

THE DEVELOPMENT OF POTTERY MAKING TRADITIONS AND MARITIME NETWORKS DURING THE EARLY METAL AGE IN NORTHERN MALUKU ISLANDS

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Abstrak. Perkembangan Tradisi Pembuatan Tembikar dan Jejaring Maritim pada Masa Logam Awal di Bagian Utara Kepulauan Maluku. Selama masa Pasca-Neolitik atau Zaman Logam Awal setelah 2300 sampai 2000 tahun BP di Wallacea, migrasi manusia dan jaringan maritim menjadi lebih berkembang. Melalui bukti linguistik, misalnya, trans-migrasi oleh kelompok berbahasa Austronesia dan kelompok berbahasa Papua, atau bukti arkeologi seperti perluasan dan pengembangan tembikar yang memiliki kemiripan, membuat tradisi ini menjadi bukti sejarah adanya perdagangan rempah-rempah dengan Cina, India dan lebih jauh ke arah barat dalam studi kasus di Maluku. Kedatangan budaya logam (baik perunggu maupun besi) dan bahan kaca dinilai penting karena mungkin menunjukkan pengembangan lebih lanjut jejaringan migrasi manusia dan perdagangan yang aktif di wilayah ini. Dengan berpijak pada pemahaman tersebut, tujuan penelitian ini adalah untuk menemukan bukti-bukti kedatangan budaya logam di Maluku Utara sebagai indikasi jaringan migrasi dan perdagangan masa lalu. Ekskavasi sebagai pendekatan penelitian dilakukan pada situs baru di Maluku Utara antara tahun 2012-2014. Hasil penelitian menemukan bahwa Situs terbuka Gorua di pesisir timur laut Pulau Halmahera (Kabupaten Tobelo) merupakan salah satu dari situs-situs tersebut yang berumur sekitar 2300-2000 tahun BP (atau 300-50 SM). Sekaligus menjadi penanda perkembangan pembuatan tembikar dan pola jaringan maritim di Kawasan Maluku Utara pada Masa Paleometalik/Perundagian.

Kata Kunci: Tembikar, Jejaring Maritim, Masa awal Logam, Maluku Utara

Abstract. During the post Neolithic times or Early Metal Age, after 2300 to 2000 years BP, in Wallacea human migrations and maritime networks were more developed. Through linguistic evidence, for instance the trans-migration by Austronesian-speaking groups and Papuan-speaking groups, or archaeological evidences such as expansion and development of similar pottery, make the traditions a historical evidence for the spice trade with China, India, and further west for the Maluku case. The arrival of metal (both bronze and iron) and glass materials is also considered important due to the fact that it possibly shows further development of active human migrations and trade networks in that region. On the basis of such backgrounds and understanding, the aim of this research is to uncover evidences of the arrival of metal culture in Northern Maluku as an indication of migration and trade networks in the past. Excavations an approach in this research were carried out at some new sites in Northern Maluku during 2012-2014. Results show that an open site, Gorua, on the the northeastern coast of Halmahera Island (Tobelo Regency) is one of such sites, which dates to around 2300-2000 years BP (or 300-50 BC). It also marks the development of pottery-making and the pattern of maritime network within the Northern Maluku Islands during the Early Metal Age.

Keywords: Pottery, Maritime Networks, Early Metal Age, Northern Maluku

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1. Introduction

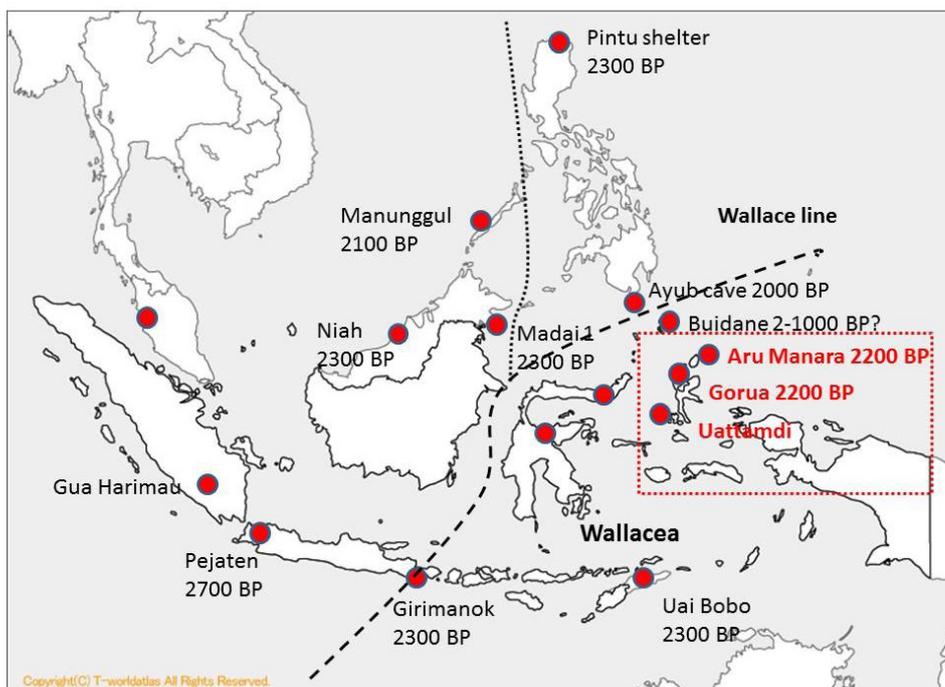
The colonization of Australia and New Guinea represents the earliest evidence of intentional and relatively long-distance, over 80 km seafaring by modern human, possibly dated back to 50,000 to 40,000 years BP. Recent archaeological studies and findings in Wallacea region support the hypothesis that such early maritime migration could be done from islands in Wallacea. In terms of Neolithic migration, the recent archaeological and linguistic studies support the idea that the Austronesian linguistic group’s dispersal into Island Southeast Asia and Oceania in around 4-3000 years BP demarcated the beginning of Neolithic times through the introduction of new horticultural subsistence systems, animal husbandry, and advanced fishing and navigational technology.

Recent excavations at late Pleistocene sites in south and eastern Wallacea provide evidence of early aquatic culture and marine exploitation. For instance, excavations in the Maluku Islands, Aru Islands, and East Timor (e.g., Bellwood et al. 1998; Glover 1986; Irwin et al. 1999; O’Connor 2007; O’Connor et al.

2005, 2011; Szabó et al. 2007) have uncovered evidence of human colonization dating as early as 30,000–40,000 BP. On the other hand, aside from southern Sulawesi that has some late Pleistocene archaeological sites which could be dated back to over 30,000 BP (e.g., Glover 1981), there have been little archaeological evidences for early human presence in the northern part of Wallacea (e.g., Simanjuntak and Semah 2015; Ono et al. 2010).

For example, the recent excavations of Leang Sarru in Talaud Islands on a remote island over 100 km away from the neighbor islands reveal that since the Pleistocene period (Map 1) modern humans have migrated to such remote islands at least by 35,000 years BP in Wallacea (e.g., Ono 2011; Ono et al. 2010, 2014; Tanudirjo 2001, 2005).

In terms of Neolithic migration between Wallacea and Oceania, recent archaeological and linguistic studies support the idea that the Austronesian dispersal into Island Southeast Asia and Southern Pacific demarcated the beginning of Neolithic times through the introduction of new horticultural subsistence systems,



Map 1. The excavated sites and major sites in Northern Maluku and Wallacea (Source: Ono)

animal husbandry, and advanced fishing and navigational technology (e.g. Bellwood 1997; Kirch 1997; Ono 2003, 2004, 2010).

Linguistic reconstruction of Proto-Austronesian terms related to farming and fishing suggests the antiquity of floral and faunal exploitation among the Austronesian speakers (e.g. Blust 1995). Many archaeologists and linguists discussed that the ultimate origins of Austronesian fishing and other subsistence strategies such as farming and animal husbandry with their basic material culture lie in along the coast of Island Southeast Asia (e.g. Bellwood 1997; Blust 1995), particularly around the Wallacea region in Eastern Indonesia as strongly advocated by Solheim's Nusantara hypothesis (e.g. Solheim 1964, 1988, 2002).

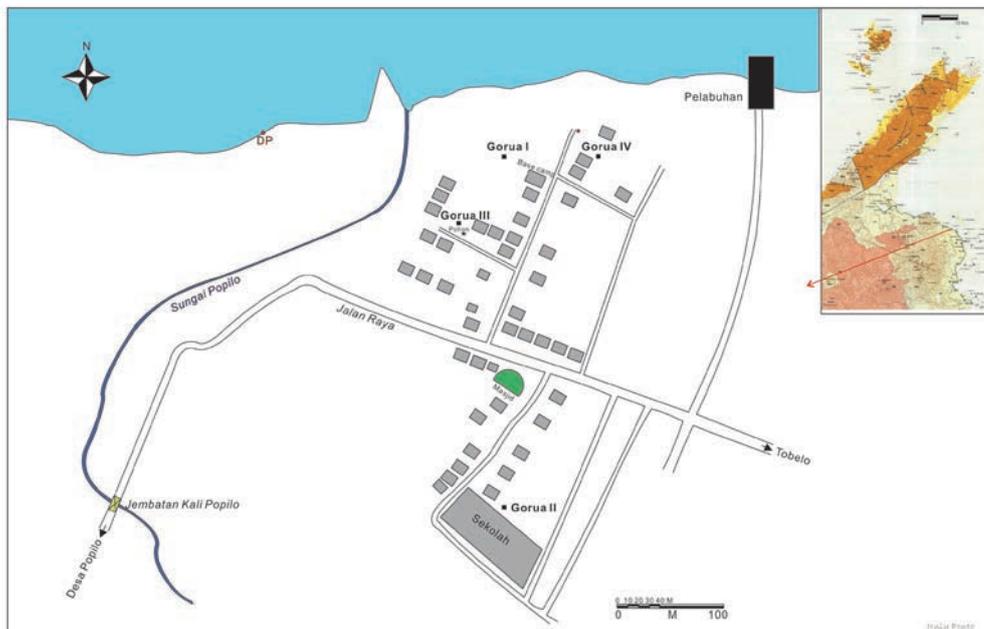
During the post Neolithic times after 2300 to 2000 years BP in Wallacea, more active human migrations and maritime networks could be developed. In linguistic evidence, for instance, the trans-migration by Austronesian language speaking groups and Papuan language speaking groups might become more active in North to Eastern Wallacea. Archaeologically, the emergence of pottery tradition in many islands in Wallacea can be possible evidences for such human migrations and expansion of similar pottery-making tradition. It is also important that the arrival of metal (both bronze and iron) and glass materials has possibly enforced the further development of active human migration and trading networks in the region.

To investigate these past human migrations between Island Southeast Asia and Oceania, the archaeological records on these islands in Wallacea region, particularly in Northern Maluku, which situated in a very important geological position as it is located in northern part of Wallacea and next to New Guinea, should be significant. However, the archaeological evidence and information are not sufficiently documented until now except

by the previous studies by Bellwood and his team in Morotai, Halmahera, Kayoa, and Gebe in the 1990's (e.g. Bellwood et al. 1993, 1998; Bellwood 1997; Irwin et al. 1999).

For example, in terms of the possible Austronesian migration during the Neolithic times, the previous studies only found a single site named Uattamdi on Kayoa Island dated back to the Neolithic age around 3,500 years BP, while there are more sites possibly in the Early Metal age dated back to around 2,000 years BP on Gebe, Morotai, Halmahera, and Kayoa. The upper layers (Layers A and B) in Uattamdi also produces the Metal-age burial artifacts including pieces of large jars and human remains, glass beads, and small number of metal) dated mainly between 2000 to 1000 years BP (e.g. Bellwood et al. 1998; Bellwood in press).

On the basis of such backgrounds, our new archaeological excavations to reconstruct prehistoric colonization and development of regional maritime networks around the Northern Maluku region had been conducted during 2012 to 2015. We also focused on the two main regions, (1) Morotai and Northern Halmahera that are currently occupied by Papuan-speaking groups, and (2) Kayoa to Bacan region that are partly occupied by Austronesian- and Papuan speaking groups. We started our research on Morotai and Northern Halmahera to excavate two sites, (1) Aru Manara on the eastern coast of Morotai Island and (2) Gorua on the northeastern coast of Halmahera, during 2012 to 2013 (Map 1). Both sites dated back to around 2300 to 2000 years BP. This paper mainly reports and discusses our temporary results of the Gorua excavation and is focused on the morphological analysis of excavated potteries, since we published or will be publish our outcomes of the Aru Manara excavations including the detailed analysis of glass ornaments and the pottery assemblage from Aru Manara (e.g. Ono et al. in press).



Map 2. Location of Gorua I, II, III and IV (Source: Ono)

Gorua is a large open site, which is part of a largely covered past human habitation area (possibly an old village), and now is under the present village. It is located in Gorua Utara village, Northern Tobelo District on north-eastern coast lowland of Halmahera Island. Since the site is estimated very wide, we excavated four different locations in the village namely Gorua I, II, III, and IV from near the coast to inner area (Map 2).

Among these sites, Gorua I is located about 50 m inland from the present coast of Gorua Utara Village and the elevation of the site is about 5 m above the high tide sea surface. Gorua II is located about 400 m inner than the present coast, while Gorua III locates about 150 m inner than the present coast. Gorua IV is located close to the present coast similar to Gorua I, and its distance from the coast is about 50 m and about 50 m east from Gorua I.

In total, 17 m² areas were excavated in Gorua; 8 m² at Gorua I, 4 m² at Gorua III, and 5m² at Gorua IV. All the excavated soil was sieved by 5cm and 1cm dry meshes to collect artifacts. All these excavation areas have deep deposits containing numbers of artifacts, mainly potsherds down to 3 to 4 m from the

surface except Gorua III which produced very few potsherds only form the upper layers and possibly out of the past habitation area.

At Gorua I, we excavated down to -410 cm in depth from the surface and stopped as no more artifacts existed and ground water came out. The excavated deposits were divided into ten layers (Fig. 1). Among these layers, the lower layers are mainly composed of blackish beach sand, while the upper layers are mainly composed of hard volcanic soils with a tephra layer which possibly indicate past volcanic activities (e.g. eruption) around Tobelo district.

Particularly Layer 3, which is about 90 cm deep from the surface and about 10-15 cm in thickness (olive brown to yellowish grey color: 2.5 Y4/3), seems to be the tephra layer possibly due to past eruption, though not dated yet as no charcoal and material were excavated in these upper layers. The number of excavated potsherds increased below this possible tephra layer and most were concentrated in the surface to middle of Layer 6, which is formed by black beach sand with about 90 cm thick deposit.

At Gorua II, we excavated down to -315 cm in depth from the surface and stopped digging as no more artifacts existed below this

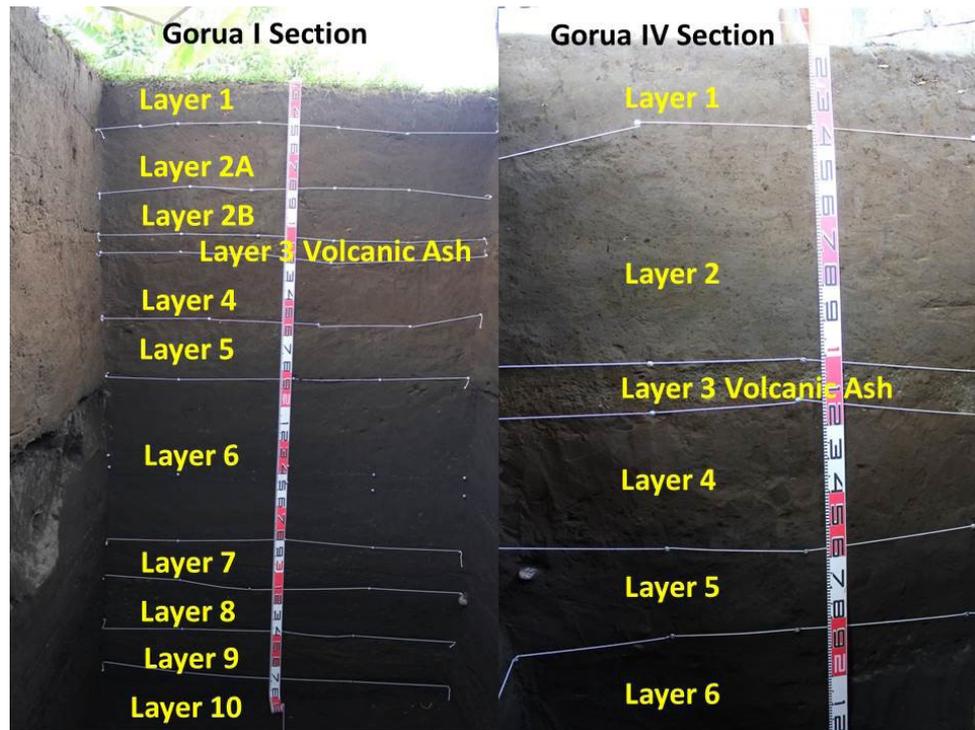


Figure 1. Cross Section of Gorua I and IV (Source: Ono)

layer (-295 to -305 cm from the surface). The excavated deposits were divided into eight layers. Among these layers, lower layers are mainly composed with blackish hard clay soils, while the upper layers are mainly composed of hard volcanic soils with some tephra layers which possibly indicate the past volcanic activities (e.g. eruption) around Tobelo district similar to the sedimentary pattern at Gorua I.

In particular, Layer 4 at Gorua II, about 160 to 180 cm in depth from the surface and with about 10-15 cm in thickness (olive brown to yellowish grey color: 2.5 Y4/3) seems to be the possible tephra layers by the past eruption possibly the same as Layer 3 at Gorua I and Gorua IV. Interestingly, however, Layer 6 to 8 below the possible tephra layer are not soft beach sand layers like in Gorua I, but composed of very hard and loamy deposits.

At Gorua IV, we excavated down to the middle of Layer 8 (-290 cm in depth from the surface) and stopped digging as no more artifacts existed below this layer, hence the excavated deposits were divided into eight

layers. Among these layers, the lower layers are mainly composed of blackish beach sand, while the upper layers are mainly composed of hard volcanic soils with a tephra layer which possibly indicates the past volcanic activities (e.g. eruption) around Tobelo district similar to the sedimentary pattern at Gorua I and II.

Based on such excavation research during 2012 and 2013, we further discuss the possible development of pottery making and regional maritime networks in and around the Northern Maluku Islands during the Early Metal ages.

2. Methods

Our study discussed in this article is based on excavation as the main method. The chronological analysis with the new C14/AMS has been applied for samples collected from the Gorua site. Morphological and typological analysis applied for the excavated potteries from the Gorua.

2.1 C14/AMS Dating Analysis

In our study, only Gorua I could be

dated since no charcoals and bones or shells were excavated at other sites except Gotrua IV. Active volcanic activities and sedimentations of volcanic soils could be the main factor for the scarce of bone remains in Gorua. The six artifacts (a human tooth, a pig's tooth and four pieces of charcoals) from Gorua I were sent to the laboratory of Tokyo University. Calibration utilised OxCAL4.1 (Ramsey 2009), with results based on IntCal09 and Marine09.

2.2 Pottery Morphological Analysis

The excavated artifacts from Gorua I are a variety of potsherds (n=2932), mainly of red slipped type and including stoves, a few number of human and pig bones and tooth, charcoals, stone tools, and a piece of metal tool. A small piece of bronze tool was excavated from the upper part of Layer 7 (Grid B2/TG/-200cm in depth).

Pottery sherds and stone tools were excavated in several layers, but concentrated in Layer 2 and 4 in the upper layers, and Layer 6 (-200 to 280cm in depth) in the lower layers. Parts of pottery stove were also excavated from the bottom part of Layer 5 or upper part of Layer 6. A complex (assemblage) of these pottery stove sherds and plain or incised potsherds were excavated on top of Layer 6, and they were estimated as part of cooking area in the past.

Gorua II which is located at much inner area only produced a small numbers of potsherds (n=77) and a few pieces of stone tools including a possibly basalt flake and ocher from the lower

layers, with no artifacts in the upper layers.

Gorua IV which is located near Gorua I produced a number of pottery sherds (n=3735) including red slipped or red and black colored types, a few fish bones, charcoal, and possibly a stone tool and stones including pumice and ocher. Pottery sherds and stone tools were excavated from several layers, but mainly from Layer 2 in the upper layers, and Layer 5 (brown to blackish hard soil layer around 165 to 200 cm in depth) to Layer 6 (blackish sand layer around 200-280cm in depth) in the lower layers.

These excavated potteries are first sorted into some categories as (1) plain lip, (2) plain body, (3) decorated lip, (4) decorated body, (5) carination, (6) stand, (7) knob, and (8) stove, then counted and weighted. After the classification into each categories, some potsherds, mainly parts of stoves are selected for reconstruction, while decorated sherds are further sorted into more detailed types and categories such as (1) red-slip, (2) black painted, (3) incise motifs, (4) applied motif, and (5) cut-out decoration. The color of red slipped and black pottery are checked and identified by Munsell Soil Color Charts, and diagnostic sherds are measured, drawn, and photographed.

3. Results and Discussion

3.1 Results of C14/AMS Dating

In result, only two charcoal samples from the bottom of Layer 5 to surface of Layer 6 (-195 cm in depth) and a charcoal sample from the bottom of Layer 6 (-290 cm in depth)

Table 1. Result of AMS dates from Gorua I (Source: Ono)

Site	Sample ID	Grid	Spit	Sample	C14 Date	Calibrated Date(1SD)	Calibrated Date(2SD)	Calibration
Gorua I	TKa- 15813	A2/BL	9B	Charcoal	2189±19 BP	353BC - 294BC	360BC - 273BC	IntCal09
Gorua I	TKa-15814	A2/BD	9B	Charcoal	2197±19 BP	355BC-289BC	361BC-271BC	IntCal09
Gorua I	TKa-17038	B2/TL	12	Charcoal	2187±20 BP	2301-2245 cal BP	2308-2225 cal BP	IntCal09
Gorua I	TKa-15815	B2/TL	18	Charcoal	2162±20 BP	207BC-176BC	233BC-160BC	IntCal09
Gorua II	TKA-17039	A1/TL	12	charcoal	1878±19 BP	1871-1816 cal BP	1877-1771 cal BP	IntCal09
Gorua II	TKA-17040	A1/TL	14	charcoal	1859±19 BP	1825-1773 cal BP	1865-1728 cal BP	IntCal09

in Gorua I are dated as back to around 2300 to 2100 years cal BP or 300 to 200 BC (Table 1), which are slightly older than Aru Manara on Morotai Island.

Since no charcoals and other materials were excavated in much upper layers or lower layers below Layer 6, all the acquired dating show the dates of Layer 5 to 6 in which the largest number of potsherds and other materials were found (see also Table 2), hence layer 5 and 6 are considered as most actively used as habitation zone in the past.

On the other hand, Gorua II and IV have so far no dates yet as no charcoal and bone or shell remains were excavated, but the lower layers of Gorua II and Gorua IV are possibly same age with the Layer 6 in Gorua I, which dated back around 2300-2000 years BP.

3.2 Results of Pottery Analysis

Both Aru Manara and Gorua produced potteries, although most of the ones from Aru Manara are part of burial jars and rather specific pottery as burial accessories (Ono et al. in press), while Gorua produces larger number of potsherds and possible stoves that were mainly used as cooking and daily utensils and they are slightly older than the potteries from Aru Manara. In this point, we mainly focused on the

excavated potteries from Gorua here.

As shown in Table 2, Gorua IV produced the largest number of potsherds (n=3777), while Gorua I produced a number of potsherds (n=2938) and stoves from the dated layers (Layer 6). Gorua II which locates over 400 m inland from the present coast produced the smallest number of potsherds (n=78) and other materials, hence more artifacts concentrated in the area close to coast rather than inland in Gorua.

In relation to layers, the upper layers (Layers 1 to 4) down to about 180 cm produced very few potsherds in Gorua, particularly at Gorua II and IV, while the lower layers mainly Layers 5 and 6 that are black sand layers dated back to 2300 and 2100 years BP, produced large numbers and volume of potteries. Such results clearly show that most of potteries including stoves belong to the Early Metal ages. Their major types are (1) red-slipped pottery with light or dark brown red color on its surface (inside or outside or both), (2) black-ware pottery (Fig. 2A) with dark brown to black color in its surface (inside or outside or both), (3) red-slipped pottery with some black color painted on its surface mainly around rim part (Fig. 2B), and (4) stove (Fig. 2C). The only exception is a grayish color potshard rim with applied motif on

Table 2. Excavated Potsherds from Gorua (Source: Ono)

GRA1/8m2				GRA2/4m2			GRA4/3m2		
Layer	Number	Weight(g)	Dating	Layer	Number	Weight(g)	Layer	Number	Weight(g)
1	1	52		1	0	0	1	0	0
2A	137	388		2	0	0	2	0	0
2B	225	624		3	0	0	3	1	25
3	0	0		4	0	0	4	631	1439
4	871	2124		5	0	0	5	724	1581
5	181	2472	2300 BP	6	0	0	6	2379	8802
6	1481	9392	2300 BP	7	78	843	7	0	0
7	27	341		8	0	0			
8	11	52							
9	4	27							
Total	2938	15472		Total	78	843	Total	3735	11847



Figure 2. Decorated potsherds and stove from Gorua; (A) black-ware potsherd; (B) red-slipped with black color potsherd; (C) reconstructed pottery stove; (D) grayish potsherd with applied motif (Source: Ono)

its surface excavated from Gorua II (Fig. 2D).

Among them, the largest number belongs to (1) red-slipped potteries including (a) large to middle sized bowls sometimes with long or short rolled-out lip indentations on the rim (Fig. 3A-C) and (b) middle sized vessel with restricted forms and everted rims, some of which has incised motifs in its body (Fig. 3D, H, J) and long or short rolled-out lip indentations on its

rim (Fig. 3K-L).

Some varieties of pedestals or stands with triangular and oval shaped cut-outs were also excavated (Fig. 3E-F), it is yet unknown to which type of pottery do these pedestals belong. Sharp-pointed rims and possible knob or handle with light red slip on its whole surface were also excavated mainly from upper layers at Gorua I.

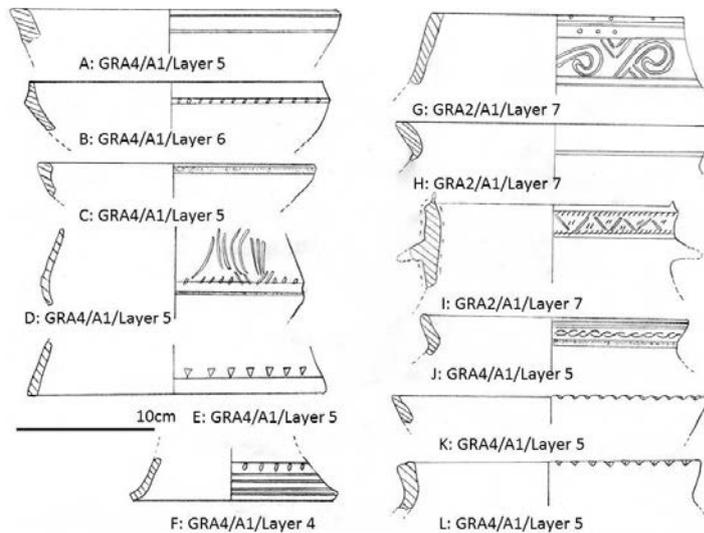


Figure 3. Variety of Gorua pottery assemblage (Source: Ono)

The second largest number of potsherds belong to black colored pottery. Although the exact techniques for making such black-ware potteries are unclear, some of them are surely partly painted on red-slipped. Such black paintings are mainly on the rim or carination (Fig. 2B). It is also worth to note that most of these types have incised decorations, including geometric and bracken-shaped or scroll-like patterns (Fig. 3G). The incised pottery shard from Layer 7 at Gorua I is a part of a beautifully made black colored pottery with geometric incised motif (see Fig. 2A).

3.3 Discussion

Like previously stressed by Peter Bellwood, the Northern Maluku Islands occupy strategic geographical location between the major islands of Sulawesi, the Southern Philippines and New Guinea (Bellwood et al. 1988, 233).

Furthermore, Fitzpatrick and Callaghan (2013) recently use the seafaring simulation program known as *Seascope* to provide additional data on seafaring probabilities and indicate that the most potential route(s) of the human migration to Mariana Islands in Micronesia are from its south as New Guinea or Eastern Indonesian islands rather than from its north in Taiwan or the Northern Philippines as has been argued in the past studies (e.g. Hung et al. 2011). Such scenario tentatively points the important geological location of the Northern Maluku Islands for the past human migration and colonization to the Pacific islands.

In terms of such past human migration and colonization to the Pacific, both (1) initial human migration through eastern Indonesia towards Sahul (Australia and New Guinea) by crossing the sea from Wallacea region including the Northern Maluku and much later (2) Neolithic human migration possibly by the Austronesian speaking people to the Pacific, including Remote Oceanian islands, show a

possibility that Sulawesi to Maluku regions can be one of the starting locations for such past migrations.

Furthermore, later (3) post-Neolithic human migration in Eastern Indonesia particularly around Sulawesi to Maluku region, is also important to investigate and discuss in relation to the past spice trading networks or complicated human and language migrations among Austronesian and Papuan speaking groups in Maluku Islands. Following Spriggs (1998) and others, Non-Austronesian languages of the region include some on the islands near Timor that immediately derive from there, and the languages in Northern Halmahera and Morotai. They are thought to be related to languages of Western New Guinea. Whether they represent ancient language stocks present in pre-Austronesian times throughout Maluku or are the result of more recent population movements is unknown.

Our current analysis outcomes in this paper deal with (3) post-Neolithic human migrations and their subsistence and burial practices. Based on our excavation and acquired AMS dates of the excavated human tooth, bones, marine shells, pig tooth and charcoals from all the excavated sites including Aru Manara (Ono et al. in press), Uattamdi (Bellwood et al. 1998; Ono et al. in prep), and Gorua, it is clear now that the first human migration with pottery making tradition into Morotai to Northern Halmahera could be dated back to around 2300 to 2100 years BP, over 1000 years younger than the first Austronesian migrations to some islands in Eastern Indonesia during the Neolithic times.

These migrated people clearly had pottery making and using tradition. The direct AMS dating of the excavated marine shell ring or bracelet made of *Trochus* shell from the Aru Manara site indicates that these shell made ornaments and possibly glass ornaments were also used as grave goods during the same times (Ono et al. in press).

Our current results also match with the excavation results by Peter Bellwood and his team in 1990's, and we may be able to conclude that the early Austronesian Neolithic people were possibly skipped these regions mainly occupied by Papuan speaking groups at least from the early Holocene times (Bellwood 1997; Bellwood et al. 1993; 1998).

In terms of the pottery variation in Gorua, some are decorated mainly on their rim parts with incised and impressed motifs, sometimes with red and black color attached. In general, most of decorated motifs on Gorua potteries are similar to the motifs from other Early Metal aged sites in Indonesia as well as contemporary prehistoric sites in the Pacific. For example, popularity of red-slip tradition with incised motif tradition seems very similar in Gorua and other sites, including Aru Manara and Uattamdi.

Among all the Early Metal aged sites in Northern Maluku, everted rims with long rolled-out lip indentations or scallops (see Fig. 3K-L) are also common at Um Kapat Papo (UKP), Gebe Island excavated by Bellwood in 1990's (Bellwood in prep). Most of the UKP potteries were produced from the top layer with a marine shell dated to 1765-1437 cal. BP (ANU 9316) and estimated as from Early Metal age. Incised motifs with a simple curvilinear or parallel straight-line type (Fig. 3I) are also similar to UKP incised motifs as well as other contemporary Moluccan assemblages from Tanjung Pinang on Morotai Island and Buwawansi 3 on Gebe Island (Bellwood in prep).

Another common incised motif in Buwawansi with horizontal incised zones of simple straight line and curvilinear incision are also commonly found in Gorua and Aru Manara. Stands with cut-outs through the stand (Fig. 3D, F) are also excavated from Uattamdi Layer A to B and Tanjung Pinang on Morotai (Bellwood in prep), both of which dated to Early Metal age. Aru Manara also produced

such stands with triangular shape cut-outs (Ono et al. in press).

On the other hand, red and black colored/painted potteries are so far only found in Gorua and not reported in previous studies. In much wider scale, some red and black colored pots are excavated and reported from the possible late Neolithic layers on Mariana Islands in Micronesia (e.g. Carson 2014) as well as post-Lapita sites in Melanesia (e.g. Garange 1970). Furthermore, the applied motif pottery from Gorua (Fig. 2D) is similar to those of the post-Lapita pottery tradition including Mangassi tradition in Vanuatu and other islands in Melanesia between 2500 and 1800 years BP.

Dentate-stamped and painted (red and white color) pots are also excavated from Lapita sites in Vanuatu, which possibly dated to around 3000 and 2500 years BP (e.g. Bedford 2006). Although the date is not clear yet, similar dentate-stamped and painted (red and white color) potsherds were recently found at Mansiri site in Toraut, Northern Sulawesi (e.g. Aziz 2011) and also in Karama valley, Western Sulawesi (e.g. Anggraeni et al. 2014). Furthermore, our recent excavations in Central Sulawesi unearthed huge number of dentate-stamped and lime infilled pots possibly used as burial goods during to around 2300 and 1600 years BP (Ono et al. in press 3). On the other hand, none of such pots are found in Gorua and other sites in Maluku region so far.

Painted pottery with the 'three coloured ware' (black and red on a cream base) has been found in cave sites such as Niah Cave and Lubang Angin in Western Borneo possibly dated to around 3000 years BP (Bellwood 1997, 239). The ones from Gorua have no dentate-stamp and are clearly younger than these pots, but the findings from Gorua tentatively indicate that such pottery tradition could be wider spread among East Indonesia to the Pacific since the Neolithic times. Painted potteries were also excavated in New Guinea (e.g. Mailu region)

possibly dated back to around 1800 to 1500 years BP (Irwin 1985).

On the other hand, the burial practice confirmed in the Aru Manara has similar characters in burial jar types and motifs with the burial tradition in the Philippines islands, particularly Palawan (e.g. Fox 1970), and also Sulawesi, including Talaud Islands during the late Neolithic to the Early Metal age (Ono et al. in press).

Shell and glass ornaments as burial goods also seems to bear areal similarity and further analysis on the glass ornaments tentatively indicate that these goods were possibly brought both from China in its north and Indian Ocean in its west into Morotai Island. These archaeological traces also show that the active and wider human migration and movement including maritime trade were occurred in these regions including the Northern Maluku Islands in around 2200 years ago.

In terms of post-Neolithic human migration and trading, the earliest evidence of the international trade in Maluku spices came from Han Chinese and Indian sources of about 2200 years ago (Miller 1969). Such historical sources hints about the spread of metal from mainland Southeast Asia through the islands as far as areas either side of Maluku starting 2300–2100 years ago.

The sudden appearance of metal including the spread of Dongson bronze drums and goods which were originally from northern Vietnam or southern China into Island Southeast Asia as far as to Maluku and the Bird's Head of New Guinea, can be recognized as marking the beginning of the spice trade. Another possible trading material are bird's plumes which had been one of the major export goods from Maluku and New Guinea regions for long time until the 20th century (e.g. Swalding 1996).

The existence of glass ornaments in Aru Manara and Uattamdi in Early Metal aged layer also indicates such possible trading

activities by these early people in and around the Northern Maluku Islands, probably both by China and Indian originated routes. Although the current result of the excavated glass analysis is hard to identify the exact origin(s) of these glass materials, it is clear that these goods were exported from outside of Maluku, more potentially from China or somewhere in Mainland Southeast Asia.

No bronze and iron goods were excavated from Gorua, Aru Manara and Uattamdi except a small piece of possible bronze fragment from the surface at Aru Manara, although it is quite possible that the people might use these items which were possibly exported from outside regions as well.

The Northern Maluku evidence for widespread adoption of pottery of general Indonesian Metal Age style from 2200 years BP or 200 BC would fit in with this interpretation (see also Spriggs 1999). It is yet unknown how and where such trade activities were practiced. However, the current excavation result do indicate that such trade or exchange networks might been existed both between Northern Maluku and China or Eastern Asian region as well as between India or western part of Southeast Asian region.

4. Conclusion

Not all of the analysis of the excavated artifacts have yet been completed in our study on the Northern Maluku Islands. For Gorua site, C14 and AMS dating samples are not sufficient to discuss the detail chronology of the site use. However, our current results tentatively indicate that the first human migration with pottery making tradition to the eastern coast of Northern Halmahera as well as Morotai could possibly be dated to about 2300 to 2100 years BP. During this early phase, the people mainly produced and used well made red-slipped or black-ware well-made potteries in some styles including direct-rimmed pot, restricted bowls,

and stoves.

Lastly, regarding the past human migration to Northern Maluku, it is yet unclear which groups (e.g. Austronesian speaking people or Papuan Speaking people) was migrated to coastal area in Morotai and Halmahera with pottery making tradition, where they were from, and how was the process of their migration developed during the later-Neolithic to Early Metal ages around 2300 to 2000 years BP. To solve these matters, further intensive and comparative analysis on all the data from Northern Maluku and their surrounding islands should be conducted in the near future. With further detailed analysis of the excavated materials, we will continue to acquire more detailed and clear image of the past human migrations into Northern Maluku Islands and the development of maritime networks in Wallacea, especially in Northern Maluku.

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