Archaeological Research in the Laguna de Bay area, Philippines

Timothy James Vitales[1]

Abstract

This paper outlines the archaeological undertakings conducted around the Laguna de Bay one of the most prominent lake features in southern Luzon, Philippines. Since the beginnings of the discipline and its research in this archipelago, the Laguna de Bay area has demonstrated its rich archaeology from the sites discovered and artefacts recovered dating from the Palaeolithic to the historic period. However, despite the abundance of archaeological data gathered from this significant region, our knowledge on the prehistory of Laguna de Bay area somehow still needs to be fully explored and understood. Realising its archaeological potential, an extensive multi-disciplinary research focusing on the whole lakeshore is crucial in our understanding of the role of Laguna de Bay in the archaeology of the region; from the development of communities around it to the environmental and cultural-historical processes that might have occurred and affected the area.

Introduction

Southern Luzon has been one of the pivotal regions in our understanding of the archaeology of the Philippines. Since the early beginnings of the archaeological discipline in this archipelago, southern Luzon yielded significant findings that have helped us examine the socio-

[1] *Researcher I, Archaeology Division, National Museum of the Philippines*
Email: archaeofreako@yahoo.com

cultural life of past Philippine communities and their movements and interactions with other communities through time (see Beyer 1947, 1948; Solheim 2002). Artefacts and other archaeological remains found in Metro Manila (e.g. ACECI 2005; Bautista 2009; Fox and Legaspi 1977; Locsin and Locsin 1967), Batangas (e.g. Barretto-Tesoro *et al.* 2009; Dela Torre 2003; Dizon *et al.* 2005; Fox 1959; Janse 1941; Paz 2003; UP-ASP 2010, 2011; Vitales *et al.* 2011), Cavite (e.g. Accion 1978; Nazareno 2002), Laguna (e.g. Postma 1991; Ronquillo n.d; Tenazas 1973), Rizal (e.g. Beyer 1947; Fernandez and Rogel 1968; Peralta and Evangelista 1965), and Bondoc Peninsula in Quezon Province (e.g. Paz *et al.* 2008; Ronquillo 1975a; Solheim 1951), dating from the Palaeolithic period to the recent 19th century historic period, have given us a glimpse of the way of life of past Philippine societies and how they viewed and experienced the world around them.

This paper focuses on one area in southern Luzon that seemed very crucial in the early history of the region. Being the largest lake in the Philippines (present surface area around 900 square kilometres (Punongbayan 1998)), Laguna de Bay forms a prominent feature in the archipelago. Geological studies reveal the freshwater lake as previously an extension of Manila Bay before it became a shallow water basin due to the uplifting of the Diliman Plateau, which separated the bay extension from Manila Bay (Adams 1910 from Ward and Bulalacao 1999; Punongbayan 1998). This was further supported by the evidence of marine diatoms recovered during sediment coring (Ward and Bulalacao 1999) and studies on the salinity changes and sediment supply in the lake for the past 6,000 years (Jaraula 2001).

The lake has been sustaining not only the flora and fauna of the region but also the communities that thrived around it. Early historical records have attested the significance of the lake in the past; as a rich source of livelihood and as an efficient access way in moving around places (e.g. Chirino 1604; Morga 1609). It would not be a surprise then that the lakeshore has already been densely populated at the arrival of the Spaniards as described in historical accounts (see Loarca 1582; Salazar 1588). Its lake basin contains arable lands and rich river valleys that are very suitable for habitation. Currently the lake sustains 61 surrounding cities and municipalities within six provinces including Metro Manila. The strategic location and prominence of Laguna de Bay has definitely made it one of the most promising areas for archaeological research in the Philippines (Fernandez and Rogel 1968). In fact, many important

discoveries have already been uncovered around the lake area that might help us understand the early history of this region. It will be the central theme of this paper to present an outline review of the archaeological undertakings conducted around Laguna de Bay, as well as the significant finds found in the area. This archaeological review will cover only sites found in lakeshore cities and municipalities (see Figure 1), although other neighbouring sites will be considered as well for their inferred relationship with the lake and lakeshore sites, such as in Sta. Ana, Manila (Fernandez and Rogel 1968; National Museum of the Philippines 1968).

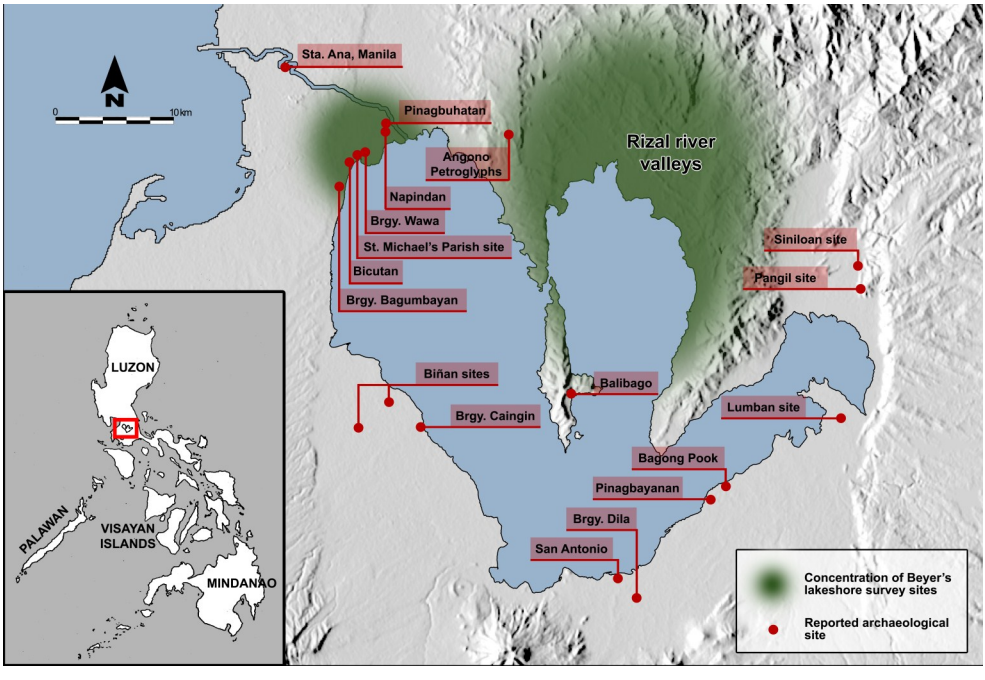

Figure 1: Laguna de Bay, showing its location in the Philippine archipelago (inset, in red box) and the location of archaeological sites around the lake, including the Sta. Ana site in Manila area (modified Laguna de Bay relief map generated from SRTM data).

The Archaeology of Laguna de Bay

Beyer's Lake District and other Sites

In the late part of the 1920s archaeological investigations have been carried out by H. Otley Beyer in the areas covered by what used to be part of the Rizal Province. This investigation, which was eventually called Rizal-Bulakan Archaeological Survey, was initiated after the discovery of rich archaeological remains in the Novaliches Dam on February 1926. From that year to 1930, Beyer explored the areas in

Bulacan (along Marilao River), Rizal province, and the present Metro Manila area surrounding Pasig River near the Laguna Lake. The five-year survey has examined about 120 archaeological sites and collected almost 500,000 different specimens from different cultural time periods (see Beyer 1947, 1948 for his cultural periodisation of Philippine archaeology). Beyer divided the whole surveyed region into three districts: Novaliches-Marilao District, Central District, and the Lake District. The results of the survey were included in his Outline Review of Philippine Archaeology by Islands and Provinces, which was published in the Philippine Journal of Science (Beyer 1947).

The Lake District, which covers most of the present Rizal Province, has the most number of sites surveyed (71 sites, 14 of which were excavated). Concentrations of these sites are found along the river valleys in Baras, Tanay, and Pililla. The cultural time period varies in every site; ranging from the Palaeolithic (Beyer estimated it to be around 300,000 to 250,000 years ago at its earliest) to the much recent 17th to 18th century CE. Some of the notable finds and sites are outlined below:

- Palaeolithic stone tools (c. 50,000 to 20,000 years ago) in Site 26 within Baras river valley (Figure 2a)
- Obsidian and chert microliths from the 'Mesolithic period' (c. 12,000 to 8,000 BCE) in Sites 18, 21, 27, 57, and 63, all within Baras, Tanay, and Pililla river valleys (Figure 2b)
- Early Neolithic (c. 4000 to 2200 BCE) stone tools in Baras and Pililla river valleys
- Late Neolithic (c. 500 to 200 BCE) horned barkcloth beater in Site 19, Tanay area (Figure 2c)
- Late Neolithic (c. 800 to 200 BCE) red stepped adze in Site 34, Talim Island
- 'Extensive deposit' of 'Bronze Age' (c. 800 to 250 BCE) ornaments in Site 13, upstream of Tanay river valley
- Very rich 'Iron Age' (c. 250 BCE to 850 CE) deposits (e.g., beads) in Site 17, at the mouth of the river in Baras
- Large variety of Tang-Sung Early Monochrome porcelain types (c. 9th to 12th century CE) found in an old village midden and few burials in Site 7, Tanay area

- Large quantities of Early Ming wares (c. 15th to early 16th century CE) in village middens in Site 24 and few whole pieces in burials in Sites 11 and 45; all located within the Pililla river valley

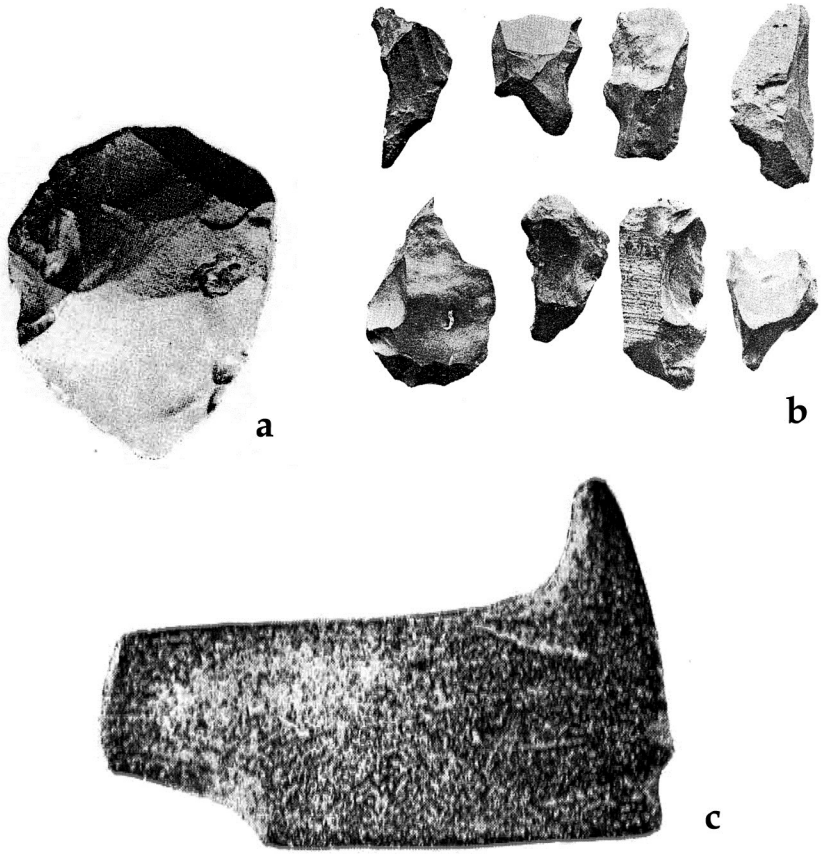

Figure 2: Some of the archaeological finds collected by Beyer from Rizal lakeshore sites: a) late Palaeolithic stone tool from Site 26 (from Beyer 1947: Plate 3); b) Mesolithic microliths (from Beyer 1947: Plate 4); c) Neolithic horned barkcloth beater found in Site 19 (from Beyer 1948:Figure 20-a).

Beyer also mentioned in this outline the discovery of stone adzes in a hill site on top of a stone quarry in Binangonan, Rizal in the early 1920s. However, the area has not been investigated afterwards. Other lakeshore sites aside from Lake District were also examined by Beyer such as the Central District wherein he recorded two sites with important finds: early settlements and grave sites containing Tang-Sung Early

Monochrome wares in Taguig river valley, and Late Neolithic adzes and chisels with associated obsidian and chert flakes in Bagumbayan site south of Taguig. Later discoveries around Laguna Province by other individuals were also mentioned in his outline review, although he failed to find some of these early period archaeological sites (pre-16th century CE in particular) when he investigated it. At the south of the lake, around 25 to 30 obsidian flakes and chert 'semimicroliths' were found by Dr. H. R. van Heekeren on the foothills of Mount Makiling near Calamba-Tanauan highway. In Lumban area at the eastern side of the lake, a carved stone head, which Beyer believed to be possible pre-Spanish, were found by children from a freshly-cut roadbank. It was carved from an old stone mortar and was believed to be product of native workmanship.

In another article Beyer (1948) presented a chronological narrative of the early history of the Philippines (and East Asia) based on the lithic materials and other data he collected from his surveys, with discussions on its relationship with the peopling of the Pacific. Included here were the findings from his surveys in the Lake District, in which he even discussed in one of the sections the significance of the environmental setting of Rizal river valleys in explaining the distribution of particular stone tool types in the area. According to Beyer, the presence of Early Neolithic stone implements only in Baras and Pililla river valleys was due to the fact that Baras and Pililla have wide arable lands, which were suitable for agricultural 'Early Neolithic communities' when they arrived in the area; unlike the Tanay river valley, which has a more rugged terrain though it was richly forested. The surviving 'Mesolithic microlith-using hunters', on the other hand, who used to occupy the three river valleys (as explained by the uniform distribution of obsidian and chert microliths in these areas), were then left only with the rugged Tanay valley as the Early Neolithic agriculturalists began settling in Baras and Pililla. The presence of Bacsonian-type stone tools or 'protoneoliths' only in Tanay, however, was believed to be made by the surviving microlith-using communities when they came in contact with Early Neolithic people.

The Archaeology of Angono Petroglyphs (Binangonan, Rizal)

In March 1965, renowned Philipine National Artist awardee Carlos V. Francisco stumbled upon what he believed to be ancient drawings incised on a rockshelter that is situated between Angono and Binangonan. Realising its possible cultural and historical value, he immediately reported the discovery to the National Museum of the

Philippines. Headed by then Secretary of Education Alejandro Roces and then Director of the National Museum Galo B. Ocampo, an interdisciplinary technical survey team was organised to evaluate the site (Peralta and Evangelista 1965).

The Angono petroglyphs mostly depict lizard-like, frog-like, and human-like images engraved on the tuffaceous wall of the shelter (Figure 3). Upon the initial inspection of the survey team on the quality of the engravings, it was postulated that the incisions were most likely made by a blunt instrument and not with metal-edged tool due to the fact that the grooves were not as clean cut as it would be with a metallic sharp edge (Peralta and Evangelista 1965). The art styles of the petroglyphs were analysed by Jesus Peralta (1973), which eventually became the main theme of his master's thesis.

To further understand the nature of the petroglyphs and its temporal context, the archaeological team of the National Museum composed of Alfredo Evangelista, Avelino Legaspi, and Jesus Peralta, among others, went to the rockshelter site on the same year to conduct preliminary excavations on the shelter floor and test casting of the rock engravings (see Peralta and Evangelista 1965). The initial excavations, however, yielded negative results, except for recent post holes and fireplaces. Such absence of archaeological materials was explained as a result of the erosional nature of the floor. It was inferred from the findings of the initial excavation that the mouth of the shelter might have originally extended further out.

The boulders that were on the front of the rockshelter were most likely the actual parts of the shelter mouth or overhang that have fallen down. This inference led them to explore the immediate area in the front of the rockshelter. Test excavations yielded archaeological materials at varying depths, such as lithics (chert flakes, obsidian flakes, and siltstone core tool), a polished trapezoidal adze, and few fragmented pieces of earthenware ceramics (Peralta and Evangelista 1965, see also Barretto-Tesoro 2008; Bautista 1998).

These artefacts according to Peralta and Evangelista (1965) do not necessarily indicate direct association with the petroglyphs. However, Peralta (1973) later suggested that the petroglyphs were around 3000 years ago during the Neolithic period, which he based on the presence of earthenware ceramics and stone tools, aside from the absence of metal

Figure 3: Angono petroglyphs (photo by G. Barretto-Tesoro)

tools used in the production of the petroglyphs and the absence of tradeware ceramics in the site.

In 1998, another archaeology team of the National Museum led by Angel Bautista conducted trench excavations within the rockshelter and its nearby areas in hope of recovering datable materials that would shed light on the true date of the petroglyphs (Bautista 1998). The excavations yielded only recent materials and no significant datable materials were recovered. Archaeological research of the Angono petroglyphs, however, has not yet ended with the last excavation. Currently, the petroglyphs are being re-analysed by the collaborative efforts of the University of the Philippines-National Institute of Physics, University of the Philippines-Archaeological Studies Program, and the National Museum of the Philippines using state-of-the-art instruments that produce digital casts of the petroglyphs (Barretto-Tesoro 2008). Such methodology would help understand more on how these engravings were made.

Archaeology to the Pasig River: Taguig and Pasig Sites

The presence of archaeology in the lakeshore of Metro Manila and along the Pasig River has been well pointed out by Beyer (1947) in his outline. Some of the sites Beyer investigated include Taguig, Makati, present Manila area (including Sta. Ana), and Pasig. In the Taguig area, a grave site has been partly excavated within the river valley, uncovering human remains with associated ceramic grave goods dating to 9th to 12th century CE (Tang-Sung Early Monochrome period). A Neolithic site containing stone adzes, and flaked obsidian and chert was also discovered in Bagumbayan, which is presently a *barangay*[1] under Taguig city, just south of the river valley. Archaeological undertakings were again carried out by the National Museum of the Philippines in 1967 in Napindan, Taguig and Pinagbuhatan, Pasig wherein the explorations have confirmed the presence of Asian foreign ceramics comparable to those that were excavated in an 11th to 14th century CE burial site in Sta. Ana, Manila (National Museum of the Philippines 1968). This was followed in 1968 around Bagumbayan (or Bagongbayan) and Bicutan, both in Taguig, wherein several obsidian flakes, as well as early and contemporary tradeware ceramic sherds, were recovered from surface and test excavations (Anonymous n.d.; Salcedo and Tanaka n.d.)

In 1971, a certain Alejandro San Pedro accidentally unearthed some artefacts in his property in Barangay Wawa (which was a *barrio* or a

[1]*Barangay* is the smallest administrative division in the Philippines, which is comparable to a village or district.

small village then) while constructing his house (Flores 1974). The artefacts include porcelain, stone adze, spindle whorls, tektites, and glass beads. It was only three years later when this discovery was brought to the attention of the National Museum, through the initiative of the Filipinas Foundation. Together with Alfredo Evangelista, the members of the Foundation went to the site in 1974 and first examined the area, whether it is feasible to conduct an archaeological excavation. Unsystematic diggings have actually already started prior to their arrival, yielding a profusion of earthenware and tradeware ceramics sherds, together with deer antlers and probable crocodile remains. Human burials were also found in the site, with some having possible stone markers on top of the graves.

Almost twenty years later in 1992 another site was discovered during the construction of the foundations of St. Michael's Parish compound in another *barangay* (Bautista 1992). Out of the eight pits that were dug, three of them contained human remains, earthenware pottery sherds, and Chinese tradeware sherds. All materials were found two to three metres below the surface. The Chinese tradeware ceramics, consisting of blue-and-white porcelain sherds and a stoneware bowl fragment, are all Ming period type, which belongs to the 16th century CE. In the Pasig area, archaeology has been indicated by Beyer from the discovery of three nephrite adzes during a dredging activity in 1920, in front of the Provincial Building of Pasig (Beyer 1947). In Pinagbuhatan, archaeological endeavours have been taking place since 1958 (Henson and Ronquillo 1973) then it was followed in 1966 and 1967 (National Museum of the Philippines 1968).

In 1973, Henson and Ronquillo (1973) of the National Museum investigated a site within the Republic Glass Corporation in Pinagbuhatan after the company unearthed tremendous amounts of earthenware and porcelain fragments during their initial clearing of the area. However, the systematic excavations of the National Museum revealed only few pieces of Asian tradeware and local earthenware ceramics and human remains within the trenches. Though the site seems to be highly disturbed, the amount of materials found in the surface led them to postulate that Pinagbuhatan might have been a habitation site around 12th to 16th century CE. In 1990, a pot hunting activity was documented by Victor Paz (1990, 1992) of the University of the Philippines within and adjacent to a glass factory site (probably the same site Henson and Ronquillo have excavated) in Pinagbuhatan. The pot hunting recovered burials with significant amount of grave goods mostly composed of Asian

tradeware ceramics, believed to be associated with the Sung Period (10th to 12th century CE). The site, however, was probably inhabited up to the 17th century CE, from the presence of artefacts such as tradeware ceramics associated with the Ming Period (14th to 17th century CE), which were found on the upper layers of the excavations.

Pila Excavations and the Laguna Copperplate

Although Beyer (barely) mentioned the archaeological potential in the eastern shore of Laguna de Bay in his Outline Review, its importance has not been truly recognised until the discoveries of an extensive 10th to 15th century cemetery in Pila and a 10th century copperplate with inscription in Lumban, both in the province of Laguna.

Systematic archaeological undertakings in the eastern shore of Laguna de Bay began around late 1960s. Around May to October 1967, archaeological diggings were conducted in Laguna and Rizal by graduate students Ms Julita Fernandez and Ms Amelia Rogel from the University of the Philippines-Department of Anthropology and Dr Robert Fox and Mr Avelino Legaspi from the Anthropology Division of the National Museum (Fernandez and Rogel 1968; see also Fox 1968; Valdes 2003). Known as the 'Laguna de Bay Project' (see National Museum of the Philippines 1968), which was funded by the ESSO Standard Philippines and Mr and Mrs Manuel Elizalde, 10 archaeological excavations were carried out in Pila (Barangays Bagong Pook and Pinagbayanan), Lumban, and also in Balibago, Talim Island. This project was formed after the important discoveries excavated in Sta. Ana, Manila earlier that year (see Fernandez and Rogel 1968).

One hundred and fifty three graves were uncovered from three out of four sites, which date around 12th to 15th century CE based on the Asian foreign ceramics recovered. In September of the same year, the University of San Carlos (USC), together with Mr Leandro Locsin and Mrs Cecilia Locsin, also conducted excavations in Barangay Pinagbayanan in Pila, Laguna. Supervised by Rosa C. P. Tenazas, the USC team unearthed several burials, including those that are believed to be cremated human remains (Tenazas 1968, 1973,1977).

Four cultural layers or horizons were identified in the excavation (Tenazas 1968). The earliest was believed to be around the Iron Age (c. 500 to 1000 CE) based on the absence of foreign tradeware ceramics and the distinct earthenware pottery tradition found compared to the later period earthenware ceramics. Although no human remains were recovered from this cultural layer, Tenazas somehow designated the presence of these

distinct earthenware pottery forms in the site as burials in which she identified three. The next cultural layer has the most burials recovered, with grave goods composed of Asian tradeware ceramics, iron slags and implements, spindle whorls and net sinkers, gold ornaments, and Chinese coins, among others. The Early and Late Sung types of tradeware ceramics and the dates of the Chinese coins (1063 CE and 1100 CE) place the cultural horizon around 11th to 12th century CE. At the third cultural layer, evidence of cremation began to appear either placed in pits or in stoneware jars.

A stone structure was also found in this layer, which is believed to be a crematorium. Late Sung and Yuan types of trade ceramics found, together with a radiocarbon date of 1375±25 B.P. obtained from one of the cremated remains, place this cultural horizon around the early 13th to 14th century CE (Tenazas 1977). Presence of post holes, net sinkers, spindle whorls, and iron slags within its black soil matrix also indicate that the site at this period has been used as a habitation as well. The latest cultural horizon is associated with late 13th to 15th century CE, based on the Early Ming type Chinese ceramics and Thai and Vietnamese ceramics recovered from the burials (Tenazas 1973, 1977). In 1990, the National Museum of the Philippines acquired a thin copper sheet that was said to be found in Lumban River near the Laguna de Bay area. This copperplate contains a ten-line script impressed or hammered on one side (hence the name Laguna Copperplate Inscription) (Figure 4).

Figure 4. Laguna Copperplate with Inscription (National Museum of the Philippines)

The decipherment of what seems to be an old script on the copperplate was made possible through the efforts of Antoon Postma of the Mangyan Heritage Center (Oriental Mindoro) (Postma 1991). The Laguna Copperplate Inscription (LCI) was written in Old Javanese script known as Early Kawi; however, the language used contained vocabularies that are much closer to Old Tagalog and some Sanskrit terms (Postma 1991; Tiongson 2008).

The LCI generally narrates the acquittal of a debt worth 865 grams of gold brought upon by a person of high office and his whole clan, which took place around the Saka year 822 or 900 CE; thus making the copperplate inscription the earliest calendar-dated historical document in the Philippines. Place names were also mentioned in the LCI; among them is Tundun, which corresponds to the present Tondo area in Manila. Other place names or toponyms such as Pailah, Puliran, and Binwangan were placed by Postma in Bulacan, corresponding to the present Paila in Norzagaray, Pulilan municipality, and Binuangan in Obando respectively (Postma 1991).

However, a paper presented by Mr Jaime Tiongson (2008)[2] of the Pila Historical Society in the 8th International Conference on Philippine Studies reassessed the interpretation of the LCI and used early Tagalog dictionaries to re-interpret the said document. His study revealed a slightly different story, involving the union of two clans as a form of acquittal from the debt. In addition to that, the re-interpretation also showed that some of the toponyms were actually situated not in Bulacan but rather to the east of Manila. Pailah, for example, refers to the present Pila in Laguna while Puliran refers to the Laguna de Bay, which in the past was called Pulilan according to the early Tagalog dictionaries.

These places was said to have more historical significance than in the north of Manila based on the wealth of archaeology found in these areas, particularly in Pila. Binwangan on the other hand is believed to be the present Barangay Binawangan in Capalonga, Camarines Norte, which according to Tiongson may be very significant because of the presence of goldmines in the region (e.g. Paracale). This new interpretation has shed light on the social complexity of Pila as early as 10th century, which has also been evident in the archaeological record in Barangay Pinagbayanan.

[2]Tiongson's paper was later published as a book along with other contributors in Ang Saysay ng Inskripsyon sa Binatbat na Tanso ng Laguna (2013).

Other Archaeological Sites in Laguna and Rizal Provinces

Systematic exploration and excavation has also been carried out in other sites in Laguna and Rizal provinces around the lake. In Bay municipality in Laguna, archaeological excavation in 1969 by the National Museum in Barangay San Antonio has generated five burials associated with grave goods such as earthenware and stoneware ceramics and metal artefacts (Peralta 1969). Cremated human remains were also found placed in stoneware and earthenware jars. Other materials recovered from the site include earthenware pottery vessels, an obsidian[3], a Chinese coin, worked fish vertebrae, deer antlers, and other animal bones, net weights, spindle whorls, iron artefacts and slags, and glass beads. At the south of Barangay San Antonio in Barangay Dila, still in Bay, burials have also been recovered from the excavations in 1978 (Alegre *et al*. 1978).

Out of three burials in the site, two of them were found *in situ* while one burial was disturbed. No grave furniture, however, were found within the burials. Other materials recovered from the site consist of a broken green glass bracelet, porcelain and stoneware sherds, earthenware pottery sherds, human and animal remains, and an iron implement. The presence of Asian foreign tradeware ceramics definitely placed these sites within the Protohistoric period (c. 9th to 16th century CE), although the exact range of the period has not been indicated. At the southwestern lakeshore a burial and habitation site in Barangay Caingin, Sta. Rosa, Laguna was excavated, also by the National Museum, in 1975 (Ronquillo n.d.). Eight extended burials were found, consisting of five infants, one child, and two adults.

The non-adult burials contained grave goods, mostly Asian foreign ceramics dating from 12th to 15th century CE. The adult burials on the other hand lacked grave goods. Midden deposits were also found in the site, consisting mainly of edible molluscs, carabao remains, deer antlers, earthenware stove fragments, earthenware sherds from pedestalled vessels and other vessels, clay net weights, spindle whorls, stoneware sherds, and porcelain sherds. Presence of domestic items such as net weights, spindle whorls, and stove fragments, together with animal remains suggests that the site was also used as a settlement area. However, no post holes were found in the site. Other sites around the lake that has reported archaeological undertakings include Siniloan (Alegre 1976), Pangil (Ronquillo 1975b), and Biñan (Bautista 1989, 1993), all within

[3]It was never indicated in the report whether the obsidian piece found was a flake or at least show signs of working.

the province of Laguna. Asian trade ceramics were mainly recovered from all these sites, with dates ranging from the Sung period (10th to 13th century CE) in Pangil (Ronquillo 1975b) to the late Ming period (17th to 18th century CE) in Biñan (Bautista 1993).

Discussion

The outline review of archaeological undertakings and some important discoveries presented in this paper clearly shows the wealth of archaeology around Laguna de Bay. Its early recognition can be attributed to H. Otley Beyer's extensive Rizal-Bulakan and Manila surveys around the 1920s and 1930s. Rizal in particular has shown concentration of archaeological sites around the river valleys of Tanay, Baras, and Pililla. These sites yielded rich deposits of burials, middens, and various artefacts ranging from the Palaeolithic period to the recent 19th century CE historic period. Presence of these materials from different periods indicates continuous habitation within these areas. However, archaeological research in the abovementioned sites was never followed after Beyer, although the materials such as the Neolithic stone implements found in his survey areas were studied subsequently by Frank Lynch, S.J. (1949) and later on by Roger Duff (1970).

The Angono petroglyphs site in Binangonan, Rizal, on the other hand, is continuously being studied since its discovery in 1965. Aside from the follow-up archaeological excavations conducted within the rockshelter and around its vicinity in the late 1990s, the petroglyphs were also currently re-examined using up-to-date technology. More studies though, are still needed to better understand its nature, particularly the date of the petroglyphs, the function of the rockshelter, and the context of the site and its relationship with other sites within the region.

The late 1960s to 1970s saw another surge of archaeological endeavours in the Laguna de Bay area; due mainly to the major discoveries made from the Sta. Ana excavations in Manila and also to the frequent pot hunting activities in the Laguna and Rizal lakeshore areas. The significant finds recovered from Sta. Ana has led archaeologists to shift their focus towards the lake to understand the extensive trading networks in the region as shown in the presence of Asian foreign ceramics. These endeavours have resulted to the discovery of more sites of the same period in Taguig, Pasig, Pila, Lumban, and Talim Island. Pila, Laguna, however, was the only one that was extensively studied archaeologically; resulting to some publications (Tenazas 1968, 1973) and references in other literature (e.g. Locsin *et al.* 2008; Tiongson 2008; Valdes

2003). There were also excavations in other lakeshore sites around that time that were conducted, not necessarily in connection with the Sta. Ana discoveries, but rather based only on local reports of accidental discoveries and pot hunting activities; such as Sta. Rosa (Ronquillo n.d.) and Bay (Alegre *et al.* 1978) in Laguna. Nevertheless, these sites provided pertinent data such as the burials and its associated finds, particularly Asian tradeware ceramics dating around 10th to 15th century CE, that can be compared with the findings in Sta. Ana and those sites previously mentioned, since nearly all of them yielded materials that belonged to approximately the same time period.

Potentials for an Extensive Archaeological Research

It is apparent that in spite of the wealth of archaeology in the Laguna de Bay sites, our understanding of the region as a whole through archaeology is still very limited. Just like major river systems, lakes and lake basins can also provide viable places for thriving communities especially when the lakeshores are seasonally flooded. Lakes can also provide excellent access ways for travel, trade, and interaction with various inhabitants living around it. These essential characteristics are present in Laguna de Bay, and therefore very feasible for studying the growth of settlements and the development of societies around this region through archaeology. In addition, we can also examine the role of the lake in the development of some historically significant places such as Manila, Tondo, Sta. Ana (Sapa/Namayan), Bay, and Pila (see Paz 2009).

Going to the Pasig River, it would be interesting to conduct further excavations in Taguig and Pasig areas since they have been yielding interesting archaeological finds. This can contribute to our understanding on the historical and cultural processes that shaped Manila. On the southern side of the lake, excavations conducted on Bay and Sta. Rosa have revealed notable finds that can also be worth studying. Bay has been known historically for its prominence in the lakeshore area (hence the namesake Laguna de Bay or 'Lake of Bay'). Recent studies also believed that the *Ma-yi* mentioned in early Chinese historical records might actually be referring to Bay instead of Mindoro (Go 2005).

While more historical evidence brings this current thinking closer to what was actually described in the Chinese records, it would also be important to test this hypothesis through further archaeological investigation in the Bay area and its vicinities. In Rizal province, surveys conducted by H. O. Beyer have yielded tremendous amount of archaeological data, which could be worth considering historically and

archaeologically. As mentioned earlier presence of materials from the Palaeolithic to the recent 19th century Spanish Colonial period indicates continuous occupation of the area. We might not be certain of how many groups or populations might have occupied Rizal province but we know for sure through historical accounts that it has been heavily populated prior to the arrival of the Spaniards.

The dense population and profuse archaeological evidence indicate the significance of the Rizal as a physical and cultural landscape. As mentioned by Beyer, the richness of three river valleys has provided suitable places of settlement for past communities. Folklore also attests to the role of Rizal as a significant locale. Oral traditions also described the larger part of Rizal (particularly Talim Island, Rizal river valleys, and Jala-Jala peninsula) as once part of Pila ruled by a *datu* (chief) named Gat Salyan Maguinto, whom the present inhabitants of Rizal considered as their founding ancestor (Amante 2010; Santiago 1997). Such evidence coming from previous archaeological surveys, historical accounts, and oral traditions would definitely require an extensive archaeological research in the Rizal area.

In the midst of the richness of archaeological materials found around the Laguna de Bay, majority of the identified archaeological sites (in good contexts) around Laguna de Bay are composed of open burial sites, mainly because it is the most conspicuous archaeological feature found in the Philippines. Nonetheless, these burials can give a great deal of information from the socio-cultural organisation of these past lake inhabitants to their past diet and demographics. The extensive study conducted by Tenazas (1977) in Pila has provided substantial data on the socio-religious organisation of its past inhabitants from c. 1500 to 500 years ago. She revealed evidence of population growth and movements around the area and the role of external influences (brought by their interaction with outside traders) in the changing burial patterns materially and ideologically. Their location in the lakeshore can also provide us some inferences about the worldview of the past lake inhabitants and their close relationship to the lake. It would be important therefore to reconsider the study of mortuary remains in the region, from the human remains to their burial patterns.

While the burials can give substantial information on past societies from group to the individual, it is important as well to look at the settlement sites. Unfortunately, archaeological evidence of settlements remained scanty, mostly inferred through the presence of midden deposits and post holes (see Beyer 1947; Ronquillo n.d.; Tenazas 1968).

While burials reflect mostly the kind of society and the cosmology these lake inhabitants were living in, evidence of settlements in turn reflect most of their life ways at the domestic or household level. Finding concrete evidence of settlements in this region such as post holes, midden pits, and hearth remains should be taken to great consideration in the archaeological research to understand how they utilise their domestic space. We can also look at the relationship between the burial sites and settlement sites and how would this reflect their idea and use of landscape and possibly, reflect their orientation with the lake.

Integration of multidisciplinary studies in archaeological research, especially those from the biological and geological sciences, has been growing in importance as well as the interest in understanding past environments or landscapes and inferring past human behaviour. Environmental studies can provide clues on past environments and the role of past communities living around the lake in altering these landscapes. Geoarchaeology, palynology, archaeobotany, and zooarchaeology would definitely be essential in the archaeology of this region. Pollen analysis or palynology would be among these approaches that can reveal past environmental settings and changes through time. This in fact has already been conducted by Ward and Bulalacao (1999) in Laguna de Bay. The analysis of only one core sample, which was obtained through drilling into the lake-bed revealed an environmental sequence going to c. 6000 years. Evidence of marine diatoms and pollen of several mangrove taxa at the lower levels supports the transformation of the lake from the saltwater Manila bay extension to its eventual enclosure as a freshwater basin around 3700 BP. Sudden increase of grass pollen and concentrations of charcoal on levels dating later than 2400 BP was also found in the analysis, indicating deforestation and burning caused by human-related activities. Geoarchaeological approaches such as sedimentology and pedology on the other hand can help us determine evidence of past human occupation and even past human activities in the area.

Archaeobotany and zooarchaeology is helpful not only in reconstructing past environments, but also in understanding patterns of plant and animal exploitation, past diets, and past human interactions at different ecological settings. Analyses of plant and animal remains in Ille cave and rockshelter site in northern Palawan, for example, have revealed evidence of exploitation of forest resources in the past (Carlos 2010; Lewis *et al.* 2008; Ochoa 2009; Piper and Ochoa 2007). Archaeobotanical study in Tanjay site in Negros Oriental has revealed upland-lowland trade

interaction through evidence of forest products from the uplands in lowland sites (Junker 1999). Similar approaches were also used in understanding the nature of subsistence among the past inhabitants of the Peñablanca caves in Cagayan Valley in northern Luzon (Mijares 2007).

On a particular subject matter, one of the interesting findings recovered around Laguna de Bay was the evidence of cremation practice. Aside from Pila (Tenazas 1973 and 1977), cremated human remains placed either in pits or ceramic vessels were also found in Bay (Peralta 1969) and Lumban (Elizalde 1967)[4]. It should also be noted that such evidence were also present in Novaliches area (Beyer 1947) and in Naic, Cavite (Accion 1978; National Museum of the Philippines 1978), north and west of the lake respectively. Evidence of burnt human remains was also recovered in Ille cave and rockshelter in northern Palawan (Lewis *et al*. 2008); although these were dated c. 9000-9500 BP – way earlier than the Laguna de Bay cremation burials, which were around the early to middle part of the 2nd millennium CE. Presence of such distinct form of burials at almost the same time period should be examined in relation to each other. Cremation practice at this time depth is believed to be an influence of Hindu-Buddhist tradition (Tenazas 1973; Valdes 2003) either brought by the foreign traders or adapted by the local communities themselves when they travel and traded in foreign regions. It would be important as well to consider the role of the lake and the lake communities of this period in the spread of such practice.

Lastly, studying the archaeology of Laguna de Bay basin could tell us of the development of several cultural communities around the area, particularly the Tagalog-speaking populations. The Tagalogs, which constitute the majority of the inhabitants of Laguna de Bay, was believed to be already a distinct ethnolinguistic group as early as 10th century, as inferred from the recent interpretation of the Laguna Copperplate Inscription (Tiongson 2008). Spanish chroniclers have also identified Tagalogs living in Manila and around the lake as physically and culturally distinct from other ethnic groups (see Scott 1994). While recent historical studies point at Manila area as the possible birthplace of 'Tagalog' as a self-ascribed ethnonym (Ubaldo 2009), it would be

[4]Excavations around Laguna de Bay by the National Museum and University of the Philippines in 1967 have indicated the presence of cremation burials in one of its sites (Fernandez and Rogel 1968). Tiongson (2008) identified the site to be Talim Island, based on a secondary source. A review, however, of the National Museum Inventory Records in the said sites on that year did not mention such evidence in Talim Island (Anonymous 1967) but rather in one of the sites in Lumban.

interesting to look as well at the role of the lake and the lakeshore in the formation and development of the Tagalog ethnic identity.

We can look at the stylistic attributes of material culture such as pottery as possible ethnic markers, although it is advised to be very cautious on this matter (Jones 1997). Main and Fox (1982) have indicated formal and decorative similarities between the earthenware lugged and spouted pots found in Calatagan, Batangas (Figure 5) and in Sta. Ana, Manila – both are Tagalog regions. The pottery from Sta. Ana, however, was quite earlier (11th to 13th century CE) than those from Calatagan (15th to 16th century CE). It should also be noted that similar pottery was also found in Pila, Laguna, which dated around 11th to 12th century CE (see Tenazas 1968 and 1977) – contemporaneous with the Sta. Ana earthenwares.

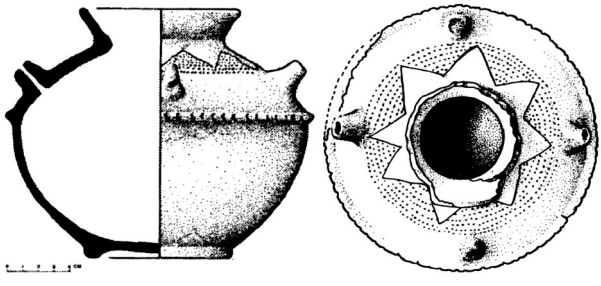

Figure 5: Lugged and spouted earthenware vessels found in Calatagan, which was also reportedly found in Sta. Ana and Pila (from Barretto-Tesoro 2007).

This pottery style so far has only been reported in these areas[5], which is within the Tagalog region. The associated period of these pottery forms and styles could be indicative of the development and (possibly) spread of this tradition through time. The fact that these earlier pottery styles were found in the Laguna de Bay basin already suggests that this might be the area of its initial development, which later influenced pottery complexes in Batangas as Main and Fox (1982) and also Tenazas (1968) have implied. Associating this with the development of the Tagalog ethnic identity could be very promising; however, more archaeological investigations and material culture analyses will definitely be needed.

[5]Initial examination by the author of the pottery recovered from Naic, Cavite also revealed presence of lugged and spouted earthenware pots similar to those found Calatagan, Sta. Ana, and Pila sites. The Naic site is dated around Ming dynasty period (14th to 16th century CE) based on the Asian trade ware ceramics found.

The outline review of Laguna de Bay has revealed the richness of archaeology in the region and also the scarcity of our understanding about it. The considerable amount of materials found in the lakeshore opens a lot of opportunities for further archaeological research. Since Laguna de Bay basin is all connected through the lake, it might be helpful as well to study each archaeological site surrounding the lake as one region instead of just per site separated by political boundaries.

Archaeological evidence on the lakeshores has already demonstrated some of their similarities of archaeological features and assemblages and therefore should be studied in relation to each other. On the other hand, heritage matters should also form a crucial part in our archaeological research around Laguna de Bay since the lake basin sites, like any other archaeological sites in the Philippines, are gradually being devastated by real estate developments, indiscriminate looting, and natural disasters (e.g. typhoon Ondoy/Ketsana in October 2009). This growing concern needs to be addressed properly by disseminating archaeological heritage awareness among the local government units and local communities. Such undertaking would help them enrich not only their history and culture, but also the value of the lake, which was the source of life for them as their ancestors have once been.

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