., gelatin consisting mainly of collagen) was extracted

via the gelatinization method improved from Longin (1971) and Yoneda *et al*. (2002).

Fragments of the bone sample (about 500-700 mg) were first collected using a disk cutter. Surfaces of the bone fragments were then brushed using a sandblaster to remove depositions, weighed, and then sonicated in ultrapure water (18.2 MΩ). The bone fragments were then sealed in 150-mL vials containing 0.4 M HCl for two nights to remove hydroxyapatite. Subsequently, samples were washed through sonication in ultrapure water until pH neutrality. Bone fragments were soaked three times in 0.1 M NaOH, centrifuged and decanted to remove humic and fulvic acids. These were then rewashed via sonication in ultrapure water until pH neutrality.

Next, 10 mL of pH 4 HCl was added to the bone fragments then heated at 90 °C for two days to extract the collagen. The resulting solution was centrifuged for 3 min at 3,500 rpm. The supernatant containing the dissolved collagen was then filtered to a 50-mL vial, then freeze-dried for two nights.

2.1.2 Combustion and Graphitization for C-14 Dating

The freeze-dried collagen (about 2-4 mg) were put in between 700-800 mg of CuO in a small tube, which was then put inside a larger tube (i.e., combustion tube). The combustion tube was then attached to a vacuum system overnight. Next, while still connected to the vacuum system, the combustion tube was burned off using a blowtorch producing a sealed tube of about 30-cm long. The sealed combustion tube was heated at 500 °C for 30 min and then at 850 °C for 2 h in a muffle furnace. The sealed tube was then attached to a purification vacuum line, and while still connected, crushed to liberate the produced CO_2. The evolved CO_2 was then cryogenically purified and trapped in the purification vacuum line and subsequently transformed to graphite using hydrogen gas and iron catalyst.

2.1.3 Carbon-14 Measurement

Graphite samples (transformed from the combusted collagen extracted from the bone samples) were analyzed via AMS in MALT, the University of Tokyo. Results were reported as $\Delta^{14}C$ (in per mille or ‰) (Equation 1) as defined by Stuvier and Polach (1977) and include $\delta^{13}C$ correction. The standard used was NIST new oxalic acid (OXII).

$$\Delta^{14}C = [F_m\, e^{0.00012097(1950-Y)} - 1] * 1000\ ‰ \quad (1)$$

where Y is the year of collection and F_m is the deviation of the samples radiocarbon content from the oxalic acid standard, normalized to $\delta^{13}C_{VPDB}$ = -17.8‰ (Equation 2).

$$\delta^{13}C_{VPDB} = [[(^{13}C/^{12}C)_{sample} / (^{13}C/^{12}C)_{VPDB\ standard}] - 1] * 1000\ ‰ \quad (2)$$

Details of the ^{14}C AMS measurement are the following: typical current of 20 μA; sequential injection; cycle sequence of 0.4 ms for $^{13}C^-$ and 100 ms for $^{14}C^-$; 4.8 MV terminal voltage, +4 charge state for 12, 13 and 14 C and a background of $^{14}C/^{13}C < 3 \times 10^{-14}$. Complete specifications of the MALT AMS facility have been reported by Matsuzaki *et al*. (2015).

2.2 Relative Dating

While the absolute dating method can be extremely useful, relative dating can be used in the field and even as a tool to inform how to proceed with the excavation. Relative dating techniques are also valuable in instances where absolute dating is logistically or financially not feasible. It helps in cases where an artifact may have been subject to contamination, chemical change, too small to sample, or when one wishes to avoid a destructive dating method. Ultimately, relative dating demonstrates the chronological relationships of each context. The human remains with an accession of X-2014-O-800 excavated at Trench 2 at the COS were accompanied with a set of grave goods: celadon bowl with twin fish design, an elongated oxidized metal fragment and a section of a worked shell artifact (see Figure 3 and cf. Archaeological Field School, 2019). Furthermore, the individual's remains have a notable dental modifications involving filing, possible dyeing and gold plates pegged onto the teeth. The celadon bowl and dental modifications served as reference in establishing the relative dating of the skeleton (this is further discussed below).

3. Results and Discussion

3.1 Absolute Dating of Bone

Only one human skeleton was found in the 2019 Field Season. Two trials (Bone 1 and Bone 2) of collagen extraction, combustion, graphitization and radiocarbon dating via AMS were performed on the bone fragment collected from the COS. Radiocarbon dating yielded radiocarbon ages (BP) of 1015±66

and 1175±63 for Bones 1 and 2, respectively (Table 1). Taking the average of these results and propagating the errors appropriately in a radiocarbon age (BP) value of 1095±46. From the radiocarbon age (BP), the calendar age (BC or AD) was calculated using the OxCal version 4.4.4 calibration program (Bronk, 2009) and the IntCal20 calibration curve (Reimer *et al*., 2020).

Table 1. Radiocarbon dating by AMS

Accession no.	Sample	^{14}C dating (Years BP)	Calibrated date (2 sigma)	Sample # laboratory
X-2014-O-800	Bone 1	1015±66	774-1030 AD or 902±128 AD	MALT
	Bone 2	1175±63		

Results showed that the bone fragment from the COS has a calendar age range of 774 to 1030 AD or 902±128 AD at 95.4% confidence level or 2σ (Figure 4).

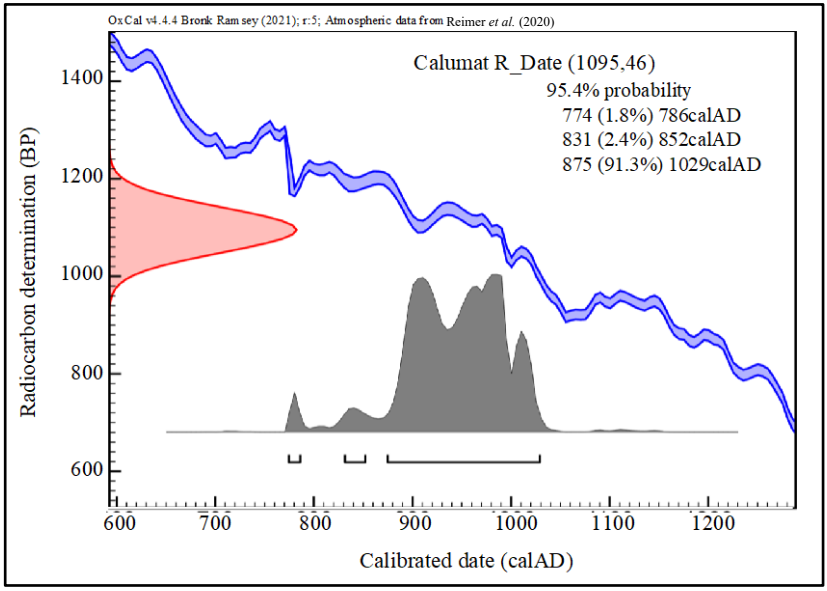

Figure 4. Radiocarbon age calibration of the *Calumat* bone fragment

This may indicate that the burial may have been dated ca. 1000 AD belonging to the advent of the Philippine "Age of Tradeware Ceramics" or the "Age of Contact" spanning from ca. 500 to 1500 AD before the arrival of the Europeans in the Philippines. This period may also be characterized by the

presence of trade ceramics in the Philippines. To date, this is the first Northern Mindanao archaeological sample recovered in good context subjected to radiocarbon dating.

3.2 Relative Dating of Celadon Bowl

Aside from the result of the chronometric dating, relative dating was also applied in the burial vis-à-vis its context (celadon bowl, metal fragment and modified shell artifact) or culturally known as *pabaon* or grave furniture. Ethnographically, less has been known and discussed on metals and shells in establishing their chronology. It should be noted that the time period associated with the metal fragment (X-2014-O-798) and the modified shell artifact (X-2014-O-968) showed less certainty in associating the materials to its particular time period. This was a result of both the deterioration of the condition of said artifacts and their persistent or continuous use throughout the period until probably the modern day. Among the artifacts accompanying the skeletal remains (X-2014-O-800), the celadon bowl with twin-fish washer design (X-2014-O-799) and the dental modifications may be the most reliable points of chronological reference.

The celadon washer was recovered at 23 cm below local datum point (ldp). Relative to the human remains, the celadon was found above the cranium (Figure 3). The artifact is 13 cm in diameter and 4 cm in height with a small chip on the rim (Figure 5). The washer features a flattened rim and a lotus leaf pattern molded on the exterior. The interior of the vessel is incised with a twin-fish motif swimming around simple plant forms. The decorations appear to be a freehand incision applied to the clay body before firing. It is finished with a translucent olive-green glaze with a satin sheen and a finely crackled quality. The entirety of the washer is covered with the glaze except the exposed foot-rim revealing the bare fired clay.

The twin-fish washer is a small shallow bowl form extensively documented on the subject of tradeware ceramics (Addis, 1969; Southeast Asian Ceramic Society, 1979; Chin, 1988; Qingzheng, 2002; Melendres, 2008). Unique styles and production technologies in ceramics can be attributed to specific kilns and time periods (cf. Addis, 1969; Gotauco, 1997; Melendrez, 2008; Brown, 2009; Orton and Hughes, 2013; Bahn, 2014; Jian'an, 2017; Tan *et al*., 2017).

Figure 5. Top view of X-2014-O-799 showing the incised twin-fish motif (a); bottom view showing the foot-rim and molded lotus-leaf pattern (b); side view showing profile of the lip-rim and the lotus-leaf pattern (c)

Upon initial assessment, X-2014-O-799 was thought to be from the Longquan kiln in Zhejiang, China during the late Song to Yuan Dynasty (13-14th century) (Addis, 1969; Chin, 1988; Southeast Asian Ceramic Society, 1979; Qingzheng, 2002; Melendres, 2008). The small washer forms with the twin fish motif arriving in the Philippines were largely attributed to the said date range (Addis, 1969; Southeast Asian Ceramic Society, 1979; Chin, 1988; Melendrez, 2008). The growth of Lonquan kiln export to the archipelago coincided with the transition of the Song Dynasty capital from the north to the south. Foreign threats from the north pushed the Imperial Court to move south ca. 1126-1127 AD (Tan *et al*., 2017). Along with the move, the Longquan kilns grew to be the primary producer of celadons. This sparked the peak of large scale arrival of Longquan wares to the Philippines from the 11-14th century (Addis, 1969; Tan *et al*., 2017). While the Lonquan kiln flourished at the start of the Southern Song Dynasty, it has been in production since the Northern Song ca. 950 AD (Krahl and Harrison-Hall, 2009; Tan *et al*., 2017). The twin-fish washer styles arriving in the Philippines were primarily

attributed to the 11-14th century trade boom. However, further investigation of the artifact suggests that it may have been made at an earlier date.

The need for reassessment stems from two factors: (1) the application process of the twin-fish motif and (2) the unique ornamentation of the twin-fish motif. The known twin-fish washers from excavations, museums and private collections most often used a molding technique to create the embossed relief of fishes on the interior of the bowl (Figure 6) (Tan, 1959; Chung, 1977; Sheng, 1989; Pierson, 2001; Nezu Institute of Fine Arts, 2010).

Figure 6. The X-2014-O-799 (a) compared with various examples of similar twin-fish washers from the Song-Yuan Dynasties: Christie's (2017) (1127-1279 AD) (b), Trodacero (n.d.) (950-1279 AD) (c), Sotheby's (2018) (1127-1279 AD) (d), Melendres (2008) (e) and Bonhams (2014) (f)

While X-2014-O-799 utilized the same basic design element, the application technique was radically different. Instead of using a mold, it was incised onto the clay with a freehand technique before firing. Examples of the latter appear to be few and far between, with one such example seen at an auction of Pigura Asian Art at Trocadero (Figure 6c) dated to an earlier period of Northern Song to Southern Song Dynasty – a date range of 950 to 1279 AD.

The freehand incision technique suggests that such artifacts were created before the standardization of the twin-fish form with molds. In support of this, the popularity of the molding technique at the Longquan kiln only grew after the end of the Northern Song Dynasty taking inspiration from the molded styles of Ding Ware or Ding Yao from Dingzhou in Hebei (Medley, 1989; Krahl & Harrison-Hall, 2009). From this point on, the popular norm of Longquan wares transitioned from incised interior decorations to molded relief interior decorations.

The freehand plant-forms (Figures 7 and 5) between the swimming fishes also suggest that the washer could have been produced at a time with a different design sensibility and visual identity.

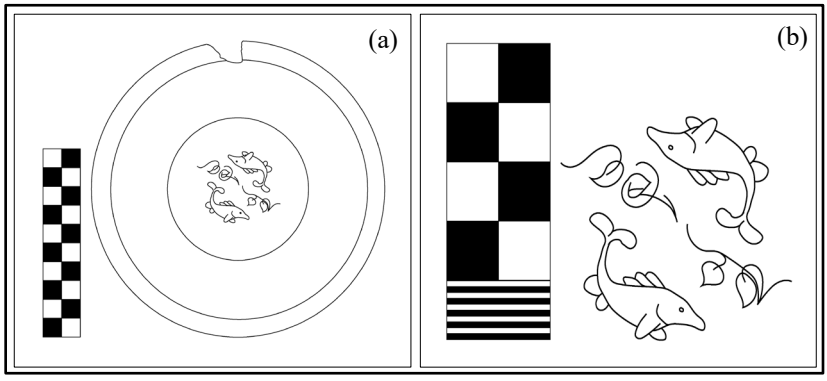

Figure 7. Illustrated top view of X-2014-O-799 (a) and illustrated detail of its twin-fish and plant form motif on interior (b)

Together with the incision technique, both indicated that it was manufactured before the trend of molded interior motifs. The general characteristics of X-2014-O-799 still point to provenance from the Longquan kiln but from an earlier time period – possibly produced during the time of the Northern Song Dynasty from 950 to 1126 AD.

3.3 Dental Modifications

A total of 28 teeth were recovered from the burial (Archaeological Field School, 2019). Five of them had clear evidence of gold ornamentation. Three of them intact and two with holes where the plates were once attached. All of the teeth with the pegged gold plate were all from the upper jaw. Those

recovered included the left upper canine (13), left lateral (12), left central (11), right central (21) and right lateral (22) incisors.

The left lateral (12), left central (11) and right central (21) incisors had the entire gold plates and all three pegs intact. The left upper canine (13) only had one peg intact on the distal right. Nonetheless, all three peg holes remained clearly visible. The right lateral incisor (22) no longer had the pegs and the plate, but the three peg holes are still visible (Figure 8).

Figure 8. Dental modifications of X-2014-O-800 – left upper canine (13), left lateral incisor (12), left central incisor (11), right central incisor (21) and right lateral incisor (22) (Photo by Dr. Tanya Uldin)

Based on the material evidence, it is possible to hypothesize the application process of dental ornaments. The gold plates were shaped and prefabricated before being applied to the teeth. They were made from gold sheets approximately shaped into triangles that were relatively shaped for each tooth. Each tooth is filed flat and perforated to accommodate the plates and pegs. The gold plates are fixed on to each tooth with three gold pegs. Two of the pegs attach to the distal end of the tooth and one is attached to the proximal end of the tooth near the gums. Use-wear analysis indicated that the tooth ornaments were applied during the lifetime of an individual and not as a post-mortem practice. This is made evident by the striations and the rolling of the distal ends of each plate, consistent with the effects of biting and chewing.

The written accounts of gold pegging are seen throughout, such as a Chinese account from 1178 AD and the famous manuscripts of Antonio Pigafetta from 1521 AD (Pigafetta 1525 of events of 1519-1522; Atienza, 2014). The practice of gold pegging teeth in the Philippines is perhaps most popularly seen with the Bolinao skull from Balingasay, Bolinao, Pangasinan, dated from the 14th to 15th centuries AD. In comparison to the dental modifications of X-2014-O-800, the Bolinao skull features a fish scale pattern of multiple pegs rather than full plates held with individual pegs (Legaspi, 1974).

The gold pegging styles similar to X-2014-O-800 have been documented in both historical accounts as well as archaeological. These utilized a triangle pattern of pegs or shaped plates, with the pegs varying in number from 1 to 7 per tooth (Rittershofer, 1937; Atienza, 2014). The practice of this style of dental modification was most often seen in the central and southern parts of the archipelago (Filipino Heritage, 1977). They were mostly attributed to the Age of Contact in Southeast Asia ca. 1200 AD (Winters, 1977; Atienza 2014).

The earliest attributed dates of gold-pegged teeth are from ca. 800-1200 AD (Figure 9) from the San Remigio, Cebu (Atienza, 2014).

Figure 9. Modified incisor excavated from a burial site in San Remigio, Cebu. Estimated to be 800 to 1,200 years old. Photo by Mr. Zigfred M. Diaz (Atienza, 2014, p.70)

Its style and morphology may be attributed to the *Calumat* skeleton. This suggests that X-2014-O-800 may have lived ca. 800-1200 AD. This practice of dental modification may have been continued up to the Historical Period in 1500 AD. Though falling out of vogue with the spread of European influence, it has been documented as late as the 17th century AD (Rittershofer, 1937; Atienza, 2014).

The practice of dental modification or teeth adornment in the past served as a status symbol. This has been done by the elites as status insignia (Cole, 1956; Junker, 1999; Canilao, 2012). Aside from *Datus*, renowned warriors or war heroes also marked their insignia through gold pegged teeth (Junker, 1999). In the Philippines and all over the world, gold has been considered a "prestige item" and a precious product. Individual possession of the item may indicate its social classification.

3.4 Terminus Post Quem

By plotting the associated time periods of each artifact, it is possible to pinpoint the earliest possible date at which they could have coexisted (Figure 10).

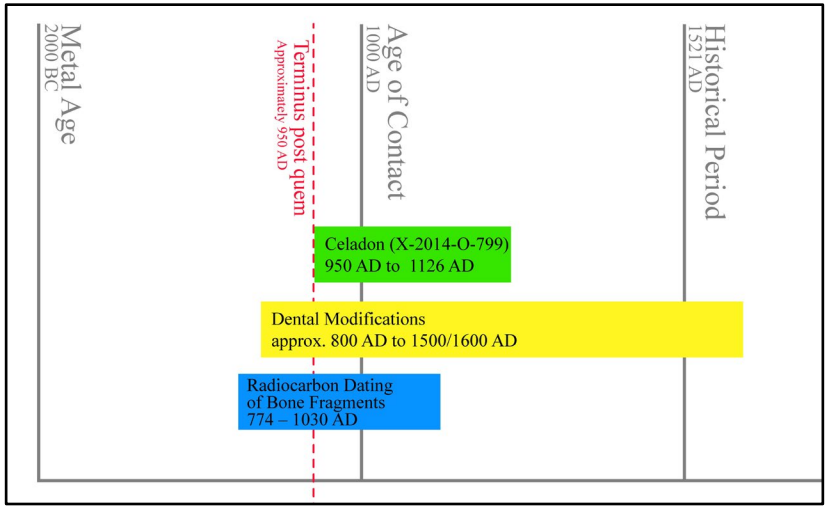

Figure 10. The *terminus post quem* of the burial ca. 950 AD

In reference to the celadon twin fish washer (X-2014-O-799) and the dental modifications of the individual, the *terminus post quem* (earliest possible date)

of the burial is around 950 AD. The *terminus ante quem* (latest possible date) of the funerary event is more uncertain if based on the artifacts alone. It should be considered and cautious that the grave goods can be heirloom pieces that predate the burial itself. The *terminus ante quem* also faces the uncertainty brought about by the persistence of material culture evidently demonstrated by metal fragment and the modified shell artifact.

4. Conclusion and Recommendation

The result of the absolute calibrated date between 774 and 1030 AD buttressed and supported the relative dating of the celadon bowl at ca. 950-1126 AD. The burial found at the COS represents a collective ethos of the community and its identity in the 10th to 11th century. Currently, based on the archaeological record, this is the first burial systematically excavated in Northern Mindanao with funerary furniture or offerings associated with the deceased as early as 1000 AD. Further, these materials may have been acquired only through exchange/trade. The *Calumat* landscape supports the diverse and eclectic mobility and resources with easy access to the river and coastal traders. This clearly indicate that, as early as the first millennium AD, Northern Mindanao settlers were already socially interactive with their neighboring traders and reflect the commercial complexity in the region.

Aside from the funerary furniture, a dental modification was also identified at the upper teeth of the skeleton. Dental modification or also known as dental mutilation has been practiced throughout history in different population and ethnolinguistic groups around the world. Tooth modification already existed in the Philippines long before the Spaniards came. The first documented gold-pegging was found in Cebu dated ca. 800-1200 AD and continuously practiced until 15th to 17th century AD. *Calumat* was not excepted from this aesthetic dentistry. Gold-pegging has been found in the adult skeleton. Like the other rare and valued materials, gold was considered a precious commodity. Gold was a material associated with the elites or people belonging to a socially stratified aristocrat. Pegging or inlaying of gold sheets on the teeth may indicate the person's socioeconomic standing and sociopolitical stratification in the society. Furthermore, this has been practiced by the early Filipinos as a status symbol by the elite community. The adult male individual found at the COS may be an important and high-ranking person. He may be a popular warrior and may belong to a political hierarchy in society. The probability of

his social status as a warrior may be manifested in the discovery of the metal fragment found beside his right arm. Further, the ritual practice of gold pegging in *Calumat* in the first millenium AD may indicate the oldest aesthetic dentistry in the island of Mindanao or probably in the Philippines.

This study demonstrated the importance of archaeological dating and its cultural implication on the archaeology of Northern Mindanao. However, there are still some significant issues and problems that need to be addressed in the interpretation of data. Future research should intend to have an extensive survey of the landscape to see the extent of the archaeological area. At the same time, the site needs further excavation that may reveal additional burial/s associated with grave goods. Furthermore, ethnographic study at Alubijid or the island of Mindanao, in general, may give insights into the cultural practices and traditions on grave goods and dental modification. Lastly, future collaboration and partnership with other disciplines from different institutions will help in understanding the country's holistic historical interpretation.

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