Archaeological Traces of Austronesian Ancestors at the Kamansi Site of the Karama River Valley in West Sulawesi, Indonesia

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ABSTRACT

Archaeological sites in the Karama River Valley have produced important information about the dating and context of the first Austronesian-speaking groups in Sulawesi of Indonesia, notably at the Kamansi Site in Kalumpang. A horizon of red-slipped pottery indicates the emergence of a Neolithic group, followed by continued occupation and cultural change. Radiocarbon dating at each site has been problematic, but an overall regional chronology has been possible. The pottery types and other findings can be coordinated with a larger regional chronology in Sulawesi, based on radiocarbon dates of stratigraphic layers and their associated artifacts. Research by Balai Arkeologi Makassar now can affirm the assumption of a shared settlement chronology at the Kamansi Site and others in the Karama River Valley.

The Karama River Valley contains several sites with red-slipped pottery and other materials that generally are understood as markers of the early Neolithic Period in Indonesia, dating as old as 3500–3000 years ago. Prior to this time, no pottery is evident in the hunter-gatherer sites with stone tools and other assemblages, so the pottery-bearing sites represent a significant change in the local material culture. After this time, the pottery sequence continues without interruption through Neolithic, Iron Age, and historical periods.

The Neolithic pottery-bearing sites in this region consist mostly of cultural deposits along the sides of the large Karama River. Elevations today vary above the flood-level of the river, but the original cultural use in some cases may have been rather close to the edge of the river. Natural effects of the river have made some difficulties in finding the buried sites today. Additional problems have occurred in possible disturbance of ancient cultural layers, but the cultural layers in many cases in fact are sealed and protected beneath material of river-flooding events.

The Kamansi Site offered an opportunity to examine a stratigraphic sequence of this early Neolithic period in Indonesia. In 2011, a new test excavation was 1 by 1 m in size, and it extended to a depth of 2 m. The exposed stratigraphy revealed a

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distinct layer of the oldest red-slipped pottery along with stone and shell remains, followed by later layers of slightly different pottery and other materials. The excavation ended at 2 m depth, within a layer definitely pre-dating a cultural context in this setting.

The new findings include varieties of red-slipped pottery, other non-slipped plain pottery, stone adze material and flaking debris, stone axes, shell and stone bracelets and other ornaments, burnishing stones, a unique type of greenstone bead, and other objects. Most importantly, the items were found in a stratigraphic order. These new results give more precision for understanding the early Neolithic chronology of the region. For example, the earliest time was characterized by red-slipped pottery, and a slightly later time was characterized by plain non-slipped pottery. Other types of artifactsand midde canbe addedto this two-part distinction in the Neolithic period. Furthermore, this information allows a more detailed appreciation of the emergence of Austronesian culture in Indonesia as realted with other regions.

Key Words : Settlement chronology, Austronesian speakers, pottery, Kamansi Site

INTRODUCTION

The island of Sulawesi possesses archaeological evidence of the ancient life of Austronesian-speaking people in Indonesia. The island has been considered as a keystone to explain the character of an ancient Austronesian diaspora in Island Southeast Asia and throughout the Asia-Pacific region as a whole. Sulawesi's geographic position could be interpreted as a stopping-point of Austronesians migrating along different routes in the Asia-Pacific or perhaps meeting at the confluence of multiple directions of movements (Simanjuntak, 2007: 223-224). Regardless of whatever model is preferred about the origins and directions of Austronesian migrations, the archaeological record in Sulawesi attracts considerable scholarly attention toward solving these issues. In this regard, some of the most crucial archaeological evidence has been found in the pottery-bearing Neolithic sites of the Karama River Valley, now known as the Kalumpang Region of Kabupaten Mamuju.

In terms of identifying the origins of Austronesian settlement in Sulawesi, red-slipped pottery is especially useful as a durable and easily identifiable item in the archaeological record. Red-slipped pottery first appeared here about 3500 years BP. Before this time, the older cultural layers contain no pottery of any kind, but instead the solder sites contain stone tools and other materials. The sudden appearance of red-slipped pottery therefore constitutes strong evidence of a transition from Palaeolithic to Neolithic lifestyle in Sulawesi.

Following the appearance of red-slipped pottery, different types of pottery continued in an unbroken chronology. Throughout this long sequence, no major disjuncture can be noted. Therefore, the oldest red-slipped pottery often is viewed as the beginning of Austronesian settlement, leading up to the historically known era of Austronesian-speaking communities in Indonesia. Later contacts with Indian traders and others within the last 2000 years clearly were overlays of foreign imprints on the strong base of Austronesian populations, while the core Austronesian language and other traditions have persisted.

So far, the most informative discoveries of early red-slipped pottery in Indonesia have been in the Karama River Valley in Sulawesi. In the Karama River Valley, Kalumpang first was recognized as a Neolithic settlement by van Stein Callenfels, who worked at the Dutch colonial pre-historic department, *Oudheidkundige Dienst*. As summarized by Simanjuntak (2007), van Stein Callenfels presented the findings in Kalumpang to the international world at the Far-east Asia Pre-historic Congress in Manila in 1951, and this work was published in the *Journal of East Asiatic Studies* in 1952. Van Stein Callenfels proposed three phases of cultural occupation in Kalumpang. First was the *Proto-Neolithic*, characterized by bevel-chisel axes, a prototype of shoulder-axe, Hoanbinhian-type stone tools, and primitive earthenware vessels. Second was the *Neolithic*, characterized by smoothed-polished axes and plain earthenware. Third was the *End-phase*, characterized by arrow-points, small chisels, and scratch-marked earthenware. Van Stein Callenfels surmised that waves of migration came from the north, following a north-to-south route from Manchuria and through the Philippines before reaching Sulawesi.

Contemporary with van Stein Callenfels and then continuing in later years, van Heekeren (1972) conducted more studies in the Kalumpang region, as part of larger research in Indonesia. He concluded that the Kalumpang sites referred to only two cultural phases, instead of the three phases as was suggested previously. In this revised chronology, the first phase was *Early Neolithic*, characterized by elliptical axes with ellipsoid-shaped sections, hammer-tools, plain earthenware, and ornate earthenware with symmetrical line patterns and small circles. The second phase was the *Final Neolithic*, characterized by smoothed rectangular axes, small axes, smoothed spearheads, arrow-points, drilling tools, hand-saws, and ornate earthenware with small circles and shell-impressed patterns. Similar to prior speculations, van Heerkeren proposed that both of the cultural phases at Kalumpang involved migration of people from southern China who traveled north-to-south eventually to Sulawesi, but he also noted possible influence by the Dong Son culture of Southeast Asia during the later phase.

More recent archaeological studies by Soejono (1993) compared the prior findings in Karama River Valley with other findings in the Maros Caves and Takalar Region. Soejono proposed that red-slipped pottery marked the appearance of a widespread Austronesian culture, most strongly evidenced at sites in the Karama River Valley. The only remaining question was about the dating of when this Austronesian culture first emerged in Sulawesi.

Simanjuntak (2007) formulated a chronology of Austronesian settlement in Sulawesi, based on radiocarbon dates associated with stratigraphic layers, primarily at the Minanga-Sipakko Site in the Karama River Valley. With reasonable caution, this chronology may be applied to other similar sites in the vicinity. The first appearance of pottery occurred about

3500-3000 years BP, specifically in the form of red-slipped earthenware, along with tools made of sharpened bones and obsidian. Next, the phase 3000-2500 years BP was marked by the presence of low-fired but ornate earthenware. Both phases, spanning in total 3500 through 2500 years BP, contained various types of rectangular adzes and faunal materials (Simanjuntak 2007).

In pursuit of more evidence about the origins of Austronesian settlement in Sulawesi, the author led the Balai Arkeologi Makassar (Makassar Archaeological Research Institute) in 2011 and 2012 for excavation at the Kamansi Site in Karama River Valley. The results are presented here, with two key questions in mind: 1) What were the major characteristics of material culture during different chronological phases? 2) What kinds of material evidence potentially can show links with other regions in Southeast Asia?

SITE SETTING AND ENVIRONMENT

The Kamansi Site is located within the Karama River Valley, where several rivers flow through hilly terrain into the large Karama River (Figure 1). It is about 5 m south from the Kalumpang-Mamuju main road, precisely at the backyard of Community Health Center of Kalumpang. The site is within a plantation, vegetated by teakwood and several bushes (Figure 2). The Karama River is about 200 m north from the site. The Betoon River flows on the east and south sides of the site. The Betoon River joins as a tributary into the Karama River, at a point northeast from the Kamansi Site.

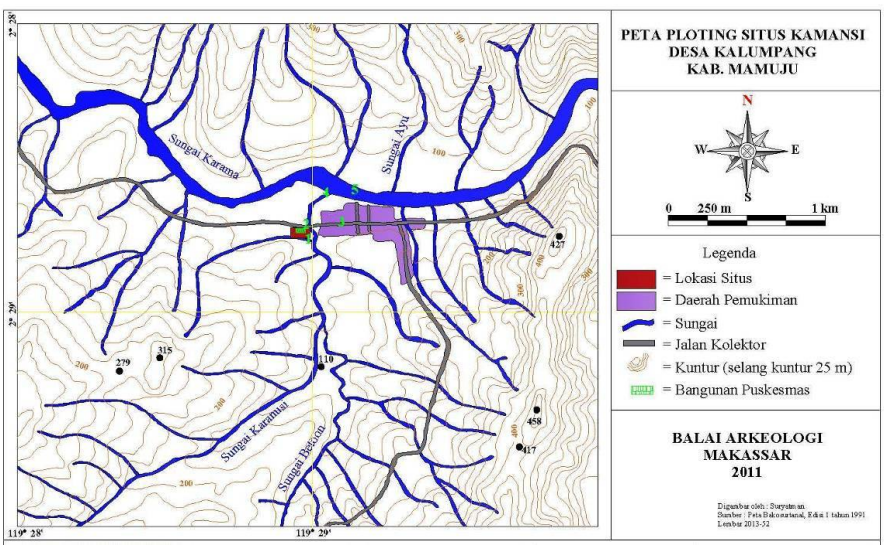

Fig. 1: Location of the Kamansi Site, shown in red color as "Lokasi Situs." The village or district of Pemukiman is shown in purple color as "Daerah Pumikimam." The rivers and streams are shown in blue color lines as "Sungai." The paved government roads are shown in bold gray lines as "Jalan Kolektor." The elevation contours of 25 m each are shown in light gray lines as "Kuntur." Health-clinic buildings are shown in green polygons as "Bangunan Puskesmas."

Fig. 2: Surface condition of the Kamansi Site, 2011.

EXCAVATION RESULTS

Test pit 1 measured 1 by 1 m in plan view, excavated in arbitrary levels or "spits" (Figure 3). Standard conventions of Indonesian archaeology today follow British terminology, such as "spits" that otherwise are understood as "levels" internationally. Depths of each spit were controlled from a string line-level (SSL), suspended evenly at 11-22 cm above the naturally sloped ground surface (Figure 4). Excavation continued as deep as 200 cm beneath the SLL, where no further cultural materials were present in a layer that appeared to pre-date cultural activity at the site.

The excavation profile (see Figure 3) shows five sedimentary layers. The uppermost layer consisted of clay with black sand particles, down to 60/90 cm beneath the SLL. The next deeper layer consisted of similar clay with less sand component, and it was slightly compact down to 105/130 cm beneath the SLL. The third layer consisted of a compact and brown-colored clay, down to 140/170 cm beneath the SLL. The fourth layer consisted of compact clay of brown color, down to the base of the excavation at 200 cm beneath the SLL, except in one corner where a different underlying sediment was found. The fifth and lowest encountered layer was found only in one small corner of the excavation square, identified as dense clay of yellow color at the base of the excavation at 190-200 cm beneath the SLL.

The recovered materials from each Spit (or level) are listed as present or absent in Table 1. This summary shows the major patterns in the cultural findings, which will be discussed in more detail later in this text. Overall, a "pre-cultural period" contains no artifacts in Spits 14 and 13, followed by an "early period" with abundant red-slipped pottery and other materials in Spits 12 through 8, and ending with a "second period" of mostly coarse and plain pottery and few other materials in Spits 7 through 1.

Table 1: Summary of artifact findings

Phase	Spit	A	B	C	D	E	F	G	H	I	J	K	L
Second	1	X	X										
	2	X											
	3	X											
	4	X			X						X		
	5	X	X								X	X	
	6	X											
	7	X		X	X						X		
Early	8	X	X	X		X						X	
	9	X	X	X				X	X	X		X	X
	10	X	X	X	X				X	X			X
	11	X	X	X			X		X	X			X
	12		X							X			X
Pre-cultural	13												
	14												

X = present

A = coarse pottery
B = red-slipped pottery
C = hematite
D = stone paddle anvil
E = green-stone bead
F = bracelet fragment
G = axe with perforation
H = shell artifacts
I = clam shell
J = obsidian tool or flake
K = axe
L = sharpening stone

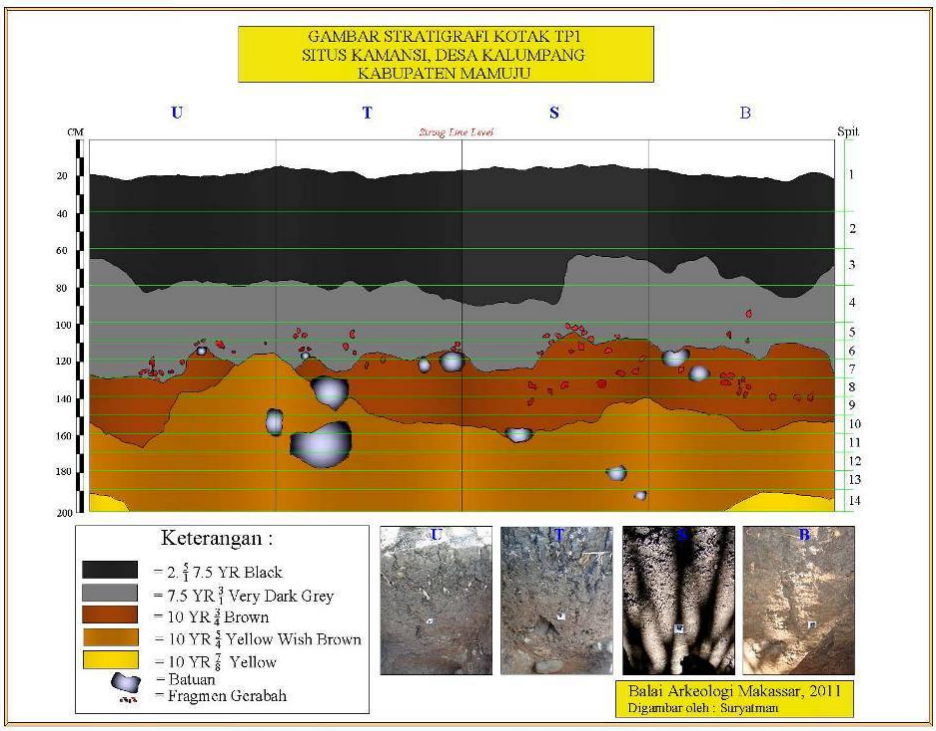

Fig. 3: Excavation profile, showing all four sides of test pit 1. Stones are indicated as "Batuan." Pottery fragments are indicated as "Fragmen Gerabah."

Fig. 4: Surface of test pit 1, prior to excavation. Arrow points to north. Scale bars are in 10-cm increments.

Spit (level) 1 was from the surface down to 39 cm below the string line-level (SLL). This depth-range included a colluvial matrix, with small-sized and plain earthenware pottery fragments, likely a result of hill-slope land-slide. The colluvial material consisted of sandy clay, blackish or brown to black color, with pH of 6.5. Up to 39 cm depth from the SLL, no in situ cultural layer was sighted. The total 23.5 buckets of material weighed 82 kg.

Spit (level) 2 was excavated from 39 through 59 cm below the SLL. As in Spit 1, a similar colluvial sandy clay layer continued here. The condition was not as hard as in Spit 1, due to more moisture in the material. Cultural materials included 15 fragments of plain (non-decorated) earthenware pottery, a stone axe, and sparse charcoal. As in Spit 1, the material likely can be attributed to hill-slope erosion. The total 18 buckets of moist material weighed 216 kg.

Spit (level) 3 was from 59 to 79 cm below the SLL. The colluvial sandy clay continued here, grading into a dark gray color. The total 31 buckets of material weighed 372 kg.

Spit (level) 4 occurred between 79 and 99 cm below the SLL. The sediment matrix appeared to be alluvial sandy clay, compact, very dark gray, and pH of 6.5. Cultural items in this spit were plain earthenware fragments, axe fragments, obsidian tools, several pebbles or pieces of axe material, rotted pieces of wood, and a possible manuport. The total excavated material weighed 360 kg.

Spit (level) 5 was from 99 to 109 cm beneath the SLL. The same sediment matrix continued deeper from Spit 4, but the pH was slightly different at 6.4. Cultural findings increased in frequency, especially concerning fragment of plain earthenware pottery, obsidian tools, stone axes, and manuports. The total excavated material weighed 204 kg.

Spit (level) 6 occurred at 99 to 119 cm beneath the SLL. The same sediment matrix continued as from Spits 3 and 4, with increasing frequency of artifacts. The findings included numerous plain earthenware pottery fragments, a stone pestle, axe fragments, stone flakes, as flat stone pendant, and basalt debris. A large boulder was near the base of Spit 6. The total 11 buckets of material weighed 132 kg.

Spit (level) 7 was measured at 119 to 129 cm beneath the SLL. The same sediment matrix continued as in the above Spits 4 through 6, but more cobbles and boulder-fragments were present. Also, the pH was different at pH 7. Pottery fragments notably included both plain and red-slipped varieties. Discolored bone fragments and charcoal particles also were noted. The total excavated material weighed 108 kg.

Spit (level) 8 proceeded from 129 to 139 cm beneath the SLL. The same sedimentary matrix continued from the above Spits, with notably more cobbles and boulder-fragments indicative of an alluvial setting near a river. Cultural findings included abundant earthenware pottery fragments, stone pendants, bone fragments, a stone axe, grinding-stone fragments, hematite, and charcoal particles. The earthenware pottery included both plain and red-slipped pieces. The total excavated material weighed 150 kg.

Spit (level) 9 was excavated from 139 through 149 cm beneath the SLL. Within this depth-range, a different sediment matrix was encountered than had been seen in the above Spits. This matrix consisted of more loose sediment of brownish color, with pH of 6.2 Larger and more numerous cobbles and boulder-fragments were noted, resembling a setting adjacent to a river. Within this same sediment matrix in Spit 9, the cultural findings represented a distinctive cultural occupation layer. Red-slipped earthenware fragments were numerous, along with small amounts of plain pottery, grinding stones, shell tools, two stone axes, a stone pendant, various manuports, mollusk shells, and charcoal particles. The total excavated material weighed 44 kg.

Spit (level) 10 was from 149 to 159 cm beneath the SLL. The same sediment matrix continued as from Spit 9, but the cultural findings were slightly less dense. Also, slightly different pH of 6 was noted. The cultural contents included red-slipped earthenware pottery fragments, plain earthenware fragments, a grinding stone, axe flakes, other stone flakes, manuports, mollusk shells, bone fragments, and charcoal particles. The total excavated material weighed 132 kg.

Spit (level) 11 was excavated at 159 to 169 cm beneath the SLL. Apparently the same sediment matrix continued from above Spits, but a different pH of 7 was noted. Cultural findings appeared to diminish slightly in frequency. These included red-slipped earthenware fragments, plain earthenware fragments, stone bracelet fragments, pieces of grinding-stones, mollusk shells, and charcoal particles. The total excavated materials weighed 144 kg.

Spit (level) 12 was measured at 169 to 179 cm beneath the SLL. The same sediment matrix continued from above Spits, but a different pH of 6.4 was recorded. Cultural findings clearly diminished in frequency. These included very small fragments of earthenware pottery. The total excavated material weighed 138 kg.

Spit (level) 13 was excavated at 179 to 189 cm beneath the SLL. A different sediment matrix was encountered here, as compared to the above-noted Spits. This matrix consisted of rough sandy material, yellow in color, with pH of 7. No cultural material was in this layer. This layer represented a non-cultural sediment, prior to the cultural activity at the site. The total excavated material weighed 156 kg.

Spit (level) 14 proceeded from 189 to 199 cm beneath the SLL. The sediment matrix was described as clay of yellowish brown color. It contained no cultural material, apparently pre-dating cultural use of the site. The total excavated material weighed 102 kg.

POTTERY-BASED CHRONOLOGY

The most abundant artifact type was earthenware pottery, counted as 3976 fragments in total, with a peak high-frequency occurrence (N=1744) in Spit 7 (Figure 5). Fair amounts were found in upper-level Spits 5 (N=520) and 6 (N=537). In levels below Spit 7, the amount decreased significantly in Spit 8 (N=186), but a slight increase was noted again in levels below Spit 9 (N=256).

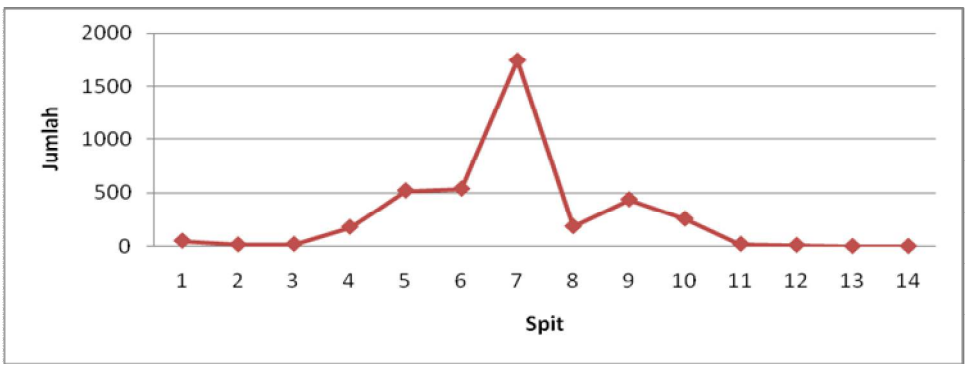

Fig. 5: Numbers (jumlah) of earthenware pottery fragments in each excavation level, labeled as Spit 1 (top, most recent level) through Spit 14 (bottom, most ancient level).

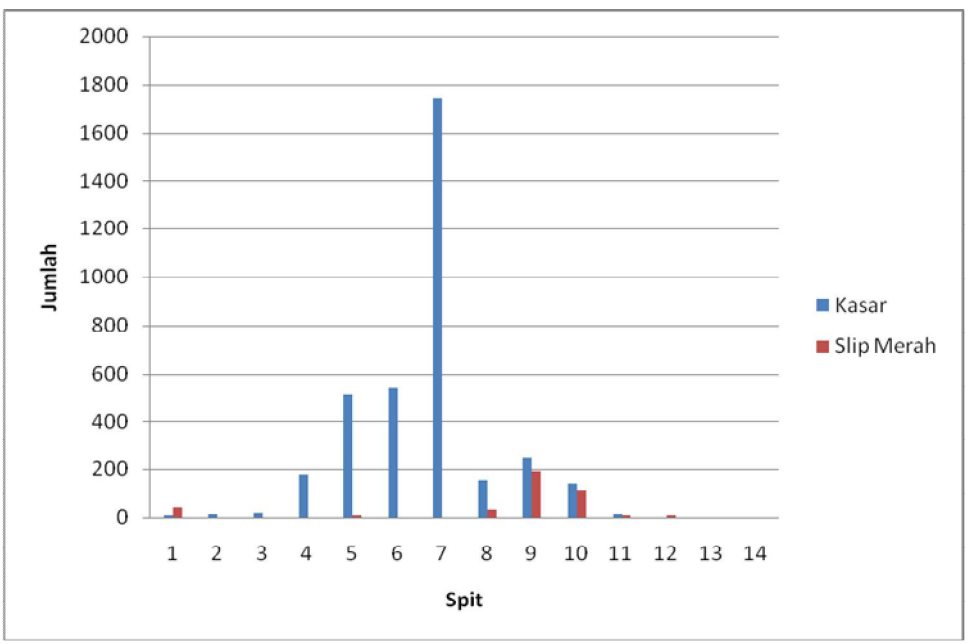

Fig. 6: Numbers (jumlah) of plain coarse pottery fragments (kasar) and red-slipped pottery fragment (slip merah) in each excavation level, labeled as Spit 1 (top, most recent level) through Spit 14 (bottom, most ancient level).

Probably the most important chronological information is learned from the stratigraphic distributions of red-slipped pottery versus plain and coarse pottery (Figure 6). The red-slipped pottery appears to be the earliest type in the site, most abundant in Spits 8 through 10. The coarse and plain pottery was present at this early period as well, but it became dominant after the red-slipped pottery diminished in the sequence after Spit 7 and above. A few stray pieces of red-slipped pottery in the uppermost Spits apparently were disturbed from slope-eroded contexts.

Decorations were found on five pieces of earthenware pottery. One piece from Spit 5 displayed straight-line incision in a pattern of adjoined triangles (Figure 7). Another piece from Spit 6 exhibited an upper-row of dentate-stamped point impressions, with a lower row of half-circle impressions (Figure 8).

Fig. 7: Decorated pottery fragment from Spit 5.

Fig. 8: Decorated pottery fragment from Spit 6.

The pottery chronology appears congruent with the overall settlement chronology for Sulawesi as proposed by Simanjuntak (2007). In this larger chronology, red-slipped pottery appeared with the plain and coarse type of pottery from the beginning of cultural use of the Kamansi Site and other sites in the Karama River Valley, dated about 3500-3000 years BP. A later phase of occupation was associated primarily with a super-imposed stratigraphic layer, where the red-slipped pottery no longer occurred but where the coarse and plain pottery became more abundant, dated about 3000-2500 years BP.

Red-slipped pottery often is viewed as a marker of early Austronesian settlement in Island Southeast Asia, found not only in the Karama River Valley but also in other sites of Sulawesi, North Kalimantan, the Philippines, and elsewhere (Bellwood 1997: 219–234). The earliest Neolithic sites with definite red-slipped earthenware in Island Southeast Asia were reported from the Cagayan Valley of northern Luzon in the Philippines, dated as old as 4000 years BP (Hung 2005, 2008). At Bukit Tengkorak in North Kalimantan, red-slipped pottery can be dated to 3000 years BP (Chia 2003; Simanjuntak 2006). In Sulawesi, the Leang Tuwo Mane‘e Site contains red-slipped pottery, dated to 3500 years BP

(Bellwood 1997: 229). The age of red-slipped pottery at Kalumpang and other sites in Karama Valley may be considered about the same age as in the Leang Tuwo Mane'e Site (Simanjuntak 2007).

The findings from the Kamansi Site generally support the notion of red-slipped pottery at the beginning of Austronesian settlement in Sulawesi, but at least two other questions then become relevant. First, was the red-slipped pottery made locally or imported from elsewhere? Second, what was the context of the decline of the red-slipped pottery and increasing popularity of the plain and coarse type of pottery later ?

Local production of red-slipped pottery appears most likely at the Kamansi site, for two reasons. First, ten fragments of hematite in Spits 7 through 11 (Figure 9) probably were used as the red coloring material for the pottery. Second, paddle-anvil stones indicate on-site production of pottery, discussed later in this text.

Fig. 9: Hematite from Spit 8.

The amount of pottery increased over time at the site, and this overall increase may have related to the disappearance of the red-slipped variety of earthenware. If the population increased and created greater demand for general-utility pottery, then perhaps the application of a red slip became less of a priority as compared to the need for sheer volume of pottery production. In this view, the quantity of the product was in some ways a higher priority over the qualitative characteristics.

STONE AND SHELL ARTIFACTS FROM THE EARLY SETTLEMENT PHASE

Of particular interest was a green-stone bead in Spit 8 (Figure 10), about 2.2 cm in diameter with a drilled hole of 3 mm at its center.

The green-stone bead at the Kamansi site was made of a rare material, known as nepheline, as tested and confirmed by Dr Yoshiyuki Iizuka in Academia Sinica of Taiwan, through a research organized by Dr Hsiao-chun Hung at the Australian National University. Geologically, nepheline forms in tectonic regions such as in Sulawesi. Generally speaking, however, similar objects elsewhere in Southeast Asia often are made of green-stone material from the Fengtian nephrite source in eastern Taiwan, and this same geological source was used for making a diverse range of ear-rings (*lingling-o*), bracelets, and other items eventually distributed broadly throughout Mainland and Island Southeast Asia (Hung et al. 2007). In Taiwan, Fengtian nephrite made into *lingling-o* objects have been found abundantly in the Peinan (Beinan) cultural sites of eastern Taiwan, dated about 3500–2300 years BP (Lien 1991: 344; Hung et al. 2007), roughly comparable to the findings at the Kamansi Site and other sites in the Karama River Valley of Sulawesi.

Fig. 10: Green-stone bead from Spit 8.

Fig. 11: Stone bracelet fragment from Spit 11.

Fragments of stone bracelets were made of a white-color stone material. One of the larger pieces was found in Spit 11, about 7 cm long and 2 cm wide (Figure 11). Based on observations of these fragments, the original objects likely were thick ring-like products, cut and polished from a raw material of white stone.

Another type of early artifact was a stone axe with perforation, locally called a "holed axe." One nearly complete example was found in Spit 9, measured about 5 cm long, 4 cm wide, and 4 mm thick (Figure 12). Its sharp working end had been polished on both faces. The distal portion included a perforated circle, about 2 mm in diameter. The exact form of utilization is unclear at this time, but the small circular hole presumably was used for

attaching cordage, possibly to a handle. The sizes and shapes of this type of artifact vary greatly in the region.

The "holed axe" possibly may be viewed as similar to other perforated tools in Neolithic sites of Taiwan (Figure 13). The potentially similar artifacts in Taiwan could date as early as 4500 years BP (Bellwood 1997), much earlier than the Kamansi Site and other Neolithic sites in the Karama River Valley of Sulawesi.

Fig. 12: Axe with perforation, from Spit 9.

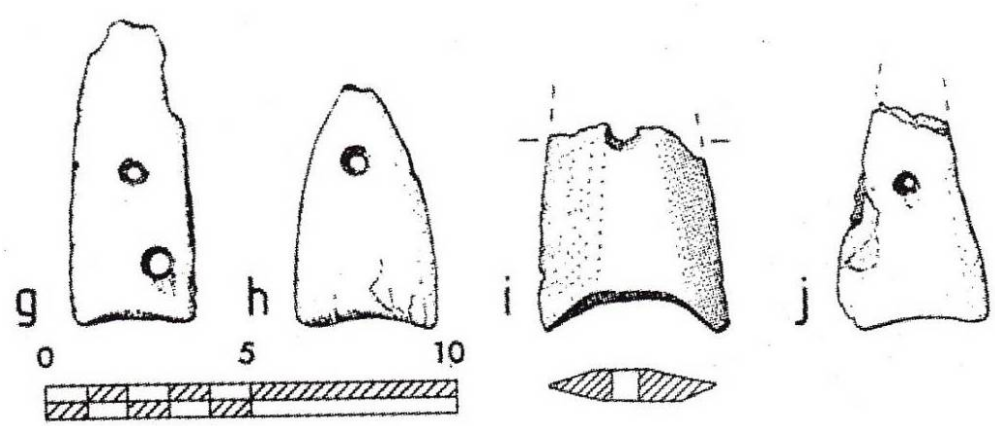

Fig. 13: Perforated stone points from Yuan Shan in northern Taiwan. Reproduced from Bellwood (1997: 216).

Mollusk shells were counted as 39 pieces from the early settlement phase, including 12 pieces with definite signs of cultural modification as artifacts in Spits 9, 10, and 11. All of the items appeared to be made of shells of the Pelecypode Class. Family-level and lower taxonomic identifications were not always possible, given the fragmentary nature of cultural modifications of the shells.

Two types of shell artifact can be discerned from the fragments. One was exemplified by a piece in Spit 9, resembling a sharp tool, about 3 cm long, 1.5 cm wide, and 2 mm thick (Figure 14). Another exemplary type also was found in Spit 9, resembling a scraper-tool and made of a clam-shell of the Veneridae Family, with a chipped outer edge and purposeful hole cut into the back portion (Figure 15).

The shell tools at the Kamansi site may be compared to the more abundant findings of shell artifacts at the Uattamdi Site in Kayoa Island near Halmahera in Indonesia. At Uattamdi, similar shell artifacts, as well as many others, were found in a cultural layer containing red-slipped pottery and dated about 3300-2300 years BP (Noerwidi 2003: 73). The dating appears approximately similar and perhaps a little later than the expected date-range of the Kamansi Site and other Neolithic sites in the Karama River Valley.

Fig. 14: Mussel-shell tool from Spit 9.

Fig. 15: Perforated shell from Spit 9.

Several pieces of adze or axe were found in Spits 8 through 12. A nearly complete stone adze in Spit 8 was measured 14 cm long, 6 cm wide, and 4 cm thick (Figure 16). It was fully shaped, but it was not polished. Another was found in Spit 9, resembling a pre-form of adze, about 10 cm long, 8 cm wide, and 4 cm thick.

Five pieces of grinding-stones (also called polishing-stones or whetstones) and fragments were found in Spits 9 through 12, giving strong evidence of local production or maintenance of adzes and axes at the site. One good example was found in Spit 10 (Figure 17). Other pieces of chipped stone and river-related cobbles conceivably related to the raw-material of these activities.

Another important artifact type was the "paddle-anvil" type of stone, including six pieces from Spits 7 and 10. These resemble tools for use during pottery-making, specifically for finishing the shapes of pots by paddle-and-anvil technique, as well as possibly by burnishing. As shown in Figure 18, two discernable shapes include an elliptical

form (usually about 5 cm long and 4 cm thick) and a circular form with a flat side (usually about 5 cm long and 3.5 cm thick).

Ethnographic examples of paddle-anvil tools in Sulawesi are shown in Figures 19 through 21, remarkably similar to those objects found in the Kamansi Site. The elliptical type sometimes was used for pressing the wet clay material into a desired shape, while the flat-circle type was used for finishing the outer-edge shape (Anonymous 2011: 35).

Fig. 16: Adze in situ in Spit 8.

Fig. 17: Polishing stone (whetstone) from Spit 10.

Fig. 18: Stone "paddle-anvils" of elliptical type (left and middle) and circular-flat flat type (right) from Spits 7 and 10.

Fig. 19: Stone paddle-anvils used during pottery-making in southern Sulawesi. The two on the left are elliptical types. The two on the right are circular-flat types.

Fig. 20: Stone paddle-anvil, used during pottery-making in southeast Sulawesi.

Fig. 21: Wood paddle-anvil of tapering shape, used during pottery-making in southeast Sulawesi.

STONE ARTIFACTS FROM THE LATER SETTLEMENT PHASE

In the later settlement phase, eight obsidian artifacts were found in Spits 4, 5, and 7 (Figure 22). These resembled various small items for cutting, slicing, and plane-carpentry tools. The raw-material source has not yet been clarified, but possibly it came from a distant location. Some scholars have mentioned that obsidian may have been used as an item for trading or barter among Neolithic communities (Soejono 1993: 183).

Fig. 22: Obsidian artifact from Spit 4.

In Island Southeast Asia, obsidian artifacts have been found that were traded over very long distances. At the Neolithic site of Bukit Tengkorak in Malaysia, obsidian artifacts came from as far away as the Talasea source in New Britain, east of the main island of New Guinea in Melanesia (Bellwood 1997: 224). The associated cultural layer at Bukit Tengkorak contained red-slipped pottery and has been dated about 3000-2000 years BP (Chia 2005:5). Other examples of obsidian artifacts in the region come from the Gua Kabon Site, possibly in a layer pre-dating Neolithic occupation (Yondri 2010:7). Overall, Indonesian archaeologists regard obsidian artifacts as belonging to the Neolithic or Austronesian Period, because these items routinely are associated with earthenware and rectangular axes that characterize the period, most often in the later phase post-dating the use of red-slipped pottery (Soejono 1993: 183).

Two stone adzes were found in Spit 5. The first example (adze 1) showed a rectangular section-shape, broken at its base, and with a surviving portion that measured 6.4 cm long, 3.9 wide, and 0.8 cm thick (Figures 23 and 24). The second example (adze 2) showed a rougher form, apparently still in the process of shaping (Figures 25 and 26). Some of the broken stone material from the excavation may have been related to adze-making activities at this location, possibly using the accessible river-cobbles and boulders. The first-noted example (adze 1) appeared similar to the “type 2, variation a” as proposed in the adze-typology by Roger Duff (1970), but the second-noted example (adze 2) was not yet finished in a manner that allowed comparison with the typology-system.

Fig. 23: Adze 1, from Spit 5.

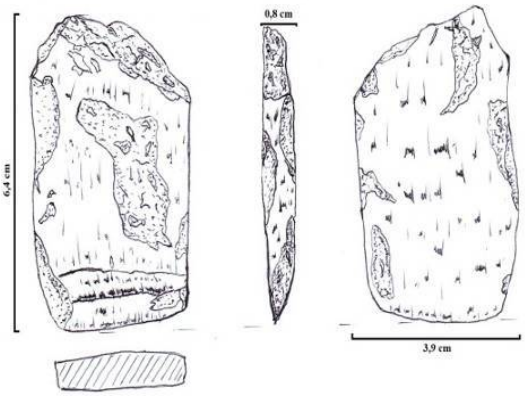

Fig. 24: Adze 1, from Spit 5.

Fig. 25: Adze 2, from Spit 5.

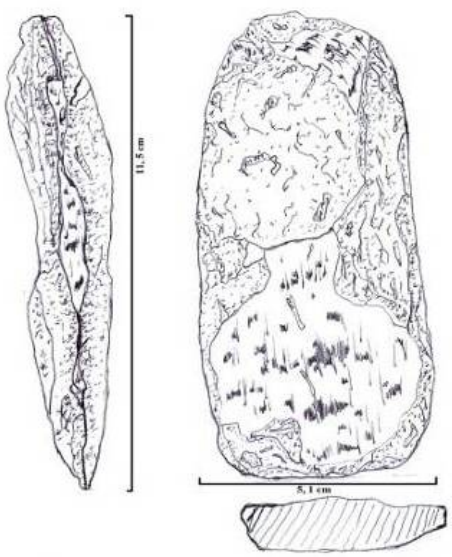

Fig. 26: Adze 2, from Spit 5.

CONCLUSIONS

Test-pit excavation at the Kamansi Site found evidence of Neolithic occupation by a group that made and used pottery, stone tools, and shell tools along the Karama River in Sulawesi, Indonesia. As with other Neolithic sites in the Karama River Valley, the oldest Neolithic layer at the Kamansi Site contained red-slipped pottery, and the later phase of occupation contained more abundance of plain and coarse pottery without the red-slipped variety.

These findings generally support the model by Simanjuntak (2007) of Austronesian settlement beginning with Neolithic sites in the region. The pottery and other materials are overall similar with prior findings in a chronology that begins with red-slipped pottery about 3500-3000 years BP and continued with other plain and coarse types of pottery in later phases. The later phases of Neolithic sites show gradual transition into the historically known periods of Indonesia, so the Neolithic Period with red-slipped pottery generally is regarded as the foundation of Austronesian-speaking populations and cultural traditions of Indonesia.

The riverside site at Kamansi provided important clues about local manufacture of pottery and stone tools at this location. For pottery-making, the compelling evidence included both the hematite (used for making red slip) and paddle-anvil stones (used for shaping the wet clay into pottery vessels). For stone tool-making, the evidence included adzes and axes in various stages of completion, plus flaked by-products and possible raw materials of river-cobbles and boulders.

In addition to the local production activities at the Kamansi Site, the presence of obsidian suggested the possibility of long-distance transport or trade of this material. The exact source is not known, but so far no geological occurrence of obsidian is known within the immediate area of the site. Obsidian is known as an item that was transported over very long distances n Island Southeast Asia, sometimes with links as far as Melanesia.

A rare discovery of a green-stone bead exemplifies the importance of an Austronesian tradition of using green-stone material in specialized ornaments. This particular item at the Kamansi Site was made of a rare raw-material known as nepheline, found in tectonic regions such as in Sulawesi. The use of this rare material is extraordinary, reflecting the importance of this kind of green-stone material for ancient Austronesian people.

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印尼蘇拉威西西部之卡拉馬（Karama）河谷卡曼西（Kamansi）遺址的古南島語族考古證據

Budianto Hakim*

摘要

印尼蘇拉威西（Sulawesi）卡拉馬（Karama）河谷的遺址發現了許多關於古南島語族出現的定年與相關資訊，特別是位於卡龍龐（Kalumpang）的卡曼西（Kamansi）遺址。紅衣陶的出現代表最早的新石器族群的到來，以及其後持續的定居與文化變遷。每個遺址的定年雖然都有些問題，但還是可以看出整個區域性的年代學概況。基於已有的碳素年代、地層與其伴隨的器物，可以從整個蘇拉威西大範圍的年代框架中來理解這些出土的陶器類型及其他相關發現。望加錫考古隊（Balai Arkeologi Makassar）的研究結果確認卡曼西遺址與卡拉馬河谷上的其他考古遺址擁有相似的聚落年代。

卡拉馬河谷有幾處遺址出現的紅衣陶與其他物質都被視爲印尼新石器早期（3500 – 3000 年前）的代表文物。在這個年代之前，在狩獵採集者的遺址並沒有發現與石器伴隨的任何陶器，也因此，陶器的出現代表了當地物質文化的重大改變。在這個年代之後，陶器序列穩定地發展經新石器、鐵器與歷史時期而沒有太大的侵入性變化。這個地區出土陶器的新石器時代遺址大部分位於卡拉馬河谷大支流的兩側。在今天，河流的海拔不同，但皆高於防洪水平，但在某些遺址，原始文化層可能非常接近河邊。河流的自然力量可能造成發現墓葬遺址的困難。它可能也擾亂了古文化層，不過，大部分文化層都因有保護而未受到破壞。

卡曼西遺址提供了檢視印尼新石器早期地層的機會。在 2011 年，我們挖掘了一個面積 1 平方公尺、深 2 米的新探坑。它的地層顯露出 2 層不同的文化層：最早期的紅衣陶、石器與貝類遺留；以及晚期的稍有不同的陶器及其他器物。這次發掘的深度爲 2 米，下面則是這個遺址沒有文化遺留的階段。

這次的發現包括紅衣陶、素面陶、石錛、與石片器殘留、石斧、貝環與石環等裝飾品、磨製石器、獨特類型的綠石珠，以及其他類型的器物。最重要的是這些器物是在依地層次序被發現。這些新發現讓我們得以更正確的認識這個區域的新石器時代早期文化。舉例來說，最早期的年代以紅衣陶爲代表，而晚期則以素面陶爲主。其他器物與貝塚也可做爲這兩個新石器時期區分的標準。重要的是，這些發現提供了關於印尼地區古南島語族文化出現的更多資訊。

關鍵詞：聚落年代、南島語族、陶器、卡曼西（Kamansi）遺址

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