

Report on High-fired Glazed Ceramics at Leki Wakik, East Timor

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Introduction

Leki Wakik is a large hilltop occupation site located within the Manatuto district in the central region of the Democratic Republic of Timor-Leste (henceforth, East Timor). The site sits on the west bank of the Lalaia River and is approximately 4 to 5 km inland from the northern coastline of East Timor. The site contains several large stone walls and circular stone arrangements which has been proposed to be the remains of house circles (ANU 2011). Five test units – A to E – were excavated during the excavation season of 2011 which produced a range of artefacts including ceramics, marine shell and animal bones (ANU 2011). Artefact density has been observed to be highest within these circular stone arrangements as well as inside an “unusual area” that is surrounded on three sides by the large stone walls (ANU 2011).

A total of 43 high-fired glazed ceramic vessel sherds were recovered as part of the ceramic assemblage from five excavated test units – A to E – at the hilltop occupation site of Leki Wakik. Excavation units A and C were located within what is broadly the central area of the site bounded by two stone walls in the east and west, as well a “notable slope and stone structure to the south (Figure 1). Unit A lies to the south of a circular stone arrangement, whereas unit C is located within another circular stone arrangement approximately 20 m northwest of unit A; these circular stone arrangements have been proposed to be the remains of house circles (ANU 2011). Units B, D and E are located approximately 100 to 120 m to the south of units A and C close to a steep slope marking the southern and south-eastern boundaries of the site. Unit B lies against a rectilinear stone structure which is located right by the steep slope, whereas units D and E are approximately 40 southwest of unit B; unit E lies within another circular stone arrangement with unit D lying within 10m to the southeast; both units D and E lie within the vicinity of another stone wall and two series of aligned stones in the north- and south-westerly directions as well.

This report focuses on the analysis of 43 high-fired glazed ceramic sherds recovered as part of the general ceramic assemblage gathered from the five excavated test units (Table 1).

Background

Fortified Sites in Timor

Hundreds of large stone-walled structures are reportedly visible on hilltops and cliff edges in the contemporary landscape along the northern coastlines of East Timor (Lape 2006:285; Lape and Chao 2008:11). Some of these stone structures in the eastern district of Lautém are remembered by locals in the regional Fataluku language as “*lata irinu*” or “old village sites,” whereas others are remembered by its local inhabitants as sites occupied during a period of internecine warfare mostly before living memory (Lape 2006:285; Lape and Chao 2008:11, 15); Lape (2006) reports that this time of conflict is remembered across East Timor as “a time of *perang saudara* or *perang ratu*” (in Bahasa Indonesia) which literally translates to “brotherly war” or “clan war” and significantly, predates Portuguese colonial administration. Preliminary investigations into the architecture and locality of these stone structures on the eastern coast by Lape (2006) supports, at least for some, their function as defences for what appears to be fortified settlement sites. As O’Connor et al. (2012) notes, the remains of these “walled enclosures” may not necessarily be “fortifications” since they vary widely in terms of morphology and location as well as levels of preservation in the archaeological record. Moreover, there appears to be a clear distinction within local vocabulary between former settlement sites with ancestral significance – “*lata irrata*” or “*lata paru*” – and fortified “*lata*” called “*pa’amakolo*” which literally means “to pile up dense or wide walls” (O’Connor et al. 2012:201).

Radiocarbon dating of earthenware sherds, marine shell, charcoal and in one case, human bone from a burial context, from eleven fortified sites in both districts of Lautém and Manatuto produced a wide range of dates spanning 12 centuries (cal. AD 348 – 1921) with two extreme outliers at the sites of Ili Mimiraka and Mua Mimiraka (cal. BP 2330 – 1530 BC and cal. BP 2334 – 1684 BC). These dates led Lape and Chao (2008) to postulate that the Tutuala fortified sites in the Lautém district were probably occupied within the 15th – 19th centuries AD, whereas most of the Manatuto sites appear to be occupied between the 11th and early 18th centuries AD; it is clear, however, that most of the calibrated radiocarbon date ranges coincide in the period between the 14th – 17th centuries AD, with the majority of the dates clustering specifically around the 1450 – 1650 AD period (Lape 2006:288; Lape and Chao 2008:17).

Based on these radiocarbon dates and preliminary settlement pattern studies by Lape and Chao (2008), it was observed that fortified settlements on cliff edges and hilltops only appeared on the northern coastline sometime after 1000 AD in spite of over 35,000 years of prior human occupation on the island; it was also noted that people had not occupied cliff

edges or hill tops before the appearance of these fortified settlements as well (Lape 2006:287; Lape and Chao 2008:11-12). While fortified sites in the Tulata area of the Lautém district generally occur on cliff edges and hill tops, only eight of 60 sites and 22 isolated finds surveyed and identified in the Manatuto district are located on hilltops (Lape 2006:287; Lape and Chao 2008:18). Nonetheless, it was found that Manatuto lowland sites found on the terraces and floodplain areas were abandoned by the 16th and 17th centuries AD, resulting in the hill top sites as the only places of habitation in that period (Lape and Chao 2008:18). This diachronic pattern of population movement from coastal, low-land sites to interior sites at higher elevations appears to be corroborated by local oral traditions and social memories of various clan histories in the Lautém district (Lape 2006:291-292). Recent Bayesian analyses of published radiocarbon dates by Lape (2006) and Lape and Chao (2008) – together with 21 new AMS radiocarbon dates derived from two additional fortified sites of Vasino and Macapainara in the Lautém district – have adjusted the earliest establishment of fortified occupation sites to a later date at 1300 AD, with the settlement pattern becoming widespread between 1550 and 1750 AD (O'Connor et al. 2012:211).

Research by Lape and Chao (2008) have concluded that the construction of fortified sites coincided with a period of decreasing and unpredictable rainfall during the late Holocene which may have been triggered by “a dramatic increase in El Niño events” from 1100 – 1600 AD. This conclusion is supported by the strong correlation between these sites and their location in areas of drought tolerance – accompanied by drought resistance resources – which are also adjacent to areas lacking in space which, in turn, is interpreted by both authors as a defensive response by the inhabitants of these fortified sites against other settlements which are suffering food shortages (Lape and Chao 2008:19). On the other hand, recent research by O'Connor et al. (2012) have suggested that socioeconomic factors such as population growth, slave raiding and competition for resources and material wealth from the lucrative trade in goods including beeswax and sandalwood are likely to have driven conflict and hence, fortification building. Permanent occupation at most of these fortified sites, however, ceased by the middle of the 20th century and became sites of “irregular use” for ceremonial activities and later, as “strategic military sites” in the 25 years of East Timorese resistance against Indonesian annexation (Lape and Chao 2008:17).

Nonetheless, these sites remain important in contemporary culture as sacred places, sites of clan histories and places of social memory and hence, continue to be in use today as places for ritual activities such as animal sacrifice, feasting as well as periodic ‘repair’ of stone features (Lape 2006:291; Lape and Chao 2008:15). Lape (2006) reports that a number of fortified sites in the Lautém district, for example, contain sacred wood or stone markers known as “*sikua*” or “*saka*” in Fataluku as well as stone platforms called “*chaluluturu*” – Fataluku for

“ancestral grave” – which are the focus of local ritual activities. By combining oral accounts with a preliminary mapping and spatial analysis within fortified sites, Lape (2006) and O’Connor et al. (2012) were able to identify “circumscribed ceremonial spaces” called “*sepu*” where dancing and communal feasting would have supposedly taken place; other interior settlement features include “distinctive sacrificial platforms” marked by “*sikua*,” a number of smaller walled structures are also thought to be possibly used as pens or corrals for animal husbandry (Lape 2006:292; O’Connor et al. 2012:203).

Historical Social Organization in Timor

Glover (1986) observed that Timorese culture can be distinguished from that of Melansia by a number of traits including “a developed class system with hereditary chiefs, cattle-keeping, the predominance of cereals including wet rice over root crops, metal working (iron for swords, and gold and silver for ornaments), weaving of cotton, and a partial market economy with the production of goods for sale and export.”

Glover (1986) adds that most settlements usually consist of scattered house clusters (or “*cnuas*”) which represent lineage groups which are, in turn, grouped together into ‘villages’ (or “*povações*”) in East Timor based on either patrilineal or matrilineal clans; the largest political unit (“*suco*”) consist between 6 to ten ‘villages’ and is ruled by a chief. In addition, Metzner (1977) reports that traditional Timorese society consisted of three basic social classes: the aristocratic “*dato*,” the general “*ema*” (or “*ema rai*” meaning men) populace, and the slaves (or “*ata*”).

Although European settlement in Timor began in the 16th century, it was not until the 19th century that both Portuguese and Dutch control became effective (Glover 1986:11; Metzner 1977:3). As late as 1859, actual Portuguese and Dutch control of the island was limited to only “a handful of coastal bases” which included Dili and Kupang, and there was “almost no European contact” with the rural population in Eastern Timor before the early 1900s (Metzner 1977:4, 16). According to Metzner (1977), the colonial administration was “constantly threatened” by tribal warfare and head hunting up to the end of the 19th century AD. Consequently, Portuguese colonial administration was not established until after a series of military campaigns under Governor José Celestino da Silva between 1894 and 1908 (Metzner 1977:4).

Prior to this assertion of Portuguese colonial administration in East Timor, the island was known to have “petty states” (or “*rai*”) which were each headed by a “king” (or “*liurai*”) who ruled over a number of “princedom” (or “*sucos*”) that, in turn, were governed by two rulers – “*macair fukum*” and “*dato uin*” – who had pledged their allegiance to their respective *liurai* (Metzner 1977:3). These *sucos* were divided into patrilineal-patrilocal or matrilineal-matrilocal

clans (or “*ahi matan*”) which are further divided into lineages (or “*feto fuan*,” “*mane fuan*”) and sublineages (Metzner 1977:3). Although the *liurai* was a hereditary position usually succeeded by the eldest son, the chiefs of *sucos* and village headmen were elected by the people (Metzner 1977:3).

Timorese ‘kingdoms’ are known to have arisen from shifting alliances between “*sucos*” and have rulers who have made claims of authority over land (Glover 1986:12). In light of the profitable sandalwood trade on Timor between the 16th and 17th centuries AD, Glover (1986) hypothesized that ‘chiefs’ who had the potential to organize labour to harvest and deliver sandalwood to the coast could gain a near monopoly of foreign goods entering the island which, in turn, would have formed the economic basis of the Timorese ‘kingdoms;’ this hypothesis coincides with the contemporaneous appearance of fortified and walled sites in East Timor.

Crucially, Metzner (1977) states that the Timorese population lived in ‘fenced, nuclear villages’ which were normally built in inaccessible locations chosen for defensive purposes as a consequence of “age-old traditions of tribal warfare among the various *sucos* and kingdoms;” cultivated fields were located near these settlements and “worked jointly by villagers” so as to “reduce the opportunities for headhunters from hostile *sucos*” (Metzner 1977:16). Consequently in the decades following colonial pacification by the Portuguese towards the end of the 19th century AD, the people were able to move to relatively unpopulated localities with more fertile soils as they were “no longer obliged to live within fortified villages, in fear of their lives” (Metzner 1977:16). This resulted in the post 20th century AD development of a new settlement pattern which was characterized by a dispersal of the rural population and established of new “hamlets” especially through the mountainous terrain of central Timor which had “more fertile land and good water supplies” (Metzner 1977:17).

Timor in Southeast Asian Trade and Exchange

A concise summary of the role played by the island of Timor in the history of trade and exchange in Southeast Asia can be found in the seminal work by Glover (1986) on the archaeology of East Timor, but his summary is worth reiterating here in light of the recovery of “Asian tradeware ceramics” at a number of fortified sites in East Timor as well as the possible role played by trade and exchange in the development of fortified sites on the island (Lape and Chao 2008:16; O’Connor et al. 2012:213-216).

The earliest record of Timorese trade appears between the 2nd and 3rd centuries AD, when the island was known to be the main source of the finest quality white sandalwood (*Santalum album* L.) traded to western Indonesia and possibly India (Burkill 1935:1954-1956; Glover 1986:11; Wolters 1967:11). The Timorese sandalwood trade appears to have

continued for at least another thousand years where the island was listed as a sandalwood source again, but this time for the Chinese market during the Song dynasty (10th – 13th centuries AD) (Crick 2010:31; Glover 1986:11; Hirth and Rockhill 1911:208; O'Connor et al. 2012:214; Wheatley 1959:11). According to the mid-14th century records of a Chinese merchant Wāng Dà Yüan (汪大淵), Timorese sandalwood were reportedly exchanged for Chinese silver, iron, cloth and more importantly, ceramics (O'Connor et al. 2012:214; Ptak 1983). At the same time, South Asian Gujarati merchants were also known to have controlled maritime trade in Island Southeast Asia who made their fortunes sailing between the islands of Sumatra, Timor and the Moluccas prior to the arrival of the first Europeans in Southeast Asia – the Portuguese – in 1511 AD (Cortezão 1944:44; Glover 1986:11).

When the last of Ferdinand Magellan's fleet, the *Victoria*, arrived on Timor in 1522, the list of products supplied for trade by the Timorese include white sandalwood, ginger, buffaloes, pigs, goats, fowls, rice, bananas, sugarcane, oranges, lemon, wax, almonds, beans and gold; the goods demanded in return included red cloth, linen, hatchets, iron and nails (Glover 1986:11; Stanley of Alderley 1874:151-52). With the exception of guns, Glover (1986) observed that this list of trade goods was almost entirely the same 300 years later (Grey 1841:283-284). Sandalwood was used by the Portuguese as the principal good for entry into the Chinese market, the trade of which eventually led to the development of a "flourishing trade" between the Portuguese outposts at Macau, Flores and Timor during the 17th century AD (Boxer 1948:175-180, 195-196; Glover 1986:11). This flourishing trade declined by the 18th century AD and by 1750 AD, no more than eight Portuguese individuals and a few "licentious friars" remained on the island while the Dutch had established themselves at Kupang in West Timor (Boxer 1948:197; Glover 1986:12).

High-fired Glazed Ceramics in East Timor

The presence of high-fired glazed ceramics in East Timor was first recorded in archaeological literature by Glover (1986) on the history, archaeology and ethnography of the island. During his excavation at the cave site of Bui Ceri Uato on the Baucau Plateau in 1967, two pieces of "glazed pottery" – identified as a "blue and white Chinese glazed stoneware" and a fragment from a white glazed "European-made cup" – were recovered with one iron nail and nine pieces of bottle glass in "Horizon X" which is relatively dated between 0 – 750 BP (i.e. 13th – 20th centuries AD) (Glover 1986:97, 119). In the same year, another sherd of "glazed Chinese ceramic" was encountered on the steep slope 10 m below the cave site of Uai Bobo 2 in the eastern scarp of the Hatu Ariana mountain (Glover 1986:127, 187). Given this paucity of imported high-fired glazed ceramics among the four cave sites then studied by Glover, he concluded that the dynamics of colonial-period trade and exchange (which began in the 16th century) had little to no socioeconomic impact on Timorese cave-site occupation which he

recognized as reflecting only a small part of “the hunting and collecting aspects of life” (Glover 1986:207).

This paucity appeared to be matched by excavations conducted by Lape (2006) at six stone structure and fortification sites in the Tulata and Ira Ara areas of the Lautém districts where no “Asian tradeware ceramics” were found (Lape and Chao 2008:18). Subsequent research at eight fortified sites on the lower floodplain of the Laclo River and the Lamessana lagoon in the Manatuto district, however, recovered 251 “Asian tradeware ceramics” entirely from surface collections and some “post-1550 AD tradeware” from within an excavated – albeit possibly disturbed – context (Lape and Chao 2008:18). A five-phase chronology was derived from the seriation of the “surface collected tradeware samples” – presumably based on the stylistic and decorative elements of these sherds – ranging between 1400 and post 1850 AD (Lape and Chao 2008:18).

Excavations at a two-level hilltop fortified site of Macapainara in 2008 also recovered “imported trade ceramics and glass” (O’Connor et al. 2012:204). Significantly, it was also observed that a “Chinese blue and white tradeware bowl” was found to be placed on the surface of a large stone structure on the lower level of the complex, and identified by local inhabitants as the “double grave containing the remains of the former ruler of Ili Vali/Macapainara and his close political ally” (O’Connor et al. 2012:204-205). Excavations at another two-level hilltop fortified site of Vasino the following year, however, did not return any “trade ceramics” (O’Connor et al. 2012:206).

As Lape and Chao (2008) did not provide further details of these “Asian tradeware ceramics,” one can only assume that they are referring to a whole assortment of Chinese and to a lesser extent, Japanese and Southeast Asian ceramic goods which were known to be widely circulated in the region both during as well as centuries before the aforementioned periods (Adhyatman 1990:11-27). In order to situate these “Asian tradeware ceramics” during this milieu of global maritime trade between Europe and China during this period, Table 1 presents a summary of this chronology and its associated sherds and their correspondence to the imperial history of China between the 14th and 20th centuries AD.

Methodology

The primary mode of analysis for this preliminary study of high-fired glazed ceramics at Leki Wakik is a macroscopic (visual) comparative analysis. A Canon EF 100mm f/2.8 Macro USM lens was used to take photo-macrographs (up to 1:1 magnification) of both exterior and interior surfaces as well as fabric cross-sections of the sherds. These photo-macrographs

allowed for a finer resolution of diagnostic details which are otherwise hard to observe and record with the naked eye.

A total of 47 metric and non-metric variables were recorded on an Excel spreadsheet database. Non-metric data (i.e. provenance, vitrification level, fabric texture, fabric, glaze colours, etc.) is gathered based on the author's knowledge and familiarity with high-fired glazed ceramics produced in both China and Mainland Southeast Asia. This data should be treated as preliminary data and hence, should not be used in comparisons with other high-fired glazed ceramics outside of the Leki Wakik assemblage without caution.

As per standard taxonomical practice in the analysis of high-fired glazed ceramics in both Southeast Asia and China, these sherds have been preliminary classified according to typologies primarily based on their respective glaze and body colours and, in the case of Polychrome and Blue and White sherds, glaze colour-decoration combination. Five preliminary typologies (Brown, Green, White, Blue and White, Polychrome) and two type-varieties (Brown and White as well as Light and Dark Green) have been identified. Undiagnostic sherds are considered separately as a group with possible typological suggested by the author in parentheses within Table 2.

Preliminary Analysis

Brown-Glazed Ceramics (IDs. 2, 13 and 15)

All three brown-glazed ceramic sherds were recovered within unit B, with spits 4 (ID. 15), 7 (ID. 2) and 9 (ID. 13) producing one sherd each. All three sherds are body fragments of ceramic vessels, but only one (ID. 2) is glazed on both exterior and interior surfaces; this suggests that ID. 2 is likely to be an unrestricted vessel (i.e. with a wide orifice) such as a basin or bowl, whereas IDs. 13 and 15 are restricted vessels (i.e. with a much narrower orifice) such as a bottle or a jar.

All three sherds are likely to be wheel-thrown and kiln-fired, although only two sherds exhibit rilling on both exterior and interior surfaces (IDs. 2 and 15). IDs. 13 and 15 also appear to have been fired at a higher temperature and hence, to a higher level of vitrification than ID. 2. In addition, ID. 2 also appears to have a finer fabric with no visible inclusions as compared to IDs. 13 and 15 which appear to have a coarser fabric characterized by specks of black inclusions. The relative similarity between IDs. 13 and 15 in both firing temperature and vitrification levels, as well as fabric composition corroborates with the hypothesized morphological differences between ID. 2 and IDs. 13 and 15. Despite these differences, all three sherds can be considered as stoneware sherds based on their relative vitrification levels

of their fabrics and hence, firing temperatures (around 1200-1350°C) when compared to earthenware (higher) and porcelain (lower) sherds (Rice 2015:5)

No decorative motifs or any other characteristics diagnostic of their provenance were observed on any of the brown-glazed ceramic sherds as they are very small in size (12.1 – 37mm in length). Pending compositional analyses however, it is preliminarily suggested here that ID. 2 is likely to originate from a ceramic kiln in China due to a general resemblance of its glazing as well as composition and colour of its fabric with that of most Chinese brown-glazed ceramics. The provenance of IDs. 13 and 15 is indeterminate due to a lack of further diagnostic traits and hence, both sherds could either be from Mainland Southeast Asian kilns (i.e. Thai or Vietnamese) or China since both regions produced and exported brown-glazed ceramics (Brown 1988, 2009; Miksic 2009a, 2009b, 2009c).

The precise date of their manufacture is as uncertain as their provenance for very much the same reasons. Chinese brown-glazed ceramic sherds have a long history of production and export into Southeast Asia beginning as early as the eighth-ninth century AD in the form of spouted ewers from the Tang dynasty up to the early 20th century AD (Guy 1990:9-11). Hence, it is almost impossible to stylistically date small pieces of undiagnostic brown glaze Chinese ceramics sherds. However, high-volume trade and export of high-fired Southeast Asian ceramics is largely confined to the periods between the 14th and 16th centuries AD commonly known as the 'Ming Gap', wherein China appeared to have lost its monopoly in the export ceramics market of the region (Brown 2009:69; Miksic 2009b:84); IDs. 13 and 15 would most likely date to this period if they originated from mainland Southeast Asian Kilns.

Given that corresponding radiocarbon dates for IDs. 2 and 15 (none exists for ID. 13) range between cal. BP 324 – 281 (63.4%, 2 sigma) and cal. BP 378 – 245 (95.4%, 2 sigma), it would appear that IDs. 2 and 15 dates to the 17th century AD (1626 – 1669) and 16th – 18th centuries AD (1572 – 1705) respectively. Assuming these dates and aforementioned provenance to be accurate, they would suggest that ID. 2 was a Chinese stoneware vessel exported during the transition between the Ming and Qing dynasties, and that ID. 15 is also more likely to be a Chinese sherd since mainland Southeast Asian ceramics “disappeared almost completely from overseas markets” during the later half of the 16th century AD (Brown and Sjostrand 2001:27; Miksic 2009b:85).

It should be noted that brown-glazed stoneware ceramics from both China and mainland Southeast Asia are usually not export items themselves; they are more utilitarian in nature in that they are produced with the intent to be primarily storage vessels. To that end,

they have served as containers during shipping for a wide variety of export goods which can also include stacks of smaller trade ceramics as well.

Type-Variety 1: Brown and White (ID. 23)

A single 'Brown and White' sherd was found within the first spit of Unit C and preliminarily assigned as a type-variety of brown-glazed ceramics in this report. This label refers to the colours of its exterior and interior glazes respectively: a monochrome brown exterior glazing with a translucent and colourless interior glaze revealing a white fabric.

ID. 23 is an undecorated body sherd with a highly-vitrified fabric which qualifies it as a porcelain sherd which suggests, in turn, a high firing temperature between 1300°C and 1450°C (Rice 2015:5). Hence, it is definitely wheel thrown and kiln fired despite the absence of any physical production marks; in addition, the fabric is white and has no visible inclusions. The small size and relatively acute curvature of ID. 23 also suggests that it was most likely part of a small vessel (i.e. a small cup or bowl). No corresponding radiocarbon dates exists for this sherd.

Despite the unassuming simplicity of this sherd, the combination of brown and white glazing on the exterior and interior surfaces is diagnostic of a type-variety of Chinese monochrome (in terms of exterior surface glaze colour) ceramic vessels which began production during the reign of the Kangxi emperor (Kāng Xī 康熙) of Qing Dynasty during the mid-17th century AD (Liu 1991b). A range of monochrome exterior glaze colours were used and often, in combination with a variety of painted decorations including both underglaze cobalt blue (usually on white interior surfaces) and overglaze polychrome enamel (usually on non-white monochrome glaze surfaces) (Liu 1991b:44-281); ID. 22 most likely belongs to the former category with a underglaze cobalt blue decoration on the interior surface, but there is also an equal chance that the interior surface remains in undecorated monochrome white.

Green-Glazed Ceramics (IDs. 1, 17 and 41)

Three green-glazed ceramic sherds were recovered individually from three units and spits: unit B, spit 7 (ID. 1), unit C, spit 1 (ID. 17) and unit D, spit 2 (ID. 41). IDs. 1 and 41 are both ceramic vessel body sherds, whereas ID. 17 consists of the lower body, base and foot of a vessel.

ID. 17 has decoration on its interior surface consisting of multiple underglaze incised curvilinear lines which possibly represent the foliage of a larger floral motif. Based on the presence of this interior decoration, as well as the curvature of its lower body vis-à-vis its base and foot, it is immediately apparent that ID. 17 is a fragment of a shallow, unrestricted vessel with a wide orifice with an estimated interior base diameter that is 20cm wide; the diameter of

its foot ring is 19cm. The shallow, recessed and inverted nature of its foot-ring, however, limits the its morphology to either a plate or a dish, but not a bowl as bowls usually have taller and vertical foot rings.

With the exception of its darker green tone to its glaze, ID. 1 has a similar decoration on its interior surface, body curvature as well as fabric colours (cream to white) and composition to ID 17. Hence, it is likely that ID. 1 is a plate or dish fragment as well. On the other hand, ID. 41 has a much darker, olive tone to its glaze than both IDs. 1 and 17. In addition, it appears to have a very different fabric composition in its greyish colour as well as coarser black inclusions visible on its exterior surface. Beyond the identification of ID. 41 as an unrestricted vessel as well due to the presence of glazing on both exterior and interior surfaces, the morphology of this vessel remains unidentified due to the lack of further diagnostic features.

All three sherds are likely to be wheel-thrown and kiln-fired. In particular, ID. 17 exhibits an unglazed portion to its exterior base surface which is most likely a result of the stacking technique used by its potter during kiln firing. The vitrification levels and hence, likely firing temperatures, across all three fabrics are similar, although the grey fabric and coarser black inclusions of ID. 41 indicate that a distinctly different clay recipe was used for that vessel. Nonetheless, all three sherds can be classified as stoneware ceramics based on the relative vitrification levels of their fabrics when compared to earthenware (higher) or porcelain (lower) sherds.

Pending further compositional analyses, it is preliminarily suggested here that IDs. 1 and 7 are likely to have a Chinese provenance based on their glaze colour, fabric and underglaze decoration, whereas ID. 41 could either be from Chinese or mainland Southeast Asian kilns since it lacks any diagnostic traits and both regions also produced and exported green-glazed ceramics as well (Brown 1988; Miksic 2009c).

The morphology the foot-ring of ID. 17 is particularly uncommon among green-glazed ceramics recovered in Southeast Asia; it is similar to an example in the ceramic collection of the National University of Singapore Museum which is listed as a “Celadon [i.e. green-glazed], possibly Longquan” (Miksic and Ong 2009:151). The Longquan (龙泉 Lóng Quán) kilns of Zhejiang (浙江 Zhè Jiāng) province is a renowned centre of green-ware production in China which produced countless bowls, large dishes, jarlets, vases and many other vessel forms between the 11th to 16th centuries (Kwan and Martin 1985:77). ID. 17, however, is not likely to be from Longquan but kilns in the southern Chinese provinces of Guangdong (广东 Guǎng Dōng) and Fujian (福建 Fú Jiàn) due to their relatively lighter tone in glaze colour as well as

thinner glaze layer over the clay bodies (Lam 1985:1, 15, 18; Lu 1979:26; Ye 1994:122, 125-6).

ID. 17 could also be a ceramic sherd of the 'Qingbai' (青白 Qīng Bái or, also known as 影青 Yǐng Qīng or Yingqing) typology as its light green glaze colour also appears to be bluish-white as well (Kerr 2001:96). Qingbai-glazed ceramics are significant in terms of relative stylistic dating as the examples recovered from Southeast Asia are usually products of specifically the Song period (c.12th – 13th centuries AD), and ceased to be in production during the Ming dynasty (c.14 – 15th centuries AD) (Pierson 2002:17, 20). As the sherd is too small to make a clear distinction, it is preliminary categorized under the green-glazed typology.

The only radiocarbon date available for green-glazed ceramics belongs to ID. 1 which corresponds to cal. BP 324 – 281 (63.4%, 2 sigma) or the 17th century AD (1626 – 1669). This date is problematic, as green-glazed ceramics from China was a major export class only during Song and Yuan dynasties (Crick 2010:32-36; Miksic 2009b; Southeast Asian Ceramic Society 1985:73-81). Although the market for green-glazed ceramics was largely filled by the Thai kilns in Sawankhalok or Si Satchanalai during 'Ming Gap' in the 14th-16th centuries AD, Chinese blue-and-white ceramics had come to dominate the export ceramic market in Southeast Asia by the end of the 16th century AD (Brown 2009:54-60; Harrison 1995:3; Miksic 2009b:84-6). However, small ceramic sherds are prone to post-depositional processes (i.e. bioturbation, etc) on site and hence, may explain this discrepancy between the relative and absolute dates.

Type-Variety 2: Light and Dark Green (ID. 19)

A single 'light and dark Green' sherd was recovered from spit 2 of Unit C and preliminary assigned as a type-variety of green-glazed ceramics in this report. 'Light and dark' green refers to the two distinct tones of glaze colours on the exterior surface of the sherd: a dark olive glaze overlying a lighter green glaze; its interior surface only exhibits the light green glaze.

ID. 19 is a sherd containing the undecorated lower body, base and foot sections of a ceramic vessel. Although the sherd was too small for an accurate measurement of its interior base diameter, the diameter of its foot-ring is estimated to be 7.5cm. Based on these attributes as well as the curvature of its lower body vis-à-vis its base and foot, ID. 19 is most likely a fragment of an unrestricted vessel ranging from bowls to dishes and plates. The fabric is white but contains some visible black inclusions. Base on the relative vitrification levels of its fabric when compared to earthenware (higher) or porcelain (lower) sherds ID. 19 can be considered as a stoneware ceramic. Concentric circles of striations on the exterior surface and a circular,

unglazed ring on the interior surface indicates that the vessel was wheel thrown and stacked during the firing process and most likely using a kiln.

As mentioned in the previous section, green-glazed ceramics were produced and exported to Southeast Asia by both Chinese and Mainland Southeast Asian kilns, but these vessels are usually monochrome in terms of glaze colours unlike ID. 19 which has two different tones of green glazing. Nonetheless, ID. 19 is more likely to be a Chinese vessel because of the presence of glazing on almost its entire surface; glazing is usually not applied on the exterior base and interior foot ring surfaces of Mainland Southeast Asian ceramics, but is commonly applied to Chinese ceramics.

No corresponding radiocarbon dates for ID. 19 exists and unfortunately, the sherd bears no definitive diagnostic stylistic traits for relative dating.

White-ware Ceramics (IDs. 22 and 42)

Two white-ware ceramic sherds were recovered from units A and C. Both sherds were found within the first spit of each unit. Although sherds are ceramic vessel body fragments, ID. 42 (2mm) is significantly thinner than ID. 22 (6.8mm). In general, white-wares either have a white fabric or slip with a transparent to translucent, colourless glaze or have opaque white glazing (Medley 1976:97-102; Tan 1993; Wood 1999:47-73). From the photo-macrograph of their respective cross-sections, both sherds appear to have a translucent (ID. 42) to opaque white (ID. 22) glaze. ID. 42, however, is only glazed on its exterior surface whereas ID. 22 is glazed on both exterior and interior surfaces. The relative sherd thinness of ID. 22 suggests that it is likely to be an unrestricted vessel, whereas ID. 42 is likely to be a restricted vessel of a much larger size.

Both sherds are likely to be wheel-thrown and kiln-fired, with ID. 42 exhibiting concentric circular striations on the unglazed interior surface that is usually a result of wheel throwing. Both sherds also appear to have been fired at a similar temperature since they both appear to have a similar level of vitrification. ID. 42, however, appears to have a finer fabric with no visible inclusions as compared to ID 22 which appears to have specks of black inclusions within its fabric. Regardless, both sherds can be considered stoneware ceramics based on the relative vitrification levels of their fabrics when compared to either earthenware (higher) or porcelain (lower) sherds.

While ID. 22 has plain, undecorated surfaces, ID. 42 bears a mould-impressed, bas-relief decoration that depicts the foliage of a plant. The colour of the glaze and the type of decoration suggests that ID. 42 is likely to be a Chinese ceramic from the Dehua (德化 Dé Huà) kiln complex in Fujian Province – also known as *blanc de chine* (Li 1993:15-29; Tan

1993). In addition, ID. 42 is most likely part of the lid of a typical Dehua small circular box; the presence of concentric striations suggests that the sherd was orientated with both surfaces on the horizontal axis and as mentioned before, the thinness of the sherd suggests a small size to the vessel.

On the other hand, ID. 22 bears no diagnostic features can which reveal its provenance and hence, can potentially be either from Chinese or Mainland Southeast Asian kilns (Brown 1988, 2009; Miksic 2009a, 2009b, 2009c). Among the Mainland Southeast Asian kilns however, the opaque quality of its glaze together with the whiteness of its fabric suggests a stronger affinity with Vietnamese white-wares – if it was indeed produced in the region (Stevenson and Guy 1997).

The dating of these white-ware sherds is problematic as no radiocarbon dates corresponding to IDs. 22 and 42 have been obtained. The provenance of ID. 42 is also not helpful in relative dating as the production and export for Dehua ceramics spanned nine centuries across four separate Chinese dynasties (Song, Yuan, Ming and Qing) (Li 1993:13; Tan 1993:11). Given that both sherds lay within the first spit close to the surface and that the available radiocarbon dates from the site range between 467 and 174 BP (i.e. 15th – 18th centuries AD), ID. 22 is most likely a De Hua ceramic vessel produced and exported sometime during the Ming to Qing dynasties.

Blue-and-White Ceramics (IDs. 3-4, 6-9, 11, 16, 20, 24, 27, 31-32, 34-36 and 43)

17 blue-and-white ceramic sherds were recovered from three units at Leki Wakik: one from unit A (spit 1), seven from unit B (spits 7-8 and 10-11) and nine from unit C (spits 1-3). With the exception of ID. 11, the remaining 16 sherds are classified as “blue-and-white ceramics” because of the presence of cobalt blue decorations painted on the fabric surface and under a layer of translucent bluish-white (i.e. ‘Qingbai’) glaze; ID. 11 exhibits a relatively darker green tone to its glaze colour, and hence cannot be considered as ‘Qingbai.’ In addition, ID. 11 has a much darker underglaze colour to its decoration which can suggest a variety of iron oxide pigment was used instead of cobalt. In other words, ID. 11 may not be a true ‘blue-and-white’ ceramic but remains preliminary categorized as such until compositional analysis of the underglaze pigment proves otherwise.

Of these 17 sherds, eight (IDs. 3-4, 16, 20, 27, 31-32 and 34) can be classified as porcelain sherds due to the high level of fabric vitrification which evidently, suggests higher firing temperatures than experienced by the remaining nine stoneware sherds (IDs. 6-9, 11, 24, 35, 36, 43); regardless, all 17 blue-and-white sherds were kiln-fired. Although rilling and striations are only present on the surfaces of IDs. 3, 16 and 20, it is most likely that all 17 blue-and-white sherds were wheel thrown as well. It should be noted, however, that ID. 11 stands

out from the rest of the sherds due to the light reddish brown colour of its fabric which contrasts starkly with the other blue-and-white sherds.

The single blue-and-white sherd emerging from unit A (ID. 43) is a ceramic vessel body sherd; all seven sherds (IDs. 3-4, 6-9, 11) from unit B are also body sherds as well; of the remaining 10 sherds from unit C, two are vessel rim sherds, (IDs. 24 and 35), five are body sherds (IDs. 27, 31-32, 34 and 36) and three are base and foot sherds (IDs. 16, 20 and 21). With rim diameters of approximately 15cm, nearly vertical and everted orientation of the sherds as well as glazed and decorated interior surfaces, both IDs. 24 and 35 are most likely unrestricted vessel fragments of large bowls. As IDs. 16 and 20 have an estimated foot ring diameter of 8cm and 7cm, maximum base thickness of 13.7mm and 8.5mm and weight of 72.1g and 12.9g respectively, and more importantly, glazed and decorated on their interior surfaces, they are both likely to be fragments of large, unrestricted vessels ranging from bowls and plates to dishes and basins. In fact, the remaining 13 body sherds are also mostly likely fragments of these large unrestricted vessels by virtue of their well-glazed interior surfaces regardless of the presence or absence of decorations.

Underglaze cobalt blue painted decorations can occur on both exterior or interior surfaces and sometimes both at the same time in varying quantities depending on the style of painted decorations; of the 17 sherds carrying this type of decoration, four sherds (IDs. 3, 6 and 11 from unit B and ID. 20 from unit C) have underglaze blue decorations only on the interior surface, seven sherds (IDs. 4 and 9 from Unit B and ID. 31-32 and 34-36 from unit C) have them only on the exterior surface and six sherds (ID. 43 from unit A, IDs. 7 and 8 from unit B and IDs. 16, 24 and 27 from unit C). The decorations present on these sherds can be broadly divided into two groups: lines and motifs. Both types of decorations, however, are usually applied in combination on complete blue-and-white vessels. Horizontal, diagonal and curvilinear lines are usually applied to outline certain features such as the circumferences of the rim, base or foot, or used as borders to frame a panel of painted motif; IDs. 4, 6, 7, 8, 9, 16 (exterior surface), 24, 27 and 43 exhibits these outlines and borders. Motifs are usually applied within these outlines or borders and serve as the centrepiece in underglaze painted decorations. These motifs comprises of a large variety of themes which include, but not limited to, flora and fauna, landscapes, buildings and architecture, human figures and auspicious scripts (Brown 1988:25-33; Harrison 1979:26-83; Krahl 1997; Liu 1991a, 1991b; Medley 1976:176-203); these motifs can be found on IDs. 3, 11, 16 (interior surface), 20, 24 (exterior surface), 31, 32, 34, 35 and 36. Given that motifs usually cover a much larger proportion of the vessel surface than lines, it is not surprising that more sherds have decorated motifs than lines.

Although relatively small in size, some of these motifs are sufficiently complete to be identified. The interior and exterior surfaces of IDs. 3, 35 and 36 depict generic flower motifs (as opposed to specific flowers such as lotus or peony which have distinct depictions) bounded by horizontal and curvilinear lines; these flowers are usually used in a general floral-themed decorative composition. On that note, ID. 32 appears to be a depiction of 'blackberries' which can occur on their own or with the lily flower (Foo 2005). IDs. 11, 16, 20, 24 and 34 appear to be generic floral (i.e. parts of flowers or foliage) motifs and probably in a general floral-themed decorative composition as well. ID. 31 appears to depict a row of bamboo, which is commonly found within landscape-themed decorative compositions and often with depictions of humans, buildings or architecture and animals. Based on the similarity of these decorations as well as their recovery from the same unit and spit (Unit C Spit 3), it is possible that IDs. 32 and 34, as well as IDs. 35 and 36 form parts of the same vessel respectively.

The provenance of Blue-and-white ceramics recovered from Southeast Asia is much easier to identify as they have been widely studied and published in both archaeological and art historical literature. Generally speaking, these types of ceramics are only produced by Chinese, Vietnamese, Japanese or European kilns; all 17 blue-and-white sherds at Leki Wakik, however, bear decorations which are stylistically either Chinese or Vietnamese and not Japanese or European. Based on these stylistic decorations and in conjunction with the relative whiteness of their fabric colours, high vitrification levels and firing temperatures, as well as the Qing Bai colour of their glaze, 16 of the 17 sherds (IDs. 3-4, 6-9, 16, 20, 24, 27, 31-32, 34-36 and 43) are most likely Chinese blue-and-white ceramics. The remaining sherd, ID. 11, is most likely a product of a kiln in Vietnam due to the combined differences in glaze, fabric and underglaze pigment colours with the rest of the 16 sherds as mentioned in the preceding paragraphs.

As mentioned earlier, large amounts of archaeological and art historical literature have been devoted to the study of blue-and-white ceramics, leading to their utility in relative dating based on the knowledge of how their styles (decorations, motifs and glaze patterns) have change over time (Brown 2009:17-21; Brown and Sjostrand 2001:15; Liu 1991a, 1991b); the high susceptibility of Chinese ceramics to experience these changes, combined with the elaborate decorations make Chinese blue-and-white ceramics very precise relative dating tools, often down to the reign years of a specific emperor or dynasty. This approach to dating, however, comes with the caveat that significant portions of the ceramic artefacts must remain intact for one to comprehensively identify styles and decorations diagnostic of relative dates.

That is, unfortunately, not the case for the 17 blue-and-white sherds at Leki Wakik, as almost all these sherds measure between 37.5mm and 25.5mm in length and width, resulting

in the lack of sufficient detail in decoration for precise relative dating. This problem is exacerbated by the fact that premodern production and high volume export of Chinese blue-and-white ceramics began during the Mongol Yuan dynasty in the 14th century AD and lasted till the first half of the 20th century AD before the establishment of industrial ceramic factories (Harrison 1995; Miksic 2009b:78-86). However, the designs of underglaze cobalt blue motifs on ceramics during the Yuan period is fortuitously in sharp contrast to that of the later Ming and Qing blue-and-white ceramics; Yuan blue-and-white ceramics typically have 'rich' but 'neat' motifs (裝飾繁縟工整 Zhuāng Shì Fán Rù Gōng Zhěng) of 'thick' cobalt blue (青料濃厚 Qīng Liào Nóng Hòu) which is sometimes 'uneven' in shade (青花色調濃淡不均 Qīng Huā Sè Diào Nóng Dàn Bù Jūn), as opposed to the 'unrestrained' and 'lively' brushstrokes (飾紋的用筆奔放、活潑 Shì Wén De Yòng Bǐ Bēn Fàng、Huó Pō) of the Ming period. The motifs themselves, consisting mainly of 'formal' and floral patterns, are also much simpler during the Yuan period, as opposed to the more elaborate depictions of humans, creatures, buildings and landscapes which dominate Ming blue-and-white ceramics (楊勝德 Yáng and 馬紀恩 Mǎ 1978:80).

Consequently, all 16 of the Chinese blue-and-white sherds are most likely from either the Ming or Qing dynasties (15th – 20th centuries AD) as none of them possess diagnostic characteristics of Yuan blue-and-white ceramics. This range of relative dates applies especially for seven of these sherds (IDs. 4, 6, 7, 8, 9, 31 and 43), as they do not have any further diagnostic features – especially in their decorations – which can allow for a greater resolution in stylistic dating. Corresponding radiocarbon dates exist for only three of these seven blue-and-white sherds recovered from unit B spits 7 (ID. 4) and 10 (IDs. 6-7), and they range from the 17th century AD (cal. BP 324 – 281, 63.4% at 2 sigma) to between the 15th – 17th centuries AD (cal. BP 467 – 319, 95.4% at 2 sigma) which broadly corroborates with the dates provided by relative stylistic dating. However, the remaining nine sherds (IDs. 3, 16, 20, 24, 27, 32, 34 and 35) most likely date within the Ming dynasty (15th – 17th centuries AD) due to the stylistic similarities in the underglaze cobalt blue decorations of these sherds, as well as the colour and quality of glazing on these sherds are to the characteristics typical of Ming ceramics as described in the preceding paragraph.

The relative date ranges for the remaining sherd within the blue-and-white assemblage, ID. 11, depends on its identification and classification as either a green-green glazed ceramic with underglaze iron oxide decoration or a blue-and-white ceramic vessel respectively (Brown 1988; Krahl 1997; Lam 1997:23-29). Vietnamese export ceramics during the 13th – 14th centuries AD were mainly those decorated in underglaze iron, followed by green and brown-glazed vessels; these ceramics were almost entirely replaced as a major

class of export ceramics by Vietnamese blue-and-white ceramics during the 15th – 17th centuries AD (Brown 1988:24-29). Given the relative small size of the sherd and lack of diagnostic features besides those mentioned in the preceding paragraphs, ID.11 could be either of the two possible typologies. However, ID.11 is more likely to be a blue-and-white sherd (albeit with darker colour tones) as its probability of being dated to the 15th – 17th centuries is higher since the remaining 16 blue-and-white sherds are dated to the contemporaneous Ming and Qing dynasties.

Polychrome Ceramics (IDs. 14, 25, 28, 30, 33 and 37-39)

Eight ceramic sherds are broadly characterized in this report as 'polychrome' ceramics due to the presence or likely presence of more than three colours (from their glaze and decoration) present on the sherds. More importantly, polychrome ceramics are usually decorated using the technique of overglaze enamel painting with a variety of three to five colours (Brown 1988:23-31; Harrison 1979:84-251, 1995:20-98; Krah 1997:154-156; Medley 1976:204-259; Wood 1999:229-247). Three polychrome sherds were recovered from the first two spits of unit A (spit 1: ID. 37, spit 2: IDs. 38-39), one from unit B spit 6 (ID. 14) and the remainder from unit C (spit 2: ID. 25, spit 3: IDs. 30, 33, spit 4: ID. 28).

With the exception of one sherd (ID. 37), the rest of the seven polychrome sherds can be considered as porcelain ceramics due to the highly vitrified fabric which suggests, in turn, a very high firing temperature inside a kiln; ID. 37 is a stoneware sherd as it has a less vitrified fabric than the seven porcelain sherds, but is still probably fired inside a kiln and at a much higher firing temperature than earthenware ceramics. ID. 37 also has a light reddish brown fabric colour which contrasts starkly with the white fabrics of the seven porcelain sherds. Of all eight porcelain and stoneware sherds, only ID. 14 exhibits rilling on the interior surface which suggests that the vessel was wheel thrown, but all these sherds are as likely to be wheel thrown as ID. 14.

Of the eight polychrome ceramics, IDs. 25, 33, 38 and 39 are rim sherds with estimated rim diameters of 10cm, 10cm, 25cm and 13.5cm respectively. The everted stance of these rim sherds, together with their sherd thickness and estimated rim diameters, suggest that all four sherds are likely to be unrestricted vessels with IDs. 25, 33 and 39 as small vessels such as bowls and ID. 38 as a larger vessel such as a dish or a plate. The remaining four polychrome ceramics (IDs. 14, 28, 30 and 37) are most likely body sherds of similar unrestricted vessels as well by virtue of their glazed interior surfaces. In particular, IDs. 14, 28 and 30 have sherd thicknesses of 3.1mm, 4.8mm and 4mm respectively, which are broadly similar to the sherd thicknesses of rim sherds IDs. 38 and 39 (4.6mm and 3.5mm respectively); on the other hand, ID. 37 measures at 7.8mm in sherd thickness and is also the heaviest sherd among the

polychrome ceramics by at least 5.1g. This suggests that IDs. 14, 28 and 30 are also likely to be fragments of similar unrestricted vessels from bowls to plates or dishes, and that ID. 37 is likely to be fragment of a significantly larger unrestricted vessel of a wider range of vessels from large bowls to plates or dishes; it is also possible that ID. 37 is a base sherd given its relatively flat exterior and interior surfaces. The possibility that almost all of the polychrome ceramic vessels are unrestricted vessels is supported by the fact that all except one sherd (ID. 14) carry overglaze decorations on their interior surfaces.

The types of overglaze enamel decorations applied on both the exterior and interior surfaces of polychrome ceramics are largely similar to those found on blue-and-white ceramics: a combination of lines and motifs (Brown 1988:23-31; Harrison 1979:84-251, 1995:20-98; Medley 1976:204-259; Wood 1999:229-247). Due to the relatively small size of the ceramic sherds however, all eight sherds exhibit only one type of decoration each. Floral motifs can clearly be seen on the exterior surfaces of IDs. 14 and 25 and the interior surface of ID. 37; line decorations are most clearly observed on the interior surface of ID. 25, the rim edge of ID. 33 and both the exterior and interior surfaces of ID. 39. As overglaze enamel painted decorations lie exposed to the elements above the glaze, they are prone to wear from abrasion as seen on both the exterior and interior surfaces of IDs. 30 and 38; ID. 28 exhibits the worst of this damage, with the overglaze painted enamel barely remaining on its interior surface. In addition to overglaze enamel painting, both IDs. 25 and 33 adorn underglaze cobalt blue painted line and motif decorations as well.

The provenance of polychrome ceramics recovered within Southeast Asia is also relatively easy to identify as only Chinese or Vietnamese kilns are known to have produced them. Based on the fact that porcelain was a technology monopolized by the Chinese until the Japanese and Germans discovered it in the 17th and 18th centuries respectively (Rice 2015:7), it is most likely that all the polychrome sherds except ID. 37 originate from Chinese kilns; as the sherd and overglaze decoration of ID. 37 is too fragmentary for clear identification, its provenance remains possibly either Chinese or Vietnamese until proven otherwise through further compositional analysis.

Chinese polychrome ceramics in various forms and varieties are known to be developed and exported during the 15th – 20th centuries AD (Harrison 1979:84-251, 1995:20-98; Medley 1976:204-259; Wood 1999:229-247). The production and export of polychrome ceramics from Vietnam, however, appear to be limited to a shorter window between the 15th – 18th centuries AD (Brown 1988:23-31; Guy 1997:56-60; Krahl 1997:154-156). It is important to note that research have indicated that Vietnamese polychrome ceramics were produced largely for export to an overseas market as very few examples have been found within Vietnam

to date (Stevenson 1997:38). Significantly, island Southeast Asia appears to have been the major market for Vietnamese ceramics in general, with the greatest quantities of finds recovered from sites in the islands of Java and Sulawesi; large polychrome 'serving dishes' with 'broad flat bases' and 'steep cavettos' were apparently in high demand and the 'finest' examples were collected and preserved as *pusaka* or 'objects of heirloom and spiritual value' (Guy 1997:56). Based on its abovementioned attributes, it is possible that ID. 37 is a fragment of this type of large 'serving dish.' Just as it was the case for blue-and-white ceramics, larger fragments with more intact portions of these polychrome overglaze enamel decorations would be helpful in identifying more precise date ranges, but that is not possible with the small sizes of the polychrome sherds.

Aside from these relative dates, only one radiocarbon date for polychrome ceramics exists and it corresponds to ID. 14, a Chinese polychrome ceramic, with a range between cal. BP 407 – 261 (95.4% at 2 sigma). This date range approximates to the 16th – 17th centuries AD and broadly corroborates with the abovementioned stylistic dates mentioned in the previous paragraph.

Undiagnostic Ceramics (IDs. 5, 10, 12, 18, 21, 26, 29, 40)

Eight undiagnostic high-fired ceramics sherds cannot be positively identified and placed in any of the preceding typologies primarily due to the ambiguity of their physical attributes. Three of these undiagnostic sherds – IDs. 5, 10 and 12 – were recovered from unit B spits 2, 3 and 4; IDs. 18, 21, 26 and 29 were recovered from unit C spits 2, 4 and 5. The remaining sherd – ID. 40 – is also the only high-fired glazed ceramic found in unit E (within spit 4).

All eight sherds appear to have 'Qingbai' glazing on both interior and exterior surfaces which usually forms the primary background colour for various blue-and-white as well as polychrome ceramic sherds. However, none of these sherds carry underglaze cobalt blue or overglaze polychrome enamel painted decorations to identify them as either of the two typologies; the relative small sherd sizes of IDs. 5, 10, 12, 26 and 29, in particular, increases the possibility that they happen to be fragments of undecorated portions of otherwise very highly decorated blue-and-white or polychrome ceramic vessels. Although IDs. 18 and 21 are much larger sherds, they would have a very low chance of carrying underglaze or overglaze decorations as well since they are most likely fragments of very large vessels (hence have proportionally small surface areas as well) and constitute the lower body and base portions of these vessels which can be left undecorated in some cases.

Being a rim sherd however, ID. 40 should have borne some underglaze or overglaze decorations as it occupies a large surface area of the vessel, and those parts of the vessel

are usually the most common areas to be decorated – if it was truly a fragment of blue-and-white or polychrome ceramic; the fact that ID. 40 remains undecorated suggests that it could also be a fragment of a true ‘Qingbai’ vessel as described in an earlier paragraph. This possibility, however, is not that high and hence ID. 40 is still considered an undiagnostic sherd in this report.

Given that all eight sherds have glazing on both their exterior and interior surfaces, it is clear that they are all fragments of unrestricted ceramic vessels ranging from bowls to plates and dishes. As mentioned in the preceding paragraph, ID. 40 is a rim sherd with a relatively large estimated diameter of 20cm and hence, is likely to be either a plate or a dish. ID. 18 is a lower body and base sherd with a single circular groove line delineating the two portions on its interior surface. ID. 21 is a base and foot sherd with an estimated foot-ring diameter of 4.5-5cm and hence, can either be a bowl or a plate or dish. The remaining five sherds (IDs. 5, 10, 12, 26 and 29) are body fragments of vessels which can range from bowls to plates and dishes as well.

Although all eight undiagnostic sherds are likely to be wheel thrown and kiln fired, only three of them (5, 21 and 40) bear visible production marks. ID. 5 has rilling on its exterior surface indicative of wheel throwing; rilling is also present on both exterior and interior surfaces of ID. 40. Aside from rilling on its interior surface, ID. 21 also has circular striations on its exterior base surface which is indicative of wheel throwing, as well as a circular unglazed medallion on the interior base surface which is diagnostic of the stacking method in kiln firing. Half of the eight diagnostic sherds (IDs. 5, 10, 12 and 26) were fired to a very high temperature and can be considered porcelain due to the high level of vitrification in their fabrics, whereas the remaining sherds (IDs. 18, 21, 29 and 40) were stoneware fired at a lower temperature and hence, exhibit a lower level of vitrification in their fabrics.

Despite their undiagnostic traits, it is quite clear that all eight sherds are likely to originate from kilns in China, since four of the eight sherds are porcelain that only China could have produced, as well as the fact that their glaze and fabric colours are very similar to those produced in China and quite different from those fired in Mainland Southeast Asian kilns. The gravel adhering to the exterior glaze and surface of ID. 18, in particular, is very diagnostic of the Zhangzhou (漳州 Zhāng Zhōu) kiln complex in the southern Chinese province of Fujian (Harrisson 1979:9; Miksic 2009b:85). These wares are also popularly known as ‘Swatow’ ware, eponymously named after a port in Guangdong province just over its border with Fujian which was once thought, erroneously, to be the port of export for these ceramics (Harrisson 1979:9; Miksic 2009b:85); the ports in Fujian, such as Yuegang (月港 Yuè Gǎng), were the more like ports through which Zhangzhou ceramics were exported (Miksic 2009b). Zhangzhou

kilns produced a wide range of ceramics from monochrome dishes and jars to blue-and-white and polychrome ceramics between the 16th to 18th centuries AD (Harrison 1979:9-13).

The only radiocarbon dates corresponding to undiagnostic sherds were for IDs. 5 and 12 with dates ranging between the 17th – 18th centuries AD (cal. BP 301 – 174, 90.5% at 2 sigma) and 16th – 18th centuries AD (cal. BP 378 – 245, 95.4% at 2 sigma) respectively. These date ranges corresponds broadly to that from stylistic relative dating between the Ming and Qing dynasties (15th – 20th centuries AD) based on their affinities with both blue-and-white and polychrome ceramics; similarly, IDs. 10, 18, 21, 26 and 29 dates relatively to the same broad period. The only outlier in relative dating is ID.40; if it is an authentic fragment of a Qingbai vessel, the sherd could stylistically date the 12th – 15th centuries AD. If not, it would share the more general date range of 15th – 20th centuries AD as the rest of the undiagnostic ceramic sherds.

Discussion

Distribution of High-fired Glazed Ceramics at Leki Wakik

The distribution of these high-fired glazed ceramic vessel sherds between each of the five excavated units at Leki Wakik is illustrated in Table 1. Across all units and spits, blue-and-white ceramics (17 sherds) take up the largest proportion (39.5.9%) of the high-fired glazed ceramic assemblage, followed by polychrome ceramics (eight sherds, 18.6%), brown-glazed and green-glazed ceramics (three sherds, 7.0% each), white ware ceramics (two sherds, 4.7%) and the lastly, the brown and white as well as light and dark green type-varieties (one sherd, 2.3% each). The remaining eight undiagnostic sherds make up 18.6% of the total high-fired glazed ceramics.

Of the 43 high-fired glazed ceramic sherds, seven are rim sherds, 31 are body and base sherds, and the remaining five sherds are base and foot sherds. More than half of the rim sherds consist of polychrome ceramics (four sherds, 57.1%), whereas the remaining rim sherds are blue-and-white (two sherds, 28.6%) and undiagnostic (one sherd, 14.3%) ceramics. The majority of the body and base sherds comprises of blue-and-white ceramics (13 sherds, 41.9%), followed by polychrome (four sherds, 12.9%), undiagnostic but possibly blue-and-white (six sherds, 19.4%), brown-glazed (three sherds, 9.7%), green-glazed (two sherds, 6.5%), white-ware (two sherds, 6.5%) and brown and white type-variety (one sherd, 3.2%) ceramics. Among the five base and foot sherds, almost half belong to blue-and-white ceramics (two sherds, 40%), whereas the remainder are green-glazed, light and dark green type-variety and undiagnostic but possibly blue-and-white sherds (one sherd, 20% each).

The majority of these vessel sherds (95.5%) were recovered from units A (six sherds), B (15 sherds) and C (21 sherds), with units D and E producing only a single sherd each. Almost all of blue-and-white sherds as well as the seven undiagnostic but possibly blue-and-white or polychrome sherds appear to cluster within units B and C, whereas the majority of polychrome ceramics and all of the white-ware sherds were recovered from units A and C. With the exception of the Brown and White type-variety, unit B also possesses all three brown-glazed ceramics, whereas the three green-glazed sherds are evenly divided between units B, C and D. Both the brown and white as well as the light and dark green type-varieties are found only in unit C.

If one accepts a direct correlation between human habitations with concentrations of ceramic vessel sherds, this distribution of high-fired glazed ceramics would support the hypothesis that the circular and rectilinear stone arrangements in the vicinity of units A, B and C are likely to be the residences of the former inhabitants at Leki Wakik. This correlation, however, needs to be corroborated with the low-fired, earthenware assemblage as it may contain diagnostic sherds from utilitarian ceramic artefacts such as cooking pots and storage vessels which typically represent domestic activities and contexts within human residences.

Maritime Trade of High-Fired Ceramics in Island Southeast Asia

It should be noted first and foremost that the premodern technology of producing high-fired ceramics in the region is confined to Mainland Southeast Asia (present day Myanmar, Thailand, Laos, Cambodia and Vietnam) and hence, never made its way to island Southeast Asia (present day Malaysia, Indonesia, the Philippines and East Timor) until the establishment of high-fired ceramics kilns by migrant Chinese potters during the 19th century Chinese diaspora into Southeast Asia (Adhyatman 1990:11; Miksic 2009a:69). As such, the foreign provenance of these ceramics recovered at Leki Wakik and in turn, its primary nature as exported trade is undisputable.

Long distance maritime trade – including the export of foreign ceramics – between Southeast Asia and its neighbours, China and India, as well as within the region itself has been going on as early as the third century AD and thereafter, intermittently for centuries prior to the 15th century AD (Crick 2010:11-36; Miksic 2009b:71-84; Volker 1954:4-8). Within the Malay Archipelago, Chinese earthenware from the Han Dynasty (c. 206 BC – 220 AD) have apparently been found in parts of Indonesia (Adhyatman 1990:11, 18; Suleiman 1980:5).

Some of the earliest discoveries of high fired trade ceramics in the archipelago were made across the Banda Sea from Timor in South Sulawesi. Between August and October 1936, Japanese collectors excavated 600 ceramics pieces from Kampong Pareko, some 40km south of Makassar (Brown 1988:xv). Besides Chinese ceramics, the assemblage also

included 140 Thai (Sawankhalok or Si Satchanalai) “unglazed black wares” which were primary covered boxes, “celadons” and “brown glazed wares,” around 50 Vietnamese “blue-and-white,” some with overglaze enamels, three “copper green” pieces and two “underglaze black” bowls (Brown 1988:xv). This assemblage was also noted by Brown (1988) to be similar to wares recovered from the site of Calatagan in the Philippines which were mostly dated to the 15th and 16th centuries AD. It is likely that South Sulawesi could have been a major centre for ceramic trade in western Indonesia and in turn, a possible source of export ceramics for Timor, as it has been found to have every type of export ceramics ever discovered in Indonesia, with Chinese ‘Swatow’ (Zhangzhou) wares of the Ming dynasty being the most abundant (Adhyatman 1990:12).

Besides a few outliers, the majority of the sherds are Chinese blue-and-white and polychrome ceramics which can be relatively dated to the period from the 15th – 20th centuries AD. These dates could be read as the dates for establishment and occupation of Leki Wakik as a settlement site, but it is also equally possible that they only indicate the entrance of the maritime trade in foreign ceramics at a site which may have been established prior to the 15th century AD.

Regardless, the dynamics between the Timorese people and the maritime trade in ceramics prior to the arrival of the Europeans is relatively understudied and warrants further investigation. Aside from the presence of export ceramics at various non-European settlement sites in Timor as evidence of local consumption, it is not known if the Timorese people themselves were actively involved in this exchange by determining the types of ceramics being shipped to Timor, or if they were just passive consumers receiving whatever the trade winds blew into port. Volker (1954) wrote that the shippers of Chinese ceramics, besides the Chinese themselves, were primarily “Siamese, Malays, Japanese, Indians and Arabs” prior to Portuguese and Dutch participation.

Huge volumes of high-fired ceramics were exported into the archipelago after the arrival of the Portuguese and the Dutch East India Company, but Timor did not appear to be a major destination for the ceramic trade on their registers. In the Dutch records of ceramic trade between 1602 and 1682, Timor was only briefly mentioned in two instances over a span of 80 years. In the first record dating to 1629, Timor was merely mentioned as one of the many Dutch possessions in Asia for which Chinese ceramics were ordered by the Company (Volker 1954:70); the second record dating to 1670 stated that only 30 Rds. (Rix Dollar) worth of porcelain was shipped to Timor, a small fraction (1.7%) of a total of 1791½ Rds. worth of porcelain shipped across Dutch possessions in the whole archipelago (Volker 1954:210).

High-fired Ceramics and the Southeast Asian Political Economy

As trade routes were gradually established between Southeast Asian and Chinese markets over the centuries, Southeast Asian elites found a new source of high-quality and beautiful ceramics which they did not have the technology to produce (Heng 2009:149). It has been suggested that the people of the Malay archipelago demanded high-fired glazed ceramics because they “admire the shining glaze, resonance, form, decoration and impermeability,” and that the decorative motifs on these types of ceramics were “symbols of magic power” (Adhyatman 1990:11).

Hence, it is unsurprising that high-fired ceramic goods played an important role in the political economies of premodern Southeast Asian societies. Imported Chinese ceramics, such as small vessels with lids, came to be considered a luxury suitable for use only by the Khmer nobility in the 11th century (Miksic 2009b:97). Chinese porcelains were also the first choice of ‘sultans and datos’ in Borneo who ‘endeavoured to imitate the prevailing attitude in China of collecting the best porcelain as a status symbol’ among many other export goods dispersed into the region around 1500 (Harrisson 2007:494). Chinese porcelains, among other exotic luxury goods, also became ‘key symbols of social status and political power’ together with indigenously manufactured prestige goods for the Philippine chiefly elite (Junker 1999:183). As late as the 19th century, it was observed in Borneo that some expensive Chinese jars decorated with dragon motifs could only be owned by Dayak chiefs who also protected the jars with expensive textiles (Miksic 2009b:99).

Therefore, it is highly likely that imported high-fired ceramic goods were also used as status symbols within the political economies of competing Timorese chiefdoms and kingdoms, given the nature of historical Timorese social organization as elaborated in a previous section.

Conclusion

Although limitations exist in the present set of high-fired ceramic data from Leki Wakik, it is hoped that this report demonstrates the potential and capacity of archaeological ceramics in answering questions about social organization as well as trade and exchange in the human past. A clearer provenance of these sherds could be established through further compositional analyses (thin-section ceramic petrography, X-ray fluorescence spectroscopy, etc); the reconstruction of vessels using these sherds may also be possible should more sherds be recovered from the site in future excavations. This would allow for the better identification of not only vessel typology, but also decorations and vessel forms which will give a more nuanced picture of the distribution and use of these artefacts at the site.

The excavation of more units at Leki Wakik will also provide a better understanding of the distribution pattern of high-fired ceramic artefacts at the site which may, in turn, allow us to test the correlation between discrete residential buildings, social status and material culture. The expansion of this research into settlement pattern studies involving the material culture of Leki Wakik and other neighbouring fortified and non-fortified sites in the region will not only chart their relationship with each other, but also lend an insight into the development of chiefdoms and kingdoms of premodern Timor.

Tables

Lape and Chao (2008)			Chinese Dynasty	Chinese Emperor	Reign Era	Reign Period	
Chronology	Count	Percentage (%)					
Period I (AD 1400 – 1550)	12	5	Ming	Zhū Yǔn Wén 朱允炆	Jiàn Wén 建文	1398 – 1402	
				Zhū Dì 朱棣	Yǒng Lè 永樂	1402 – 1424	
				Zhū Gāo Chì 朱高熾	Hóng Xī 洪熙	1424 – 1425	
				Zhū Zhān Jī 朱瞻基	Xuān Dé 宣德	1425 – 1435	
				Zhū Qí Zhèn 朱祁鎮	Zhèng Tǒng 正統 and Tiān Shùn 天順	1435 – 1449 and 1457 – 1464	
				Zhū Qí Yù 朱祁鈺	Jǐng Tài 景泰	1449 – 1457	
				Zhū Jiàn Shēn 朱見深	Chéng Huà 成化	1464 – 1487	
				Zhū Yǒu Chēng 朱祐樞	Hóng Zhì 弘治	1487 – 1505	
				Zhū Hòu Zhào 朱厚照	Zhèng Dé 正德	1505 – 1521	
				Zhū Hòu Cōng 朱厚燾	Jiā Jìng 嘉靖	1521 – 1567	
Period II (AD 1550 – 1650)	176	70		Zhū Zǎi Hòu 朱載堉	Lóng Qìng 隆慶	1567 – 1572	
				Zhū Yì Jūn 朱翊鈞	Wàn Lì 萬曆	1572 – 1620	
				Zhū Cháng Luò 朱常洛	Tài Chāng 泰昌	1620	
				Zhū Yóu Jiào 朱由校	Tiān Qǐ 天啟	1620 – 1627	
				Zhū Yóu Jiǎn 朱由檢	Chóng Zhēn 崇禎	1627 – 1644	
Period III (AD 1650 – 1725)	55	22	Qing	Fú lín 福臨	Shùn Zhì 順治	1644 – 1661	
				Xuán Yè 玄燁	Kāng xī 康熙	1661 – 1722	
				Yīn Zhēn 胤禛	Yōng Zhèng 雍正	1722 – 1735	
Period IV (AD 1725 - 1850)	6	2		Hóng Lì 弘曆	Qián Lóng 乾隆	1735 – 1796	
				Yóng Yǎn 顥琰	Jiā Qìng 嘉慶	1796 – 1820	
				Mín Níng 旻寧	Dào Guāng 道光	1820 – 1850	
				Period V (post AD 1850)	2	1	
Zǎi Chún 載淳	Tóng Zhì* 同治	1861 – 1875					
Zǎi Tián 載湉	Guāng Xù 光緒	1875 – 1908					
Pǔ Yí 溥儀	Xuān Tǒng 宣統	1909 – 1912					

Table 1. Chronology and associated sherds across various fortified sites at Manatuto by Lape and Chao (2008), and their correspondence with the imperial history of China between the 14th and 20th centuries AD.

Excavation Units	Spit(s)	14C Dates (cal. BP)*	Total Count	Brown	Green	White	Qing Bai	Blue-and-White	Polychrome	Brown and White	Light and Dark Green	Undiagnostic
A	All	-	6	-	-	1	-	1	4	-	-	-
	1	-	4	-	-	1	-	1	2	-	-	-
	2	-	2	-	-	-	-	-	2	-	-	-
B	All	-	15	3	1	-	-	7 (+3?)	1 (+3?)	-	-	3
	2	-	1	-	-	-	-	(1?)	(1?)	-	-	1
	3	301 – 174 (90.5%)	1	-	-	-	-	(1?)	(1?)	-	-	1
	4	378 – 245 (95.4%)	2	1	-	-	-	(1?)	(1?)	-	-	1
	6	407 – 261 (95.4%)	1	-	-	-	-	-	1	-	-	-
	7	324 – 281 (63.4%)	3	1	1	-	-	1	-	-	-	-
	8	-	2	-	-	-	-	2	-	-	-	-
	9?	-	1	1	-	-	-	-	-	-	-	-
	10	467 – 319 (95.4%)	2	-	-	-	-	2	-	-	-	-
	11	-	2	-	-	-	-	2	-	-	-	-
	All	-	21	-	1	1	-	10 (+4?)	4 (+4?)	1	1	3
C	1	-	4	-	1	1	-	1	-	1	-	-
	2	-	7	-	-	-	-	3 (+2?)	1 (+2?)	-	1	2
	3	-	7	-	-	-	-	5	2	-	-	-
	4	-	2	-	-	-	-	(1?)	1 (+1?)	-	-	1
	5	-	1	-	-	-	-	(1?)	(1?)	-	-	-
D	All	-	1	-	1	-	-	-	-	-	-	-
	2	-	1	-	1	-	-	-	-	-	-	-
E	All	-	1	-	-	-	(1?)	-	-	-	-	1
	4	-	1	-	-	-	(1?)	-	-	-	-	1
Total Count			44	3	3	2	(1?)	18 (+7?)	9 (+7?)	1	1	7

Table 2. Distribution of preliminary sherd typologies based on glaze and glaze-decorations across all units and spits at Leki Wakik. Possible typologies for undiagnostic sherds are also suggested by the author in red within parentheses.

* Only radiocarbon date ranges with higher probability are presented.

** ID. 37 comprises of 2 sherds, hence total sherd count is 44 instead of 43 in this table

Figures

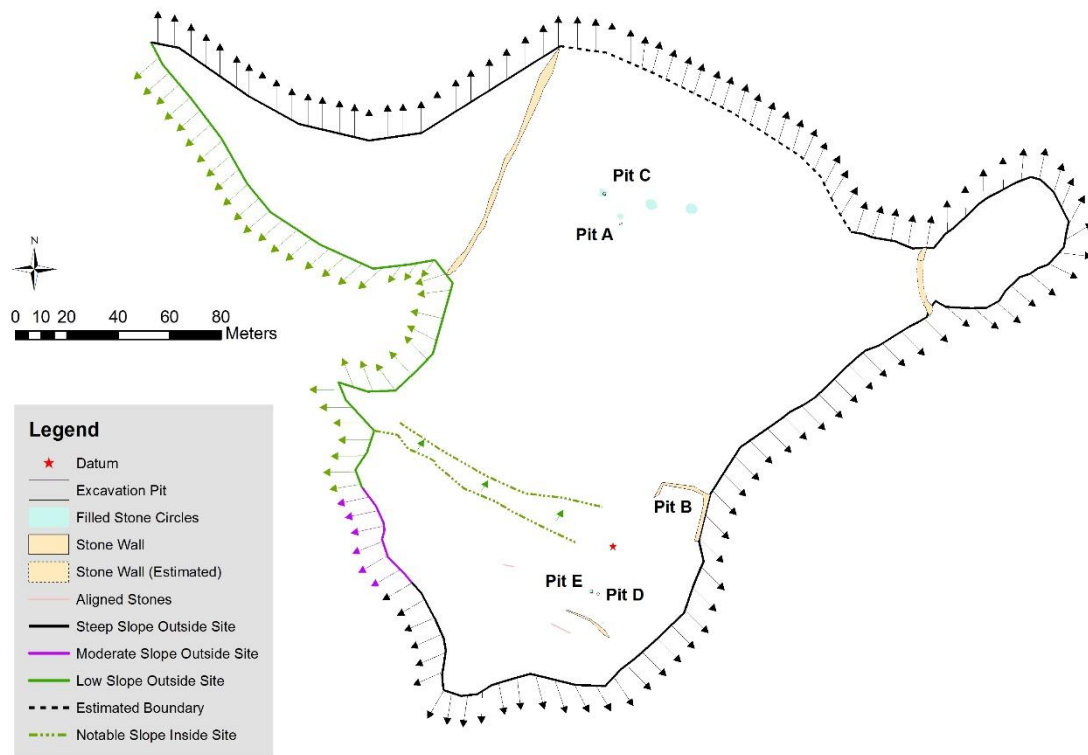


Figure 1. Plan view of Leki Wakik with locations of test excavation units A to E.

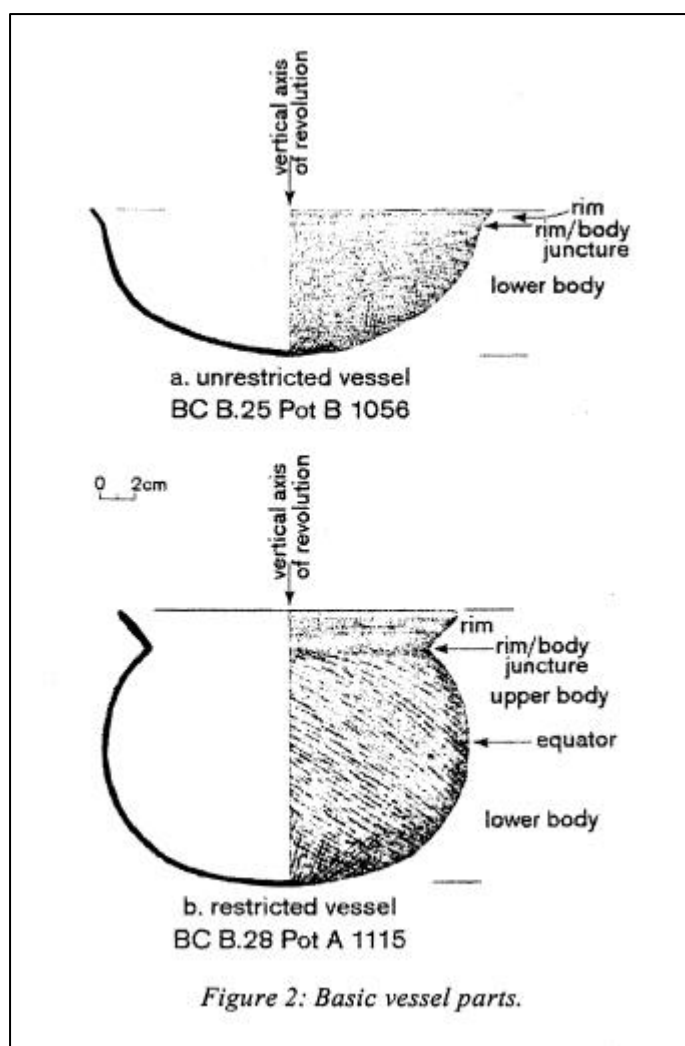


Figure 2. Examples of an unrestricted and restricted vessel, taken from White and Henderson (2003)

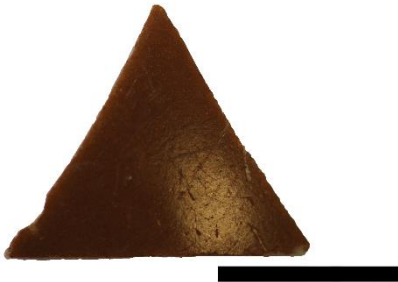
Photos

Brown-Glazed Ceramics (IDs. 2, 13 and 15)

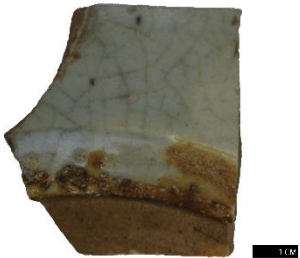
ID. #	Exterior Surface	Interior Surface	Fabric Cross-section
2			
13			
15			

Type-Variety 1: Brown and White (ID. 23)

ID. #	Exterior Surface	Interior Surface	Fabric Cross-section
-------	------------------	------------------	----------------------

23			
----	---	---	---

Green-Glazed Ceramics (IDs. 1, 17 and 41)

ID. #	Exterior Surface	Interior Surface	Fabric Cross-section
1			
17			
41			

Type-Variety 2: Light and Dark Green (ID. 19)

ID. #	Exterior Surface	Interior Surface	Fabric Cross-section
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33			
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White-ware Ceramics (IDs. 22 and 42)

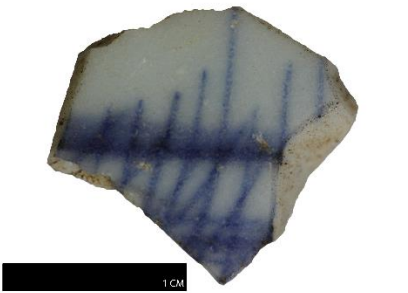
ID. #	Exterior Surface	Interior Surface	Fabric Cross-section
22			
42			

Blue-and-White Ceramics (IDs. 3-4, 6-9, 11, 16, 20, 24, 27, 31-32, 34-36 and 43)

ID. #	Exterior Surface	Interior Surface	Fabric Cross-section
3			

4	 1 CM		
6	 1 CM		
7	 1 CM		
8	 1 CM		
9	 1 CM		

11	 		
16	 		
20	 		
24	 		
27	 		

31			
32			
34			
35			
36			

43			
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Polychrome-Ceramics (IDs. 14, 25, 28, 30, 33 and 37-39)

ID. #	Exterior Surface	Interior Surface	Fabric Cross-section
14			
25			
28			

30			
33			
37			
38			
39			

Undiagnostic Ceramics (IDs. 5, 10, 12, 18, 21, 26, 29, 40)

ID. #	Exterior Surface	Interior Surface	Fabric Cross-section
5			
10			
12			
18			
21			

26			
29			
40			

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