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Connecting Dots: A Review of Past Funerary Practices on Prehistoric Burials in Indonesia

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I gifted all my blood and tears when the time
home seems far away, to my beloved
dad, grandpa and grandma
who passed away during these
2 years of master.
"Where, O death, is your victory?
Where, O death, is your sting?"

Abstract

This study investigates prehistoric burial practices in prehistoric Indonesia. We comprehensively reviewed 26 sites dating from the Late Pleistocene to the Late Holocene. Our research findings show that burial customs evolved. During the Late Pleistocene period, predominantly flexed burials and evidence of deliberate care for individuals with disabilities were observed. The Early Holocene continued this burial trend while introducing the use of ochre. In the Middle Holocene, primary burials in a flexed position were still prevalent, ochre application and secondary inhumations were evident. The Late Holocene marks a diversification in burial practices. Flexed and extended primary burials, incorporated burials, and burials in urns were observed. Gender-specific insights revealed that female burials often included grave goods. This research enhances our understanding of prehistoric burial practices in Indonesia and highlights the importance of caves as important burial sites. In addition, this research also provides a glimpse into gender roles, which allows us to understand the palaeodemography and social structure of ancient Indonesian society. In conclusion, this thesis offers a comprehensive analysis of prehistoric Indonesian burial practices, highlighting this fascinating cultural, social and chronological dimensions.

Questo lavoro esamina sulle pratiche funerarie preistoriche nell'Indonesia preistorica. Abbiamo condotto una revisione completa di 26 località che vanno dal Tardo Pleistocene al Tardo Olocene. I risultati della ricerca dimostrano che le pratiche di sepoltura si sono evolute nel passare del tempo. Durante il Tardo Pleistocene, sono state osservate sepolture primarie prevalentemente flesse e prove di cure deliberate per individui con disabilità. Il periodo del primo Olocene ha continuato questa tendenza di sepoltura, introducendo l'uso dell'ocra. Nell'Olocene medio, le sepolture primarie in posizione flessa sono ancora prevalenti, l'applicazione dell'ocra e le inumazioni secondarie sono evidenti. Il tardo Olocene segna una diversità nelle pratiche di sepoltura. Sono state osservate sepolture primarie flesse, sepolture primarie estese, sepolture incorporate e sepolture in urne. Le analisi specifiche per genere hanno rivelato che le sepolture femminili spesso includevano corredi funerari. Questa ricerca migliora la nostra comprensione delle pratiche di sepoltura preistoriche in Indonesia e sottolinea l'importanza delle grotte come importanti luoghi di sepoltura. Inoltre, questa ricerca fornisce anche uno sguardo ai ruoli di genere, che ci permette di comprendere la paleodemografia e la struttura sociale dell'antica società indonesiana. In conclusione, questa tesi offre un'analisi completa delle pratiche di sepoltura indonesiane preistoriche, evidenziando le dimensioni culturali, sociali e cronologiche di questo periodo così affascinante.

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List of Abbreviations

AMH	Anatomically Modern Human
AMS	Accelerator Mass Spectrometry
etc.	Et cetera
e. g	exempli gratia
BP	Before Present
cal	calibrated radiocarbon age
ISEA	Island Southeast Asia

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I. Introduction

1.1. Theoretical Framework

L'anthropologie de terrain is a methodology that is based on taphonomical data to reconstruct past funerary practices (Harris, 2010) In English literature, field anthropology is a literal translation for *l'anthropologie de terrain*, which defines as a methodology that is seated firmly in the principle of archaeothanatology, accompanying the taphonomical methodology (Harris J. et al., 2015).

In other words, archaeothanatology is a discipline that grew out of biological anthropology. The name has derived from the compound word formed by 'archaeo' ('ancient') and 'thanatology' which is the study of death, its practices, physical and societal effects, as well as the social and cosmological concepts surrounding deaths. (Duday & Guillon, 2006) and Schmitt (2017) also referred to this field as the "Archaeology of Death" in English literature. The most prominent feature of this study is that it places human remains at the centre of archaeological research (Knüsel & Schotsmans, 2022).

According to Duday (2009), the aim of archaeothanatology is to reconstitute ancient populations' attitudes about death by focusing on the study of the human skeleton and analysing the acts associated with the management and treatment of the body. Moreover, Boulestin & Courtaud (2022:47) summarise the archaeothanatological approach in three phases: "The first is field observation, the second is reconstructing the disposition of the remains at the time of their final deposition and the way the assemblage was constituted, and the third is the interpretations in terms of mortuary behaviours and social information more generally".

Tiesler (2011:491) has summarised archaeothanatology is 'a mindset in scholarship which is anchored in a proactive approach to conducting and thinking about funerary archaeology' (in Knüsel & Schotsmans, 2022). Thus, field anthropology is a method that informs about archaeothanatological discussions. This method enables researchers to infer funerary practices that would otherwise be invisible, shedding light on how past communities dealt with death as both a physical and metaphysical phenomenon (Duday, 2009).

Speaking of the main object of observation in archaeothanatology, prehistoric burial and human burials are the most frequently encountered classes of cultural features observed by archaeologists and become the center for their studies. The methodological choice for archaeothanatology consists simply of placing the deceased as the center of interest in the tomb (Ahola, 2019; Binford, 1971; Duday, 2009). Correspondingly, Tarlow & Stutz (2013) argued that burials fascinate people around the world with the "beautiful things" they possessed also the practice of burying the dead is a window into the memory work of past societies (Boutin & Porter, 2014). Beyond the beauty and the high-quality work of art, archaeologists are obliged to provide a foundation for the rich and complex stories about the deceased one who is buried inside and about the society in which those ritual practices were carried out.

In other terms, the early evidence of deliberate early modern human burial appeared from the Levantine region – 'the gates of Europe' (Hublin, 2000). The Skhul and Qafzeh clusters in Mount Carmel, Israel acquires some Paleolithic burial features with the broad time range from ca. 120.000 – 90.000 BP (Grün et al., 2005; Vandermeersch & Bar-Yosef, 2019). Meanwhile, in the African continent, a human burial is known from Kenyan coastal plain, here lied a child burial from 78.300 ± 4.100 BP, this finding marking the emergence of 'modern-human behaviour' in the Middle Stone Age (Martinón-Torres et al., 2021).

However, investigating human burials using archaeothanatology methodology does not mean undervaluing the significance of grave goods, the social dimension of which is directly linked to funerary ideology, and which frequently provides information for dating the grave. Because individual burials are perfect examples of closed contexts, grave goods play an important role in reconstructing the relative chronology of different types of artefacts (Duday, 2009). After all, the study of human burials with archaeothanatological approaches, further, made it possible for an examination of variations in mortuary practices to discuss population substitutes, human migration pathways, and various aspects of social behaviour.

On the other hand, Tayles et al. (2015), in their study of Pha Phen burial from the Middle Mekong Valley, Laos, have stated about the chronology of the skeletal remains that is determined by using a wide variety of the definitions of the prehistoric period, such as attributions to Palaeolithic/Mesolithic/Neolithic. This assertation has implications to the

characteristics of the societies (Kanjanajuntorn, 2020) to which these individuals belong, such as whether their subsistence included domesticated animals and plants, the type of complexity of the stone tools technology they used, and whether they lived in the sedentary communities. These terms cannot be applied to the samples from Middle Mekong Valley, because many of the remains have little or no archaeological context, or the context interpretation for the samples sometimes are outdated.

The use of Pleistocene or Holocene geological timescale is a common alternative Tayles et al. (2015), but it is important to have a consensus of the subdivision from these two periods based on the recent Geologic Time Scale (GTS) (see Head, 2019) throughout Southeast Asian prehistoric context. This needs to be agreed among scholars, to avoid what Tastated as *"these geological timescales lack precision. The definition of 'early' or 'mid' Holocene, for example, varies among researchers"* (Tayles et al., 2015:5).

Again, another limitation is that the publications which solely concentrate on these approaches are scarce and archaeothanatology is still underutilised throughout ISEA. Most publications describe the burial treatments and bioskeletal profiles of interred individuals have been used to review mortuary practices from the Pleistocene period and beyond (Harris J. et al., 2015; Samper-Carro et al., 2022). According to Zeitoun et al. (2013), archaeothanatology cannot illuminate mortuary rituals in Southeast Asia due to the lack of trustworthy chrono-cultural markers and comprehensive descriptions of burials. This is also due to the lack of application and linearity of archaeothanatology in the Southeast Asian prehistoric funerary practice, which can make it challenging to form such in-depth studies at times.

1.2. Research Aims

This research is aimed to analyse the approach of prehistoric human burial research in Indonesia precisely and its limitation. Secondly, my thesis is also trying to create a comprehensive information about the prehistoric burials in Indonesia that potentially becomes a reference study in the future, especially in the methodology of archaeothanatology. Eventually, this thesis is going to provide an extensive synthesis of data on human burial for the studied areas and highlighting the features of the burial sites in Indonesia based on available secondary data, through maps and tables. Shortly, this thesis is trying to show a grand picture of prehistoric funerary practices in Indonesia in a

facile way but without leaving the important key information about the mortuary practices.

II. State of Art

2.1 The Definition and Organization of Funerary Practice in Archaeothanatology

The approach of archaeothanatology basically was developed in France in the early 1980s. This formulation was very successful due to its apparent clarity for French archaeologists, being the discipline in which the person studying human bones, the anthropologist, while being a biologist, works not only in the laboratory but also in the field, for example on archaeological excavations, to participate directly in the data collection and recording (Duday, 2009). Over time, the methodology begun to gain the niche outside the French scholars, in the past years (Harris J. et al., 2015). The beneficial of this method started to be demonstrated by various researchers around the globe, including in Southeast Asia such as the works that have been done Galipaud et al., 2016; Harris, 2010; Harris & Tayles, 2012; Samper-Carro et al., 2022; Willis & Tayles, 2009; and Zeitoun et al., 2013.

In this context of the thesis, the criteria samples in this thesis are based on the funerary practice and the whole structure encompassing it. The repeated actions/gestures/deeds accompanying the intentional interment of the deceased are what we understand as funerary practice including the preparation (before interment), burial practice (structure of the grave, position of the corpse, and the funerary material) and post-burial course (reopening the grave, manipulation of the bones, dismemberment, and secondary burial) to the whole integrated funerary practice (Duday, 2009; Knüsel & Robb, 2016).

Moreover, the burial practices are divided into inhumation and cremation (Maggio, 2018). Inhumation occurs without burning the body. It involves digging up a grave or burial structure for the house for the dead (Pearson, 1999). This thesis will infer the inhumation as a funerary deposit (Duday, 2009). On the other hand, cremation burials contained the body of the deceased that had been burnt first. A pyre or crematorium must be built, and then the body must be burnt entirely until all the remains will be fragments and ash (McKinley, 2013).

Meanwhile, this practice could have resulted in two ways: primary and secondary cremation graves. Primary cremation grave is inferred when both the place of cremation and the remains are interred at the same place. In contrast, a secondary cremation grave is the collection place where the cremated remains were deposited and moved from their crematorium (Knüsel et al., 2022).

The funerary deposits based on Duday et al. (2014) consist of primary and secondary burials. Immediate burials are also known as "simple funerals" due to the single ceremony for the remains while the body is still anatomically intact, then placed in the final grave. After the burial, the decomposition happens almost entirely in the last grave. At the same time, secondary burials refer to when the human remains are manipulated into two different stages. The initial process of this deposition is putting the corpse in a temporary burial and later decomposition. Later, when the corpse is skeletonised, it will be transferred into its final grave.

The funerary deposits are based on the number of individuals inside the burial individual, plural, multiple, and collective burials. A complex “necropolis” or cemetery consists of numerous tombs with usually single vaults; each grave has its own structure. Meanwhile, multiple burial comprises several corpses, and the deposition happens simultaneously, usually due to natural disasters, plagues, mass murder, etc. On the other hand, collective burials are where the corpses have been deposited at different times, and the structure has been reopened for another corpse deposition (Boulestin & Courtaud, 2022; Duday et al., 2014). Knüsel & Robb (2016) add the commingled remains that might be encountered in the burial sites. Commingling occurred when multiple human remains were deposited more than once over time, as evidenced by variations in the completeness and articulation of the remains.

The presence of grave goods is another context in Indonesian funerary practice. Grave goods are the items that accompany the interment process of the dead person. Besides the position as a significant component of mortuary rituals, additional information is embedded in the grave goods existence (Chang, 2001). Grave goods such as animal symbols, food, tools, weapons, clothing/cosmetics, and personal ornaments/jewellery inform us about the environment, subsistence, and economic relationships among the living communities. (Chang, 2001; Pearson, 1999). Thus, to understand and review the prehistoric funerary practice in Indonesia, these mentioned principles are used as the standard for interpretation.

Another critical assessment is the biological data of the dead, which must be collected, including age at death, and sex. This data is essential in the Indonesian prehistoric context to understand how the organisation of funerary practice in the past communities.

2.2 A review of the study of prehistoric funerary practices in Southeast Asia

The emergence of the burial in Island Southeast Asia also remains perplexing. This is related to the puzzling circumstances of the appearance of Anatomical Modern Human (hereafter AMH), similarly with the rare appearance of the deliberate human burial in the Pleistocene time. Then again, problem remained in Southeast Asia, because unlike eastern Eurasia and Northeast Asia, the arrival of AMH in Southeast Asia is not signalled by a completely new tool tradition comparable to Upper Paleolithic (Oxenham & R. Buckley, 2017).

On the other hand, Sémah (2014) gives the enlightenment about the fossil record, in Southeast Asia which grows into much more extensively documented after the Pleistocene-Holocene boundary, when sea level elevated dramatically, implying an all-encompassing redistribution of human groups. The geography of the Sunda shelf altered significantly at the end of the Last Glacial Maximum (LGM), from a vast formed continental area to the current archipelagic condition. Piper (2015) stated as well that the essential ecological shifts that occurred during the terminal Pleistocene and Early Holocene also aligned with one of the pivotal periods in the region's human history, which included significant changes in technology, intensification of plant processing, and the emergence of burial tradition.

This initial study focuses on the application in the sites of Ban Lum Khao and Noen U-Loke, Thailand. This study demonstrates archaeothanatology technique which allowed them to observe the pattern of mortuary practice in the social organisation in the late prehistory of upper Mun River Valley. The aspects of burial mode that were identified with this method showing the more uniformity over time, there were at least two modes of burial: wrapped or in coffin.

In the same work by Willis & Tayles (2009) also stated the potential of archaeothanatology methodology on the investigation of human burial. They stated when the methodology techniques are used, it can contribute a largely invisible aspect to mortuary rituals at archaeological sites, delivering a more thorough interpretation than material culture alone. The more this innovative method is used and refined, and the implications are understood, the greater the potential for a deeper understanding of mortuary practices.

Still in Thailand, Harris (2010), and Harris & Tayles (2012) introduced the methodology archaeothanatology in the site of Ban Non Wat. The main aim of his thesis was to examine the mortuary practices used in each mortuary phase and compare the practices over time archaeothanatology method. Upon the base of archaeothanatology, the result of this study in Ban Non Wat determined the burial type, burial position and burial context from nine mortuary phases (Fig.1). The nine phase itself spanned from the burial type of flexed burials, Neolithic 1, Neolithic 2, Bronze Age 1, Bronze Age 2, Bronze Age 3A, Bronze Age 3B, Bronze Age 4, Bronze Age 5, Iron Age 1 and Iron Age 2 which each of these phases certainly has its own date range started 1750 BC until 200 AD. Meanwhile the burial position described on how they put the human remains in each burial such as either supine position or on side with knees flexed or supine but extended position. Then, the burial context as they described comprised of loosenon-durable wrapping/no wrapping, tight non-durable wrapping, tight durable wrapping, narrow coffin, and wide coffin. In this study, Ban Non Wat's human burials that consisted of 244 adult burials were also analysed through the documentation of photographs and field drawings with

Source Van Heekeren (1957).Figure 0 - Ban Non Wat Burial no. 123 with the abundant of grave goods Source: Charles Higham.

the archaeothanatology outlook. They stated in the same work that archaeothanatology-based method that has been synthesised in his research was constructed to allow the analysis of large number of the burials, even in the post-excavation process based on the documentations. Then, it could potentially be used on burials from any sufficiently recorded and preserved data from the site. It is a useful and accommodating tool for the accumulation of knowledge about previous societies because this type of research can be conducted using the records kept during an archaeological excavation.
In the burial from Mesolithic period near the painted rock-shelter of Ban Tha Si in Northern Thailand is also another case of archaeothanatology application. The work done by Zeitoun et al., (2013) described the grave of a single individual which was found near to the wall of the rock-shelter, the body was positioned on its right side, the head is missing, and the lower and upper limbs are flexed with the hands close to where the chin would have been. This individual was buried directly in the soil. From the structural carbonate which present in the mineral fraction of the bone (bioapatite) was sampled and produced an age of 7047 ± 53 BP.

Lloyd-Smith (2012, 2013) studied the early Holocene in the West Mouth of Niah Cave in Sarawak, where one of Southeast Asia's largest series of stratified prehistoric burials was discovered. Following a reassessment of the burial data, documentary records, and, where possible, skeletal remains, 209 'proper' burials were identified: 25 from the Early Holocene and 184 from the Neolithic or later.

Even though he did not apply the methodology of archaeothanatology, based on the latest classification of the burials, it is shown that the classification reach detailed information such as first order classification (primary, secondary and multiple) followed by second order classification (flexed, seated, extended, un-burnt, including cremation, solely cremation, charred and semi-articulated), then the third order classification (tightly flexed, loosely flexed, flexed seated, decapitated, charred, arm positioning and skull only) with higher order variables (grave goods, red colouration, and container). All this classification is linked from the first to the last order and creates such thorough data for the interment.

Lara et al., (2013) presents an excellent case study of burial C.758 from the Ille site in Palawan, the Philippines, with a detailed mortuary procedure, which is not a common study in Southeast Asia (Harris J. et al., 2015). According to dating of the human bone from burial C.758, the person lived during the early Holocene, between 7.475 and 7.056

BCE (Lewis et al., 2008). It was deduced from a careful examination of the skeletal remains that the body underwent several ritualistic procedures before being buried in what appears to have been an organic container. These techniques included systematic skeletal disarticulation, defleshing, element smashing, and burning. Each step seems to have occurred while the bones were still fresh, and the way they were applied suggests that the authors were familiar with the situation. Given this familiarity and a preliminary examination of additional skeletons from the site, it appears that the treatment of C.758 was typical within Ille (Lara et al., 2013).

Another research, in the site of Pha Phen in Middle Mekong Valley, Laos also explained the mortuary practice that has been observed from an individual dated cal. 7180 – 7010 BP (Tayles et al., 2015). The skeleton is that of an adult, buried in a flexed position, lying on the right side with the knees drawn up and the arms crossed. It is possible that the body was wrapped to fit in the grave, and that the decomposition of the wrapping removed support from the left femur, allowing it to dislocate at the hip joint. Although in their work Tayles et al. (2015) did not mention explicitly about the employment of archaeothanatology, their work consists of the field observation that is including of the burial position and burial context carefully and thoroughly as Harris et. al (2015) defined. Until today, in Island Southeast Asia (ISEA) as far as our knowledge, the case in Liang Tebo (Fig.2) inferred as the oldest intentional primary burial of a modern human (Maloney, Dilkes-Hall, Vlok, et al., 2022). This burial might also shed the light of the emergence of prehistoric human burial in ISEA, dated to a secure Late Pleistocene age between 31.000 and 30.000 BP. The case of an individual that received a “surgical amputation” 6-9 years prior death, which then the inhumation process involving placing limestone rocks were positioned above the head and each arm of the individual and some materials including flaked chert artefacts, a nodule of red ochre which once placed near by the mandible, recovered from this grave.

The limitation of this example related to the application of archaeothanatology is that Maloney et al. (2022) focused on the study of medical practices in a group of foraging

Figure 1 - The flexed burial in Liang Tebo. Source: Maloney (2022)

modern humans in Borneo who lived in tropical Asia before the Neolithic farming transitional period. The burial feature is mentioned in the relation to the stratigraphical composition and how it is finally deduced to be a deliberate human burial. They discovered the individual's initial flexed position, and the grave goods in this burial. Other than that, the focus is more prominent in the application of osteological method.

Harris in 2015 argued generally about ISEA's situation, that the current evidence for burial practices suggests that both geographic and chronological variations played a large role, with the throughout practices appearing to have been diverse. Meanwhile, funerary practice in Indonesia, explained by Sahuteru (2006) has diversity throughout the different places based on the belief conception from ancestor worship. In the practice, then affected by the local genius which caused the differences from one place to another. Local genius,

according on Sulistiyawati (in Ruastiti, 2011) is the ability to resist the external culture influence to accommodating and integrating external cultural elements with indigenous culture.

2.3 Previous study of prehistoric funerary practices in Indonesia

The accompanying disciplines have been developed in Indonesia today to acquire further about the actual dead people from prehistoric times. One example is the work that considers measurements morphologically, morphometrically, and the pathological characteristics of the bones. Remember that, according to Duday (2009), morphological anthropology is a historical discipline that specifically focuses on archaeology with the goal of understanding population history. Ion (2021) also stated that the human remains can be used as diagnostic indicators of archaeological cultures, thanks to the development of physical anthropological methods in archaeology and the goal of identifying the cultural groups.

Study of Prehistoric Burials in Java

An exploration of prehistoric archaeology in Indonesia began long time ago, when the publication of the book The Iron Age of Indonesia (Van Heekeren H. R., 1957 1st ed, 1972

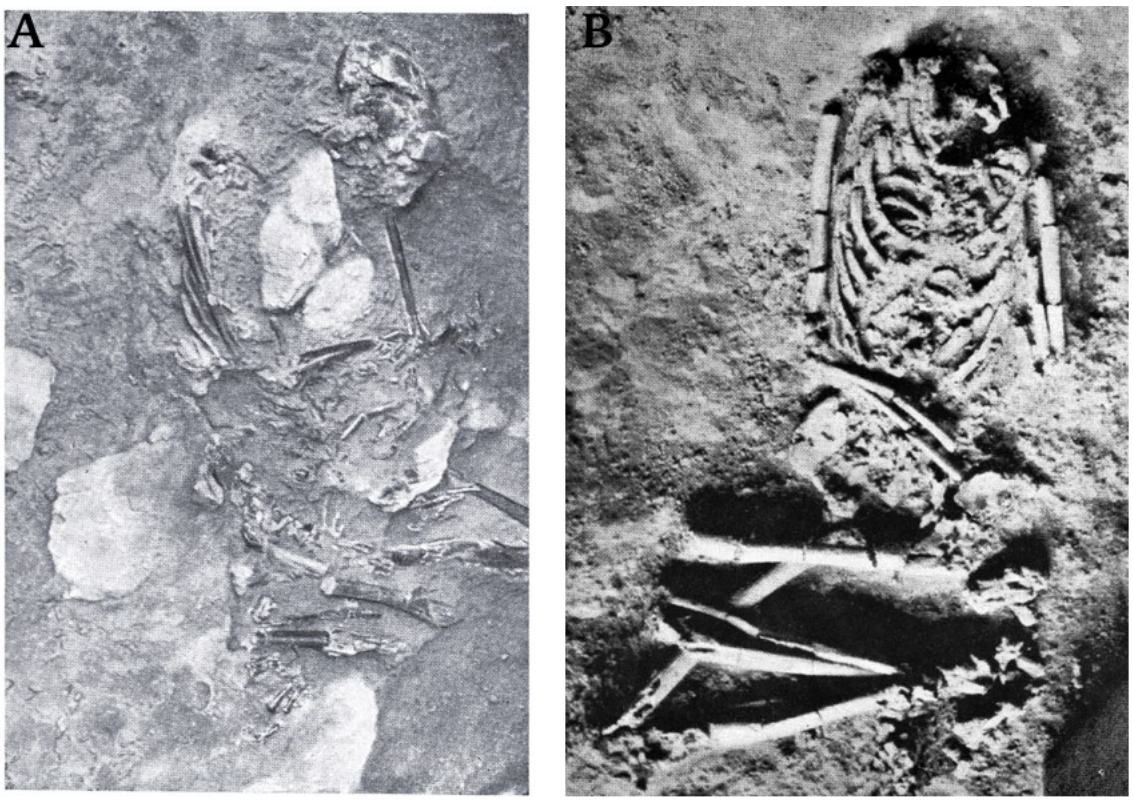


Figure 2 - A) Primary burial with flexed position in Gua Lawa.
B) Primary burial in flexed position with most of cranial part missing in Sodong rock-shelter.

2nd ed) became a beginning of the encounter analysis of human burial in the southern mountains of Java. He described that on his visit to East Java, near Ponorogo, L. J. C. van Es discovered in Gua Lawa, in January 1926:

> *"a human skeleton lying on its left side, the legs bent, with the head resting on the left shoulder and the right hand on the face*".
>
> *"The skeletons were lying in a contracted or flexed position, the hands under the chin or over the face, the knees sometimes drawn up towards the chin"*.

Another record from Van Heekeren H. R. (1972) in the Gua Marjan in the vicinity of the Sodong rock-shelter also yielded many human skeletal remains. However, only one person appeared to have been buried; the skeleton was lying on its back, legs flexed, in an east-west direction, with its head to the east (Fig.3). Three limestone blocks covered it. The skull was fractured with missing parts of the facial region, but this robust skull was otherwise in good condition. In his opinion, this cave was never inhabited by humans and was only used as a ceremonial burial site for a prominent individual.

In the same mountainous range, but in the Gunung Sewu area specifically, the work from H. T. Simanjuntak (1999) focused on the early Holocene period's subsistence through the exploration of rock shelters and caves. One of the cultural features of this period's livelihood is the primary or secondary burial with flexed position. His research investigated how prehistoric communities used caves for various purposes, including ateliers, living settlements, and burying the dead. Still in the Gunung Sewu area, the similarity of choosing the location for burial in the more isolated part of the cave was observed in the case of Song Keplek and Gua Braholo. In both caves, burials were discovered near the cave's western wall. The corpse in a flexed position, indicating special treatment. Simanjuntak (1999) eventually concluded that both Song Keplek and Gua Braholo shared the similar treatment of flexing the corpse with some local variation. More detail explanation about the human burial in Song Keplek, the corpse was buried in an oblique position, facing northwest - southeast. The head is facing south and east. Left hand folded across the chest, right hand folded with fingers touching the cheek. Both legs were folded, with the heel resting against the hip (Fig.4). C^{14} dating of charcoal from the grave context, indicates that this grave is 5.900 ± 180 BP. Other than that, Simanjuntak (1999) also indicated the secondary burial in Song Keplek, observed from 3 cranial without anatomical connection and some loose bones. However, it seems that Simanjuntak's examination of secondary burial is somewhat outdated based on the novel publications

from Détroit (2002, 2006). Adding some more details about the previous study from Simanjuntak (1999). Several flints and lithic tools were discovered all over the skeleton, including a quite large flint tool (around ten centimetres) between the two knees. Faunal remains (bones and mollusk shells) are also abundant.

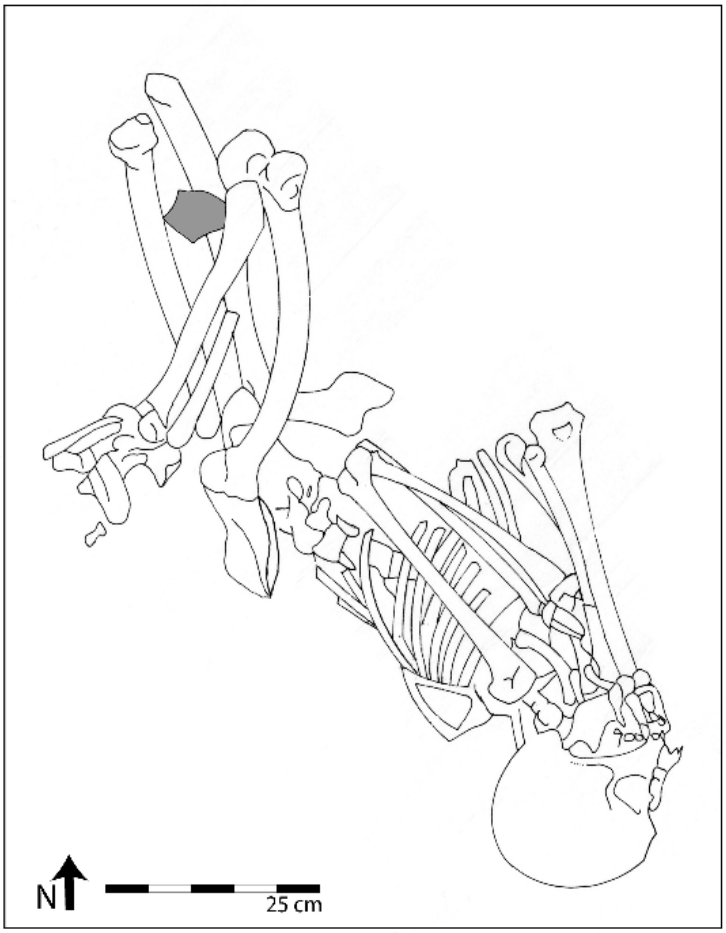


Figure 4 - The SK4 corpse position and orientation. Source: Détroit (2002)

Détroit (2002) later described about the extended burial of SK5. This burial contained a complete skeleton and anatomically connected almost perfectly (Fig. 5). The corpse was oriented to East-West with the head to the east. This corpse was found with extended legs and arms placed over the body, bringing both wrists to the level of the sternum and placed "over the heart". The head is slightly elevated compared to the skeleton. The head was "gazing" toward the feet of this individual, directionally to the west. Furthermore, very clean *effet de paroi* are visible along the skeleton: lateral alignments of the fifth metatarsal, tibia, patella, and proximal part of the femur were observed. A number of stones were removed from the top of the body, and some remains of macaque face with a few teeth

were discovered in the area of the heart, just below the fingers of the right hand, when the burial was cleaned for *in situ* study (Detroit, 2006).

In the latter revision by Noerwidi (2012), Song Keplek 5 individual obtained a younger dating from the first estimation (7020 ± 180) to the new dating on 3053 ± 65 cal. BP. This dating obtained from a rib fragment through the methodology of Accelerator Mass Spectrometry (AMS). From this new result, it shown that the human remains are from the Neolithic period of Java which is rare (Noerwidi, 2020).

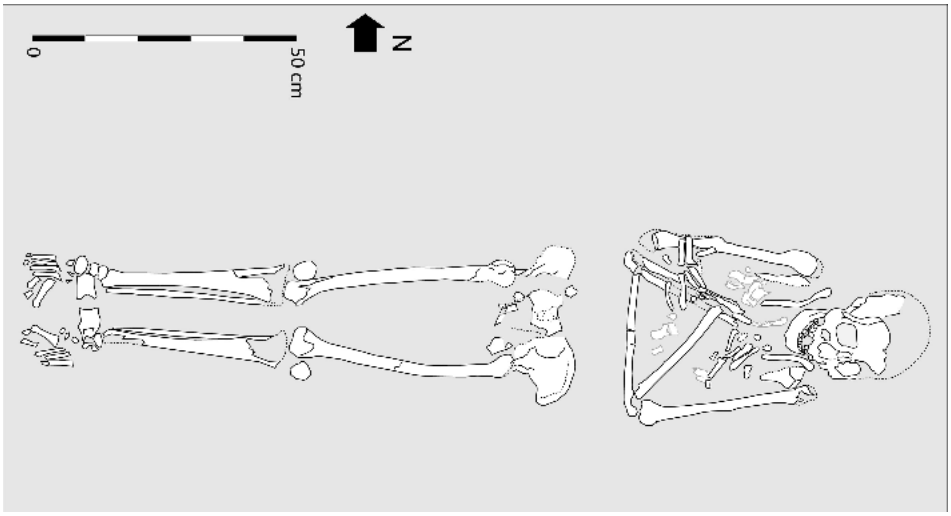


Figure 5 - SK5 corpse position and orientation Source: Détroit (2002)

Simanjuntak (1999) described one of the burials in Gua Braholo (BHL1) which date back to 9780 ± 230 BP, that makes it roughly 4.000 years older than Song Keplek's body. This grave was hidden beneath a thick hearth layer. The corpse was buried extended in an east - west direction, with the head to the west. Both legs were flexed, with heels close to the hips, a flexed left hand pressed against the chest, and a straight right hand touching the knee. Accodring to Détroit (2002), the general situation of this burial indicates a primary burial context. Upper part of the body was in supine position and swivelled on the right side. Two large stones placed over the body maintained the position of the individual. Legs were flexed on the right side, above the horizontal. Another large stone was laid across the ankles and feet. To possibly protect the corpse from animal burrowing or in spiritually way to prevent the spirit from leaving the body.

Détroit (2002) has described another burial from Goa Braholo (BHL2), with the date of 8760 ± 170 years BP. The small structure indicates the presence of a secondary burial (Fig.6). It contains dissociated parts of the skullcap, upper maxilla and mandible, teeth, incomplete pelvis, and one cervical vertebra. They were separated from each other, but they seem to be buried in a non-random order. Parts of the pelvis, including the sacrum and the right ilium without left coxal bone were found at the northern part of the burial. The skullcap was extensively fragmented right south of the pelvic bones. The cranium fragments were arranged in a small heap, clearly disregarding any original anatomical position. One cervical vertebra, one fragment of maxilla, and the right half-mandible were observed. To the east of the cranium fragments, the left half-mandible was found lying on its internal face. Two fragments of the left maxilla, the isolated right upper first incisor, and the part of the frontal bone of the upper margin of the right orbit were placed above and beside the cranial and pelvis fragments.

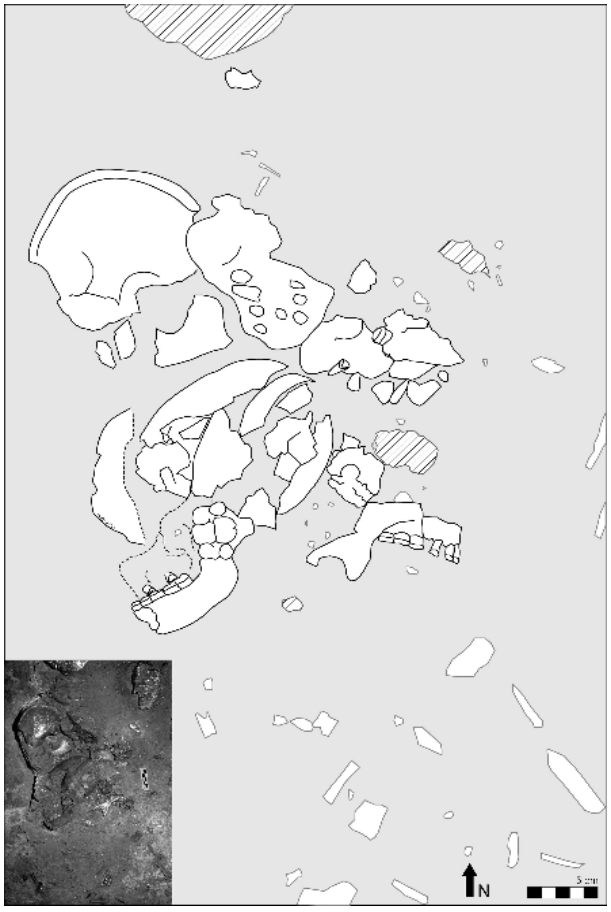


Figure 6 - The remains of BHL2, most probably secondary inhumation.
Source: Détroit (2002)

Three or 5cm think layer of very fine grey to white ashes was found beneath the skeleton. However, human bones do not show any evidence of burning. Only the margin of the large cranial fragment showed the altered aspect. Fire was probably used in the first stage of making the burial, but there is no evidence of an intention to cremate the skeleton. The human bones discovered in this burial are the result of a specific selection of the original complete skeleton of the deceased. The morphology of the fractures and the absence of anatomical connections in good preservation suggests this group of bones was buried long time after the death of the individual. However, it is unclear whether the body was buried first and then re-opened for the secondary burial, or it was exposed until the complete skeletonization. The absence of cutmarks on human bones or other indices of active human defleshing could refer to the first hypothesis.

Figure 7 - ST1 primary burial in the flexed position and grave good evidence, in the form of fauna remains. Source Détroit (2002).

Détroit (2002) described the cave with a burial feature in Song Terus in his dissertation. A.M. Moigne discovered the Song Terus burial site in the J9 excavation area, right against the cave's northern wall, in 1999. A 14^{C} dating on a mollusc shell found in the burial structure, just above the human skeleton, yielded a date of 9330 ± 90 years ago. The remains were flexed, lying on their right side in a natural cavity in the cave's north wall

(Fig.7). Its orientation is east-west, with the back against the wall and the head to the west (the original position of the skull has not been preserved). Several limestone blocks placed in front of the skeleton 'close' the burial structure. There is an indication of intentional human manipulation of the deceased body from the fractured tibia.

Later, Détroit (2006) highlighted the main featured of the funerary structures in some sites of Gunung Sewu, such as Song Terus with one human burial, Song Keplek with 2 different positions of the corpse in the interments, Gua Braholo with two types of deposits, there is a bit different with the interpretation with the observation from (Van Heekeren H. R., 1972) of Gua Lawa's deposits. Gua Lawa similarly with Gua Braholo contained "Mesolithic" cultural context, but in the case of funerary practice, Gua Lawa yielded inhumation and cremation indication. Meanwhile in Gua Braholo the inhumation practice comprised of primary and secondary inhumation, and there was no evidence of cremation.

Two human burials were discovered in 1999. A severely preserved burial in square K1 (probably a primary flexed burial based on the position and orientation of long bones) and a small burial structure in square KII, at a depth of 250 cm from the surface. The second burial is a small circular concentration of burned bones buried in grey-white ashy sediments. This structure, measuring 40 to 50 cm in diameter, was partially cut by the excavation of neighbouring square before this unusual funerary structure was identified. Recovered material indicates shows that the selected human bones were intentionally cremated.

This selection consists of the fragments of one cranium (skullcap, maxilla, mandible and teeth), few pieces of ribs and unidentified long bones. There is minimum one human individual for this assemblage. The erupted third molar was visible on the right half-mandible that indicates the age of the individual must be an adult. All the bones show the features of an advanced stage of incineration: grey colour with blue-grey to white zones. The surface is altered and fissured, and the enamel of all the teeth typically broke up during fire exposure (Détroit, 2006).

	Type of Deposit	**Position of the Corpse**	**Age (BP)**	**Global orientation (head – feet)**
Song Terus 1	Primary Burial	Flexed	9330 ± 90	W – E
Song Keplek 4	Primary Burial	Flexed	5900 ± 180	SE – NW
Song Keplek 5	Primary Burial	Extended	3053 ± 65	E – W

Braholo 1	Primary Burial	Flexed	9780 ± 230	W – E
Braholo 2	Secondary Burial	-	9760 ± 170	-
Gua Lawa (K II and TT 2)	Cremation Primary Burial	- Flexed	"pre-neolithic" (?)	-

Table 1 - Main features from the prehistoric burial practice in Gunung Sewu. Source Détroit, 2002.

The precise chronology of Gua Lawa deposits needs to be clarified. The assemblage found in the archaeological layer with the cremation showed the absence of Neolithic materials. However, this layer was rich in flake tools and bone tools. Even without the absolute dating, this burial could be considered one of the earliest human cremations from insular Southeast Asia. This discovery is important in the regional context with the Australian Lake Mungo I cremation which is believed to be the earliest in the world (Détroit, 2006). Corresponding to a short time interval (Early Holocene), these new discoveries provide invaluable data on the biological and cultural identities of Homo sapiens paleo-populations living in this area. Based on these datasets (Tab. 1), no clear visible chronological trend exists, unlike the hypothesis claiming that flexed burials preceded extended burials in Indonesia (Détroit, 2002). Thus, for the considered period, the results contrast to some extent with previous paleoanthropological models of settlements and migrations in Southeast Asia, which were in fact based on a very limited number of fossils.

Study of Prehistoric Burials in Kalimantan

The utilisation of archaeothanatology started from the inquiries by J. M. Chazine, (2005); J.-M. Chazine & Ferrie, (2008); and Ferrié et al., (2015) investigated the burials in East Kalimantan. From the first excavation in 2004 field excavation in Keboboh cave complex, the team unearthed two flexed and primary burials, from the pre-Austronesian characteristic inhumation process. Based on the flexed position (fetal position) lying or sitting on their left side and and from the feet and arms position indicating that the body had been wrapped in a mat or tied with rope, bark or barkcloth strips before being placed in the shallow burial pit. In 2006, the two skeletons' entire extraction process was carried out. The first, a very young, incomplete individual was discovered inside the front porch. Teeth were discovered in front of the skull, but the jaw was missing. Chert cores worked flakes and a significant quantity of snail shells were found in the second burial.

Later in 2015, Ferrié et al. inferred the Liang Jon's human burial in greater depth using Duday's (2009) methodology of archaeothanatology, such as the structure where this individual was buried (ST1) representing the primary individual inhumation. The truncation of the left shoulder region was most likely brought on by the installation of the structure made of limestone blocks after the body's decay, the grave was reopened, and the skull and right humerus were removed. A line of three stones that were positioned above the grave indicated that this burial had burial markers. The skull was absent, and a sizable pebble stood in its place. Eventually, limestone block which located in the head region may have been placed in the grave initially or after removal of the skull. Later, this work obtaining the dating of 2544 ± 30 BP (800-548 cal BC) from the bone's bioapatite. The studies in Keboboh cave and Liang Jon burials have given a preliminary overview of literacy research on prehistoric human burials in Indonesia using a archaeothanatological approach. Although this is novel, Noerwidi et al. (2022) made the significant notice that more thorough bioarchaeological analysis results regarding these significant findings have not yet been published.

Study of Prehistoric Burials in Aru

In the eastern part of Indonesia, precisely in Aru Island, a secondary burial in Liang Lembudu dated by associated charcoal to 16.000 – 18.000 cal BP, excavated by O'Connor, Spriggs and Veth. This adult female individual observed to possess evidence of dismemberment in the form of cut marks on the upper limbs, and selective removal of other body elements such as hands and feet (Bulbeck, 2007). These cuts might indicate that the corpse had to be partially dismembered to fits the remains within the confines of the grave cavity. A large flat boulder was identified during the excavation and partially covering the burial and interpreted as it originally placed to cover the pit (Bulbeck, 2007).

Study of Prehistoric Burials in Nusa Tenggara

Still in the part of east Indonesia, Galipaud et al. (2016) precisely in Pain Haka site which then inferred as a probable area to be exclusively used as a cemetery from around 3.000 to 2.100 BP. Using secondary sources in the form of images, an archaeothanatology analysis of burials from Pain Haka was conducted after the excavation (Harris J. et al., 2015). This is not the 'ideal' archaeothanatological approach as described by Duday (2009), but it is an approach that has worked well (Harris, 2010; Harris & Tayles, 2012; Willis & Tayles,

2009). From the “indirect” observation and application of archaeothanatology they were successful to understand the type of interments because it shown various type of burials including 37 primary, 7 secondary with 5 of them as ‘bundle burials’ and 3 intrusive burials, 8 burials could not be identified. The mortuary practice and regional significance of Pain Haka displays some interesting mortuary practices such as wide variety of burial positions, both primary and secondary burial, the post-interment removal of elements (including skulls), multiple episodes of burial and two types of mortuary containers including loose organic wrapping and pottery jars (Harris J. et al., 2015).

Samper-Carro et al. (2021, 2022) used a more in-depth approach to burial reconstruction using archaeothanatology. The analysis of the burial context attempts to piece together the sequence of events that occurred from peri-mortem to the time of excavation. The mortuary practice documented from Gua Makpan, Alor Island, provided a clear illustration of the application of archaeothanatological methods. Although the fragmentation of cranial elements and the absence of long bone diaphyses limit interpretations of mortuary practices, the Makpan child burial exhibits the positioning at the time of interment, which placed the head on its left side. This analysis also revealed secondary treatment evidence such as skeletal element removal and disarticulation, as well as the inclusion of grave material. Their absence limits the interpretation of body positioning, leaving only a few skeletal components, including the feet, head, and upper cervical vertebrae, to assess individual positioning. A cobble beneath the head with a single negative oval depression on its flat surface and red ochre around its curvature attests to the Makpan grave's inclusion of material culture. (Samper-Carro et al., 2021).

Continue the work in Tron Bon Lei with three new burials dating to ca. 7500, 10.000, and 12.000 cal BP. Even though the three burials are in the same rockshelter, the differences in burial types, body positioning, and associated grave goods indicate the change in the social and cultural practices from the Late Pleistocene to the Middle Holocene. The oldest individual discovered in Tron Bon Lei (TLB-1) was a primary flexed burial with no post-depositional disturbance. However, as the only individual identified with items of personal equipment placed on the body, this individual indicates intensive treatment of the skeletal remains prior to burial.

Lower limb positions in the second burial (DE B2) have been interpreted as evidence of a seated or squatting position. The high fragmentation of the cranium and the absence are

consistent with observations of common disassociation and post-depositional natural movement in seated interments. The described post-depositional movements imply that the individual was buried wrapped or inside an organic burial container that decomposed prior to soft tissue decomposition, or that the wrapping material did not apply enough pressure to the decomposing body to counteract gravity. Lastly, the hypothesis of individual E16b's had a pre-interment treatment may have included dismembering and removal of skeletal elements prior to complete soft tissue decomposition. Nonetheless, cutmarks were only confidently identified in a single element-the rib body, which decomposed before soft tissue decomposition, or else the wrapping material did not apply enough pressure on the decomposing body to counteract gravity.

Eventually, Gua Makpan and Tron Bon Lei's research adds to the understanding of mortuary practices in the Lesser Sunda Islands from the Late Pleistocene to the Middle Holocene (Samper-Carro et al., 2022). Other than that, this work has achieved the attempt to create the map of some human burials in Indonesia and its attribution of the skeleton position (flexed/ extended/seated/dismembered) with the diversification from the geological period span, from Late Pleistocene until Late Holocene.

Summary of the Studies of Prehistoric Funerary Practice in Indonesia

To sum up, the main perspectives in previous research on prehistoric funerary practice in Indonesia, conducted by several local and international researchers, are diverse. In the 1900s until early 2000s, many scholars covered topics such as spatial archaeology, anthropology, and ethnoarchaeology to better understand the settlements of prehistoric communities that once lived in caves, how the prehistoric community used caves as a place for living people, and/or how caves were used for cemeteries (Duli, 2015; Handini & Widianto, 1999; Handoko, 2010; Nurani et al., 2014; Setiawan, 2011; T. Simanjuntak & Asikin, 2004; Sugiyanto, 2017). Simultaneously, human palaeontology, bioanthropology, and biocultural approaches are frequently used to analyze the profiling of human remains in Indonesian prehistoric human burials (Noerwidi, 2014; Noerwidi et al., 2015, 2022; Noerwidi & Widianto, 2021).

According to Willis & Tayles (2009), bioarchaeologists use genetic evidence as opposed to material and spatial evidence that archaeologists have traditionally used to excavate and complete mortuary analyses. On the other hand, Samper-Carro et al. (2021), stated that

archaeology typically focuses on grave goods or general structures, however archaeothanatology can provide significant proof from the skeletal elements themselves, with evaluates of the disarticulation sequences, body positioning, and interment context assisting in better identifying more subtle variations in burial practices.

As a recap, by amalgamating previous works on funerary practices in Indonesia, my thesis attempts to connect all the piecemeal investigations towards funerary practices in prehistoric communities. Given that evidence of mortuary practice in Indonesia has been studied for decades, it begs the question:

1. How is the approach of human burial study in Indonesia until recent days? Which approach the researchers used?
2. Either diversity and similarity of the burial in prehistoric time happened sporadically through time and space, is there any pattern of the burial culture in the archipelagos of Indonesia?
3. What is the sharing culture seen from mortuary practice of the population inside the islands of Indonesia during the Pleistocene until Holocene period?
4. What is the cultural significance during the Pleistocene until Holocene period? Many communities in the archipelago of Indonesia in prehistoric time who buried the death in certain ways, do they belong to the same community from one place to another?

Hypothesis

Some works have done and some arguments about prehistoric mortuary practice in ISEA in general, and Indonesia arises, for instance, the study from Samper Carro (2021) stated that burial practices appear to have thrived abruptly at the beginning of the Holocene. On the other hand, the methodology of this work has been clearly demonstrated the utilisation of the methodology archaeothaatology in the Wallacea Islands. Regarding the burial, (Piper, 2015) stated that the most common burial type in ISEA, the tightly flexed burial, which then thought to have emerged in northern Borneo around 10.000 years ago and spread slowly through ISEA. Galipaud et al. (2016) also argued about the Neolithic period's relationship with sharing culture in Southeast Asia. The similarities in mortuary practices between Niah Cave in Borneo and Pain Haka in Flores may indicate the ongoing existence of earlier traditions into the late Holocene, where advancements in burial

treatments, such as dismemberment or flexed burial positions, are integrated into traditional local practices (Samper-Carro et al., 2021).

Along with these arguments, my preliminary hypothesis about the prehistoric human burial is that: A) The study of funerary practice in Indonesia has been done in several methodology, but only recently, the scholars are using the methodology of archaeothanatology which has been said from the previous chapter that this methodology has a great potential. B) The practice of burying the dead may have happened long way before Neolithic period in Indonesia, probably began in Borneo around 31.000 – 30.000 years ago based on Maloney and his team in 2022 and then spread sporadically until reaching the neighbouring island inside Indonesia; C) Though in the later period of Neolithic and Paleometalic in Indonesia the shifted of population and socio-cultural happened, these populations were once sharing the similar culture, as can be seen from the burial tradition along with the time of interments, the grave goods, the positioning of the corpses, of two different populations group in Gua Harimau (Noerwidi et al., 2015). These hypotheses will later be tested through the data which will be gathered and processed in the next chapters.

III. Materials and Methods

This section provides the data sources and materials used in the research. It defines the types of external quantitative secondary data that can be obtained and analysed to achieve the research objectives. This section describes the origin of the data, collection methods, and relevant variables. The methodology for selecting datasets and data quality and reliability considerations is also covered.

The previous chapters have stated unequivocally that this thesis aims to compile all available results of the studies on prehistoric funerary practice in Indonesia. The methodology of the scoping review is used in this work. As a result, this work aims to provide a systematic understanding of Indonesia's mortuary practice tradition. In this sense, a literature review was crucial to this research. This is critical because there has been a need for studies of previously known sites considering discoveries and criticisms developed in recent years, particularly regarding funerary practice in the Indonesian prehistoric period.

3.1 Materials

The sites were chosen based on the point of view of the rich funerary practice and their significance from the available literature. The strength of those funerary data supports this thesis, hence interpreted as essential to building the literature review of the prehistoric funerary practice in Indonesia.

3.1.1 Site Selection

The site selection process went through several directions, and the main criteria to distinguish the sites were the chronological time span and the geographical coverage. In total, 26 sites with the evidence of the prehistoric funerary practice have been identified all over the Indonesian archipelago[1]. From these 26 sites, 219 individual burials were inscribed. This data is represented by several components: 1. Individual specimen (biological profile: age-at-death, sex, and stature); 2. Interment/funerary practice; 3. Dating (if available). By means of this information, a comprehensive database has been produced which consists of all the available data. Moreover, the database is the basis for mapping the presented sites showing the diversity of the funerary practices.

[1] Only one site (Gilimanuk) data was unavailable due to the unavailability of the data.

- ***Chronological Span***

The chronology spans the current knowledge of Indonesian prehistoric funerary practice from 31.000 BP until the latest prehistoric period, around 1000 BP. This interval is distributed from the different sites with the various geographical and cultural settings in Indonesia during that period. The chronology of the sites has been obtained through radiocarbon dating (Radiocarbon C^{14}, Uranium-Thorium series, Accelerator Mass Spectrometry) or relative dating.

- ***Geographical Coverage***

The boundary of the geographical localisation will be based on the islands, thanks to the nature of the archipelagos in Indonesia. The previous state-of-art chapter gives a glimpse of the organisation of the sites in the following chapters.

Island	**Site**	**Burial Practice**	**Chronology**	**Main bibliographic reference**
Sumatera	Situs Loyang Mendale	Primary burials and few other bones with cremation indication; partially and semi flexed	3115 ± 30 BP and 7525 ± 70 BP	Setiawan, 2016; Wiradnyana, 2015
	Situs Loyang Ujung Karang	Primary burials; semi flexed and fully flexed	4400 ± 120 BP and 4940 ± 120 BP	Setiawan, 2016; Wiradnyana, 2015
	Gua Harimau	Primary and secondary burials; flexed and extended	4500 - 1840 cal. BP	Matsumura et al., 2016; Noerwidi, 2020a; Noerwidi et al., 2015; T. Simanjuntak, 2015
Java	Gua Pawon	Primary burial; flexed	11.200 - 10.200 cal. BP, 8400 - 7700 cal BP, and 6900 - 6200 cal. BP	Elizabeth et al., 2018; Noerwidi, 2020a; Yondri, 2021
	Gua Kidang	Primary burial; flexed	9440 ± 230 BP	Noerwidi, 2020a; I. Nurani et al., 2014; I. A. Nurani, 2016

	Gua Braholo	Secondary burial	12.131 – 10.648 cal. BP and 10.227 – 9496 cal. BP	Détroit, 2002; Handini & Widianto, 1999; Noerwidi, 2020a
	Song Keplek	Primary burials, extended	3053 ± 65 cal. BP and 5326 – 4870 cal. BP	Détroit, 2002; Handini & Widianto, 1998; Noerwidi, 2012a, 2020a
	Song Terus	Primary burials, flexed	10.405 – 9881 cal. BP	Détroit, 2002, 2006; Ingicco et al., 2020; Noerwidi, 2020a
	Song Gentong	Primary burial, flexed	Early Holocene	Détroit, 2002; Marliac & Simanjuntak, 1996)
	Gua Sodong	Flexed position	Early Holocene	I. A. Nurani, 1995; Van Heekeren H. R., 1972
	Gua Marjan	Flexed position, few other bones with cremation indication	Early Holocene	I. A. Nurani, 1995; Van Heekeren H. R., 1972
	Gua Lawa	Primary burial and one cremated individual	Early Holocene	Van Heekeren, 1972; Détroit, 2002
Bali	Gilimanuk Necropolis Site	Primary, secondary, commingled burials and urn burial context	1890 ± 100 BP	Soejono, 2008
Kalimantan	Liang Tebo	Primary burial, flexed	31.110 - 30.437 cal. BP	Maloney et al., 2022
	Liang Jon	Primary (?) and secondary burials, extended	4450 - 4340 cal. BC and 800 - 548 cal. BC	J. M. Chazine, 2005; J.-M. Chazine & Ferrie, 2008; Ferrié et al., 2015
	Gua Keboboh	Primary burials, flexed	Undated	J. M. Chazine, 2005; Noerwidi et al., 2022; Sugiyanto, 2009
	Gua Kimanis	Primary (?) and secondary burials, flexed	Holocene	Arifin, 2004; Bellwood, 2017

	Gua Tengkorak	Primary burial, flexed	Early Holocene	Sugiyanto, 2009; Widianto & Handini, 2003
	Liang Bangkai 10	Primary burials, extended	Undated	Noerwidi et al., 2022
Flores	Pain Haka	Primary, secondary, commindled burials and jar burial context	3000 - 2800 cal. BP	Galipaud et al., 2016
Alor	Gua Makpan	Delayed primary burial	7950 – 7795 cal. BP	Samper-Carro et al., 2021
	Tron Bon Lei	Delayed primary, primary burial	12.000 cal. BP, 10.000 cal. BP, 7500 cal. BP	Samper-Carro et al., 2022
Aru	Liang Lembudu	Primary burial, seated	18.800 ± 2300 cal. BP	Bulbeck, 2007; O'Connor et al., 2006
Sulawesi	Cappa Lombo	Primary and secondary burials, flexed and extended	7580 cal. BP	Fakhri, 2021
	Leang Panninge	Primary burial, flexed	7200 - 7300 cal. BP	Carlhoff et al., 2021
	Leang Kado' 4	Commingled burials	Undated	Fakhri et al., 2021

Table 2 - General information of prehistoric sites based on the geography and chronology in Indonesia.

- ***Secondary External Data***

Sorting out the sites from the available literature takes much work. Some areas are independently studied as an object of study and presented in a thorough discussion. A few places, unfortunately, do not have detailed discussions about the burial practice; hence, those sites are excluded of this thesis. To be clear, the exclusion of those sites due to the sites only appeared in several articles and not studied completely and independently.

The material used in this thesis is the secondary data obtained from the studies of funerary practice in the prehistoric period of Indonesia. Secondary data is the record of the dataset, which was already collected for another purpose (Dale et al., 2008; Kotler & Keller, 2012). Classification of secondary data, according to its origin, can be internal or external (Unachukwu et al., 2018). Internal data is acquired within the organisation/individual(s)

conducting the research. Meanwhile, external data is obtained from outside parties. This thesis uses secondary external data from an extensive reading through several sources. To sort out and highlight the data on funerary practice in Indonesia, it needs to be separated by the nature of the data, such as quantitative and qualitative.

Quantitative data is characterised by its numerical nature, allowing for counting and measurement. This data type is exemplified by elements such as the dating chronology of burials, the minimum number of individuals deposited in the sites or graves, and biological data such as age at death and the stature of the deceased. In contrast, qualitative data is interpretive, providing descriptive insights into funerary practices, including the structure of graves, burial context, corpse positioning, composition of funerary materials, some unmeasurable biological features in the skeleton, and post-burial rituals.

3.2 Methodology

The methodology section of this thesis details the research methods and analytical techniques used to analyse the data. Specific trend analysis is described, emphasising their appropriateness to the research objectives (Rae, 2014) about the funerary practice in prehistoric time of Indonesia which change over time. The aim of trend analysis is to fundamentally seek how or why things – in this case is funerary practice in prehistoric time of Indonesia – have changed over time (Rae, 2014).This section also discusses the limitations or assumptions associated with the selected method and provides the rationale for their selection.

The research method in this thesis is a scoping review of funerary practice in prehistoric times in Indonesia. The whole point of scoping the field is to be as comprehensive as possible, both published and even unpublished sources (Arksey & O'Malley, 2005). This literature review aims to identify the nature and extent of research evidence (Paré & Kitsiou, 2017) of prehistoric funerary practice in Indonesia.

- ***Classifying the Extant Literature:***

A thorough desk research was conducted in order to identify all the necessary and available literature which have been produced in English, Bahasa Indonesia and French. For this purpose, all kind of open sources were used, namely: 1) Google Scholar, Scopus, JSTOR, etc., 2) Books, conference paper or proceeding, and posters; 3) Unpublished resources such as theses and work report; 4) Online journal source for the papers in

Bahasa Indonesia. Processing this secondary data served to summarise past and current scholarship on prehistoric funerary practice in Indonesia.

- ***Screening for Inclusion***

An initial literature screening is predicated on titles and abstracts, followed by selecting studies that are closely pertinent to the discourse on Indonesian funerary practices. This literature searchwith keywords such as “prehistoric burial in Indonesia” employed from those three language sources.

- ***Following Data was Collected from the Processed Papers***

Detailed information about chronology; geographical location; the burial practice (structure of the grave, position of the corpse, funerary material), post-burial practice (if available); and the biological profile of the individuals such as age-at-death and sex. However, bibliographic study has revealed that there are a few sites that do not have complete burial diagnostics. Almost half of 219 individual datas of the processed sites contain incomplete information. To record this extensive data Microsoft Excel software was used to highlight and organise the obtained data. Considering the incomplete cultural sequences in Indonesia (i.e lithic or bronze periodisation), also the numerous dating of the funerary sites, then the dates are sorted into: Late Pleistocene, Early Holocene, Middle Holocene, Late Holocene following the latest International Chronostratigraphic Chart. On the other hand, to create the map systematically, the sites were grouped geographically island by island.

- ***Assessing the Quality of Primary Studies***

A critical stage in our research includes exploring primary studies using standardised variables (see *The Definition and Organization of Funerary Practice in Archaeothanatology* in this chapter). A part of this phase is also translating from the literature in Bahasa Indonesia, because due to the diversity of methodology that has been used, some researchers used different terminology of describing burial and its funerary features. Then the involvement of archaeothanatology methodology standard for these variables are used to homogenizing them. For instance, the use of the word “burial pit” instead the literal translation to “grave hole”, another is more crucial part for the position of the corpse, “extended” position is used instead of “recumbent” or “supine”, because supine is another detailed position of the corpse (Fig. 8). Another position is “flexed” as the standard in archaeothanatology point of view, instead of words “folded” or “bent” position. The use of word “grave good” instead of “grave provision” for the funerary

material. These variables are being generalised again in the creation of the maps, to show the main highlight of funerary practice.

The attributes of the maps are then showing by the legends in the form of:

1) Point to represents the location of prehistoric funerary sites.

2) The chronological of the prehistoric funerary sites which grouped into 5 and represented by different colours respectively (Navy colour for Late Pleistocene; Maroon colour for Early Holocene; Mustard colour for Middle Holocene; Beige colour for Late Holocene; Green colour for the undated sites).

3) The representative of burial features (Extended skeleton presents the primary burial with extended position; Flexed skeleton presents primary burial with flexed position; Frgamentary bones presents the secondary burial/commingled skeletons/cremation; Jar presents the jar burial container).

Beside standardising the variable aspect is this standardising the age-at-death into age class based on White et al. (2012) to avoid the vast variation of age. The age-at-death are grouped into 7 categories: Infant (0 – 3 years); Child (3 – 12 years); Adolescent (12 – 20 years); Young adult (21 – 35 years); Middle adult (35 – 50 years); Old adult (50 + years). There are 2 additional categories which is just following the nature of the secondary data (not following the standard), some individuals are classified as just Adult without another specification and the rest is the Uknown data (N/A).

- ***Extracting Data***

The information we obtained included detailed characteristics of the samples, study design, and critical findings about funerary practices in prehistoric Indonesia. Later, the data that has been chosen then organised into a database through Microsoft Excel manually, which served firstly to be the basis of trend analysis for the funerary practice in prehistoric period of Indonesia, and secondly to generate a map of prehistoric burials and their associated funerary practices. The maps are generated by the QGIS 3.20.1 software with coordinate reference systems using the Geographic Coordinate System WGS1984 (EPSG: 4326 – WGS: 84). Input vector data in the form of points with Shapefile (Shp) file format, which is the coordinate point of the location of the research object site. The point data is classified with the attributes such as the name of the location of the research object, the type of burial and the chronostratigraphy. Other input vector data in the form of maps from ESRI were accessed with the QuickMapServices (QMS) search plugin in QGIS, which only focused on displaying the area of Indonesia. The layer of points and the layer

of the vector map were overlaid, where the attributes of the data points appeared in the form of symbols and colours based on the attributes that had been classified. From the overlay of the two data points, we can see the distribution of the funerary sites and their practices feature, with existing attributes in Indonesia.

The layer of points and the layer of the vector map are overlaid, where the attributes of the point data appear in the form of symbols and colours based on the attributes that have been classified. From the overlay of the two data that displays the attributes of the point one can see the distribution of research objects with existing attributes in Indonesia. Layout data is done as an output of the previous data where the map layout uses a comparison scale of 1 cm, for the comparison of Sumatra 1: 7.000.000, Java & Bali 1: 4.100.000, Borneo 1: 7.400.000, Sulawesi 1: 5.000.000, Nusa Tenggara & Aru 1: 5.600,000, and Indonesia 1: 17.500.000. In the Layout there is also a Scale Bar comparison of 1 cm and also a north direction sign as a map orientation. The layout includes a legend as a description of the map symbol, namely, numbers 1-26 as a description of the location of the funerary sites, symbols as a highlight of burial type, and colours as the representative of different chronology. All the steps for generating the maps of prehistoric funerary sites and its practices are described in the Fig 9 and Fig 10.

- ***Analysing and Synthesizing Data***

After going through a rigorous process, we have created a visual representation of prehistoric burial sites in Indonesia through tables and figures. This will be presented in the forthcoming chapters, accompanied by detailed descriptions of each site, based on their geographical locations.

To conclude, in the material and method in this thesis, allowing the process of comprehensive examination of the funerary practice in Indonesia during prehistoric period, and enlighten the trend that evolves over time.

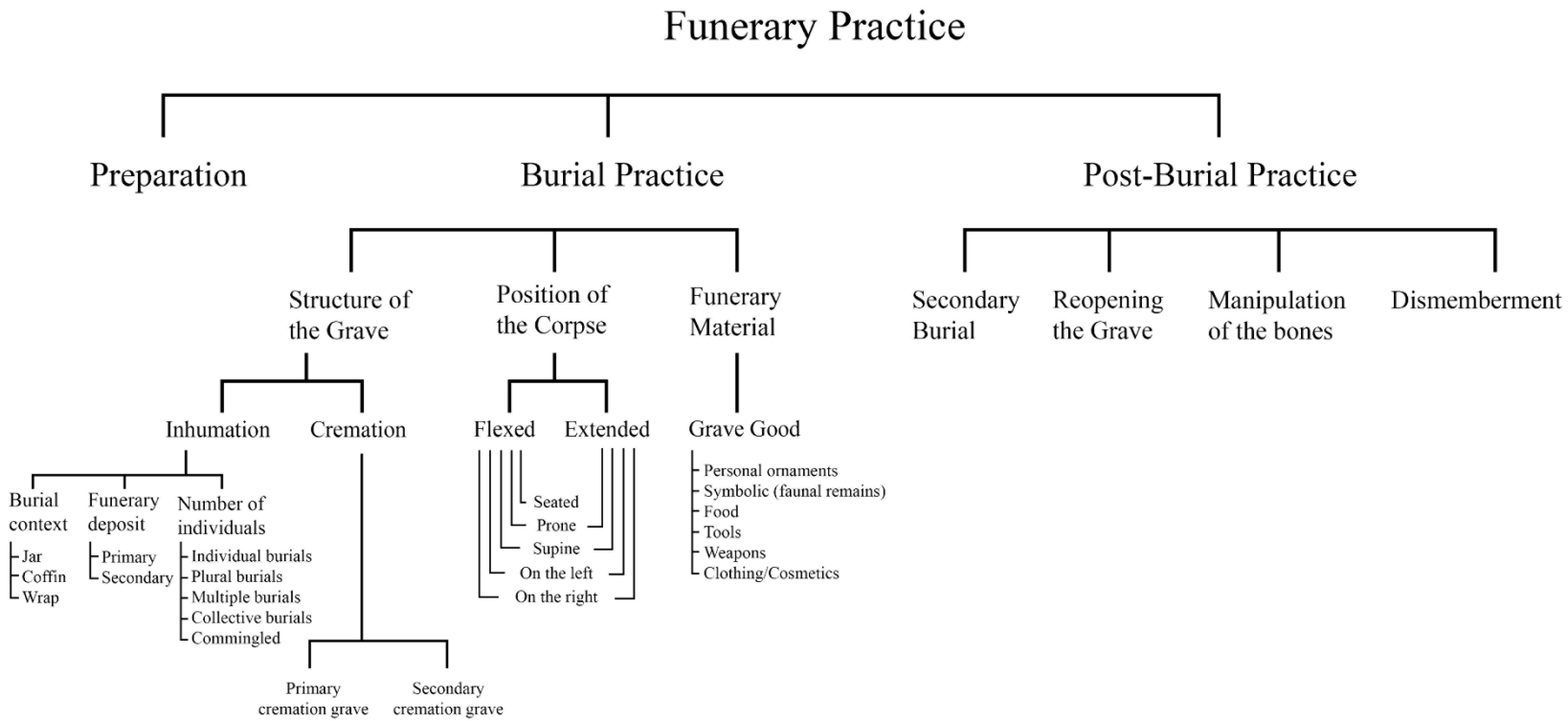
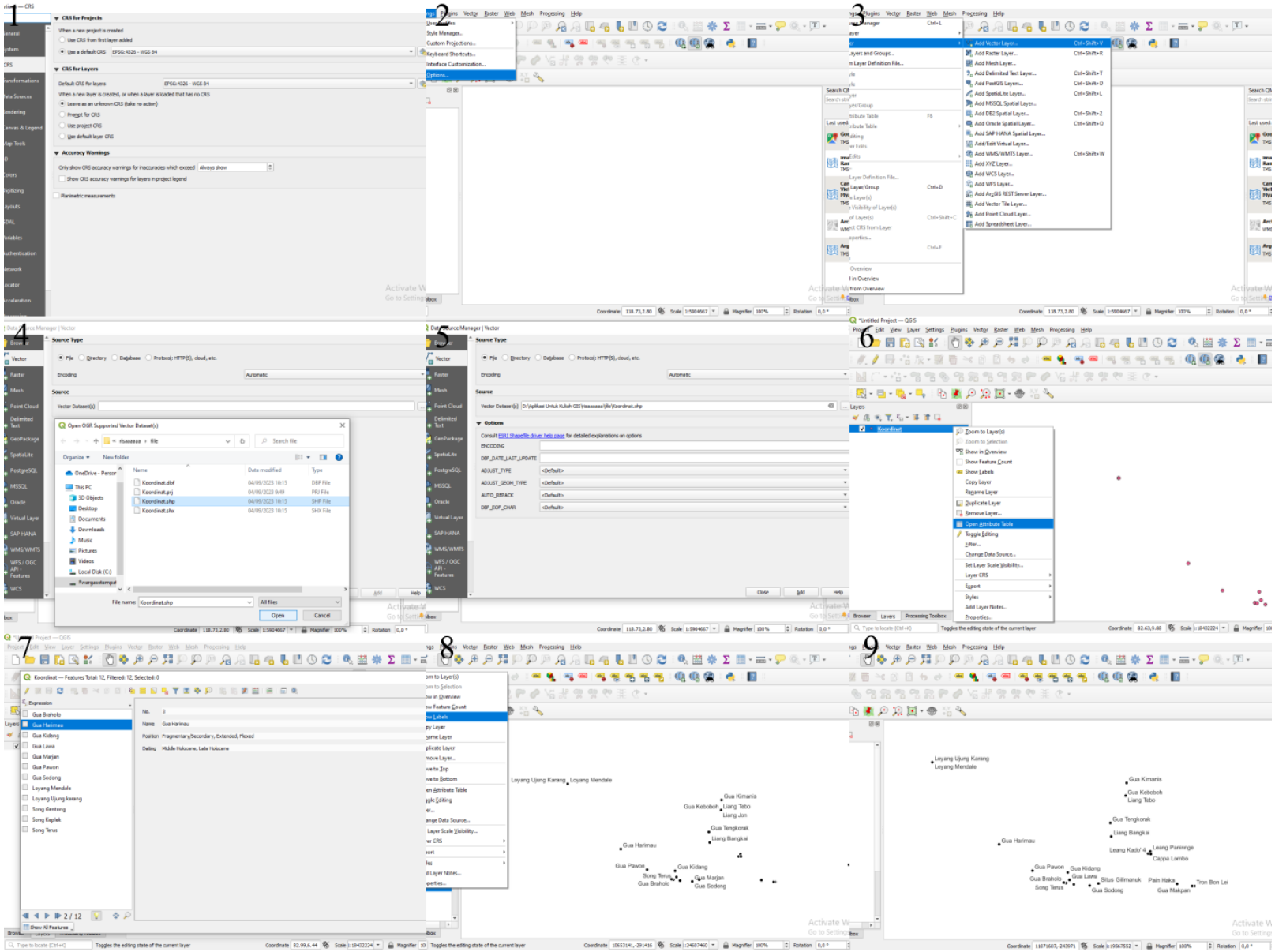
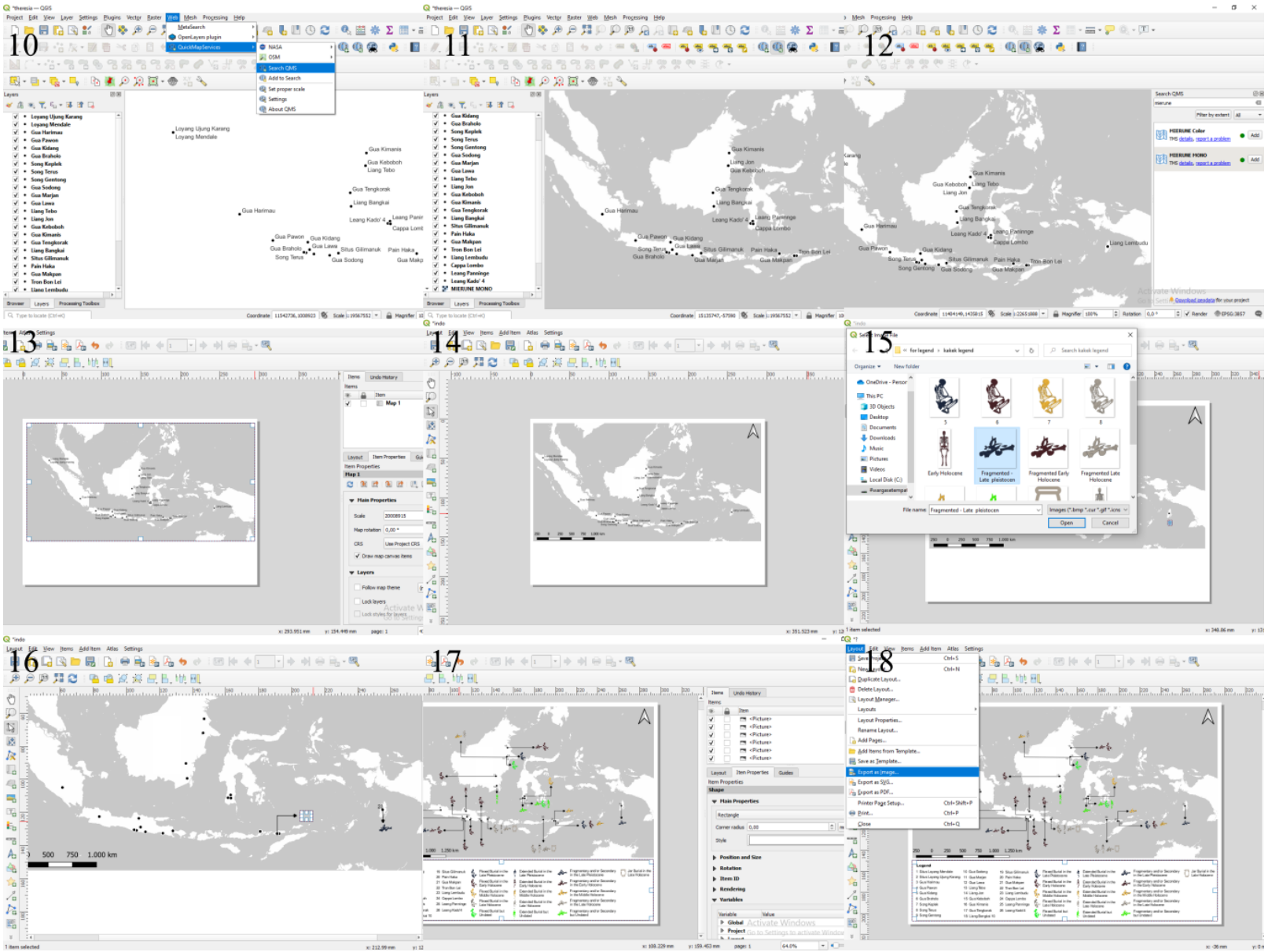


Figure 8 - The Funerary Practice Adjusted from Chang (2001), Duday et al. (2014), Maggio (2018)



1. Creating a new CRS project with the default EPSG: 4326 – WGS 84
2. Chosing the setting option of the layer
3. Adding the Vector Layer
4. Importing the file for the Vector Dataset comprising the coordinates (longitude and latitude of the 26 funerary sites in Indonesia) which previously created using Google Earth
5. Adding the Vector Dataset (Shapefile – Shp) into the Vector Layer
6. Opening the attributes data point
7. Editing the attributes data point table with the number, name, position, and dating variables
8. Showing the labels (the variable names from attribute data point)
9. All the labels of the attribute data points appeared

Figure 9 - Steps to generate the mapping of funerary sites and its site in Indonesia (First)



10. Opening plugin QuickMapservice (QMS) in Tool Web, then searching QMS to find the vector maps of Indonesia and its islands.
11. Entering the data to the vector map using the QMS search
12. Vector map data appears and is overlaid with point data, then the layout process is carried out by selecting the new print layout tool
13. Then in layout enter data points and maps
14. After the map is inserted in the layout, then insert the scale bar and north orientation pointer
15. Adding the picture for the symbol that describes the variable of data point, numbering (as site location name), the type of burial and colour (as the chronostratigraphy where it belongs).
16. The symbol and number of the point appeared.
17. Completing the map with a legend that matches the data attributes with their symbols and numbers
18. After all is complete (point, map, scale bar, north orientation, symbol, number and legend) then exported as image in JPG format.

Figure 10 - Steps to generate the mapping of funerary sites and its site in Indonesia (Second)

IV. Result

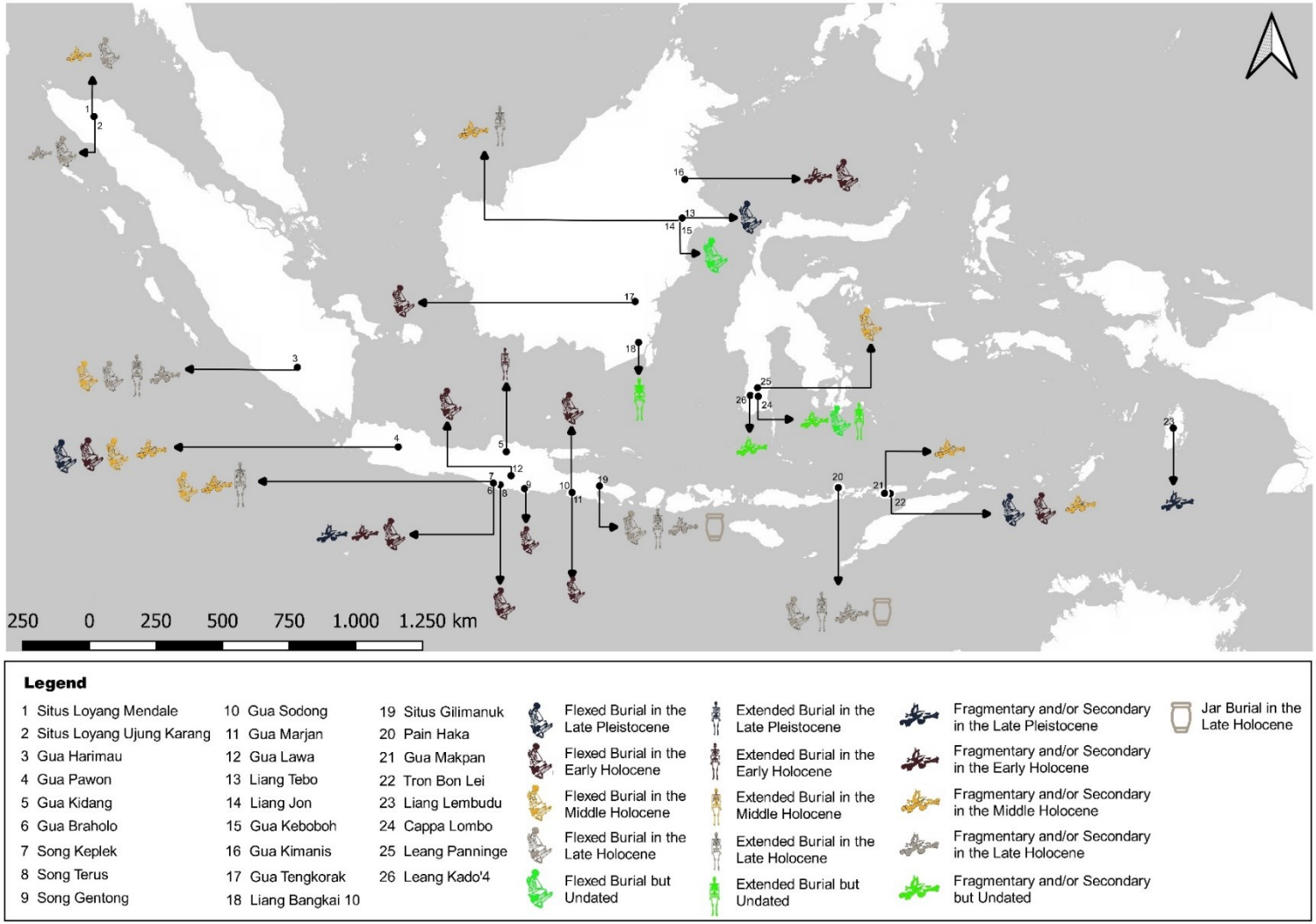


Figure 11 - The map of funerary site and its practices in the prehistoric time of Indonesia based on geochronology division.

Chronology	Primary Inhumation			Secondary Inhumation			Primary Cremation	Secondary Cremation	Commingled	Jar Burial	Uknown Type of Interment	Total
	Flexed	Extended	Unknown Position	Flexed	Extended	Unknown Position						
Late Pleistocene	3		1	1		2					1	8
Early Holocene	12	1	1			3					4	21
Middle Holocene	5		5	1		7					2	20
Late Holocene	9	10	2			6	1		1	2	3	34
Unknown	15	39	8	1		23			8	11	31	136
Grand Total												**219**

Table 3 - The distribution of the burial type based on the available individual data in Indonesia (see also Annexes)

Sex	Primary Burial Flexed	Primary Burial Extended	Primary (no position)	Secondary Flexed	Secondary	Primary Cremation	Commingled	Jar Burial	Not Fully Excavated	Unknown Type of Interment	Total
Female	15	16	3	1	12			1		3	51
Male	9	12	2	1	10			2		3	39
Unknown Sex	21	24	9		20	1	9	10	6	29	129
Grand Total											**219**

Table 4 - The distribution of the sex of the human remains from all the prehistoric funerary sites.

How and when they interred the dead?

The trend in Table 3 of the funerary practice in Indonesia, started from the Late Pleistocene can be seen that the existence of the primary burial in the flexed position dominating this period. From the Figure 10, it can be seen the existence of this type of burial is in Liang Tebo, Tron Bon Lei, and Gua Pawon. Other than primary inhumation, secondary inhumation uniquely it existed in Liang Lembudu, Aru Island, even though the individual interred in the secondary inhumation, it shows the flexed in the seated ("hocker") position. Some examples on secondary burial can be observed in Gua Braholo.

Moving to Early Holocene, number of burials and its position were increasing variously. The primary inhumation in the flexed position is still prevailed, with the existence of primary burial in the extended position. As seen in the Figure 10, the sites that yielded this primary inhumation namely Gua Pawon, Gua Braholo, Song Terus and Tron Bon Lei. Meanwhile, the unique primary inhumation with the extended position is found in Gua Kidang. This unique funerary feature during Early Holocene could be interpreted as a new trend of interring the dead from the community. Beside primary inhumations, the secondary inhumation still existed, but no recording of the secondary burial with certain position, unlike in the previous period. These secondary burials can be observed in the Gua Braholo.

In the Middle Holocene, there is a significant trend in the funerary practices. The primary inhumation with flexed position still survived in the sites such as Gua Harimau, Gua Pawon, Song Keplek and Leang Panninge. The other inhumation in Gua Pawon shown an interesting feature because there is one secondary burial with the flexed position: While the rest of the secondary inhumation in Loyang Mendale, some other burials in Gua Pawon, Song Keplek, Liang Jon and Tron Bon Lei do not yield any specific position from the secondary inhumation.

The funerary practice in the Late Holocene is shown by various type of interment. Until this certain period, the primary inhumation with the flexed position still showing the existence in the prehistoric community, namely in Loyang Mendale, Gua Harimau and Pain Haka. The existence of this type of interment also can be observed in Gilimanuk site, but such unfortunate that the access to the individual burial is impossible for this moment. The advent of extended position in primary inhumation can be observed in the sites such as Gua Harimau, Song Keplek, Liang Jon and Pain Haka. Meanwhile, the secondary inhumation without the indication of the position is found in Loyang Ujung Karang, Gua Harimau, Gua

Braholo and Pain Haka. One unique primary cremation happened in Loyang Mendale, this feature confirmed “on the spot” diagnostic because even the burnt bones still showing some anatomical connection (pers. Comm, Fakhri, August 2023). Another type of burial is the commingled which was found in Gua Harimau during the Late Holocene. Clearly there is a big shift of funerary practice in Indonesia during this period which also included the end of prehistoric time in Indonesia.Some cases here have difficulty to be inferred, either unknown type of burial, unknown position and also unknown chronology.

Another interesting point is the use of caves as burial places in prehistoric times. Of the 26 sites found, as we can see from the descriptions below, most of the burial sites are inside caves. Only two (Gilimanuk and Pain Haka) are in coastal areas. Findings from these 2 sites - coincidentally necropolis - aligned with what Jacob (2008:100) argued as “There is a possibility of finding jar burials in the Indonesian archipelago, which often occur in coastal areas. In this case, the coast of Gilimanuk Bay is an excellent place to settle because it is protected from large waves”. Armed with these, another interesting study related to the subsistence of prehistoric society can possibly happen.

How and who is interred?

Suppose the data with unknown gender and age of death is excluded from the prehistoric burials found in Indonesia, thus women (N=51) (Tab. 4) died during young adult (N=11) and middle adult (N=11) (Tab. 5) were the dominant profiles in the funerary sites. The funerary practice performed on these women was primary burial with an extended position. Even so, the practice of burying the deceased was done from the oldest until the youngest members of communities. From the biological profile, the fact that burials are also consisted of young age, specifically infant and child classes, is another insight for this discourse. Murphy & Le Roy (2017) gave an insight about how the past communities treating the death of these young member. When in most cases of funerary practice, these age classes are often lack investigated by the archaeologist (Lewis, 2007 in Murphy & Le Roy, 2017). In Indonesia, it seems that these age groups were treated in their dead as others, despite the number of all infant and children, if compared to the whole samples are nearly less than 10% (N=18) (Tab. 5). However, the possibility to inferring further about the social significancy on how they were buried is still open in the future.

In the later chapter of this thesis, it will present some concrete evidence on how the prehistoric community treating the dead in such specific manner. The cases from the female or male and the correlation grave goods in their burials can imply the gender role in society (Pape & Ialongo, 2023; Scopacasa, 2014). The correlation between sex and funerary practice will be an interesting topic to be to discover to understand the social structure in the prehistoric period in Indonesia. This finding can be a valuable insight into paleodemography, and social structure in the subsistence of the ancient populations in Indonesia.

Age Class	Female	Male	Unknown Sex
Infant	1	0	7
Child	1	0	9
Adolescent	5	4	12
Young Adult	11	7	6
Middle Adult	11	10	6
Old Adult	5	3	0
Adult (Unspecified)	8	8	22
Unknown Age	9	7	67
Total Individual	51	39	129

Table 5 - The age class of the individuals from the prehistoric funerary sites in Indonesia.

Loyang Mendale and Loyang Ujung Karang

The site of Loyang Mendale and Loyang Ujung Karang are both located in Central Aceh. The discovery of burials from those two sites contributes to the new evidence of the cave using as settlement and burial sites. Variations in the burial models at Loyang Mendale and Loyang Ujung Karang occur due to differences in cultural periods and burial trends in Southeast Asia and Indonesia (Fig.11). This model variation is also caused by the change in lifestyle from hunting and gathering food (foraging) to agriculture (farming). Setiawan (2016) argued that the Neolithic funerary practice from both sites contributes to the rare data for Indonesian funerary practice during that period.

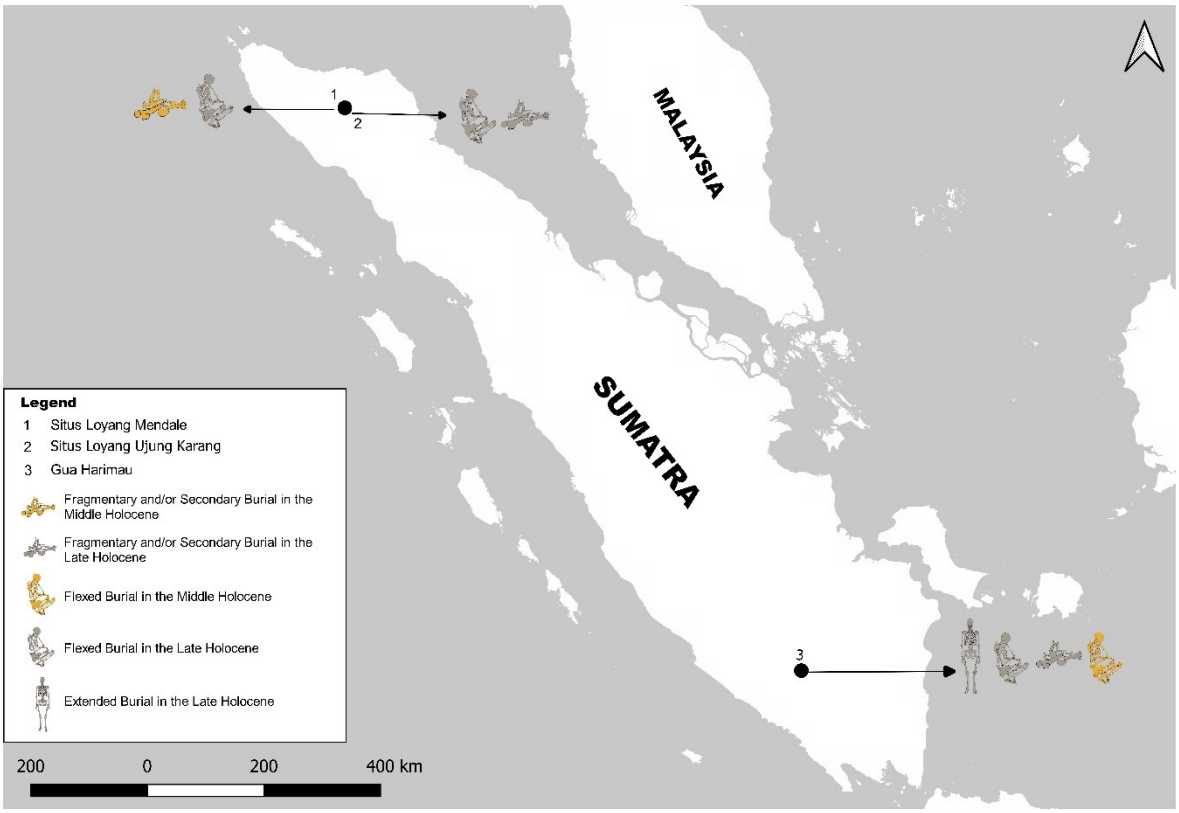


Figure 12 - The sites and funerary features on Sumatra Island

1) **Loyang Mendale**

LMD-FK I (Paleometallic)

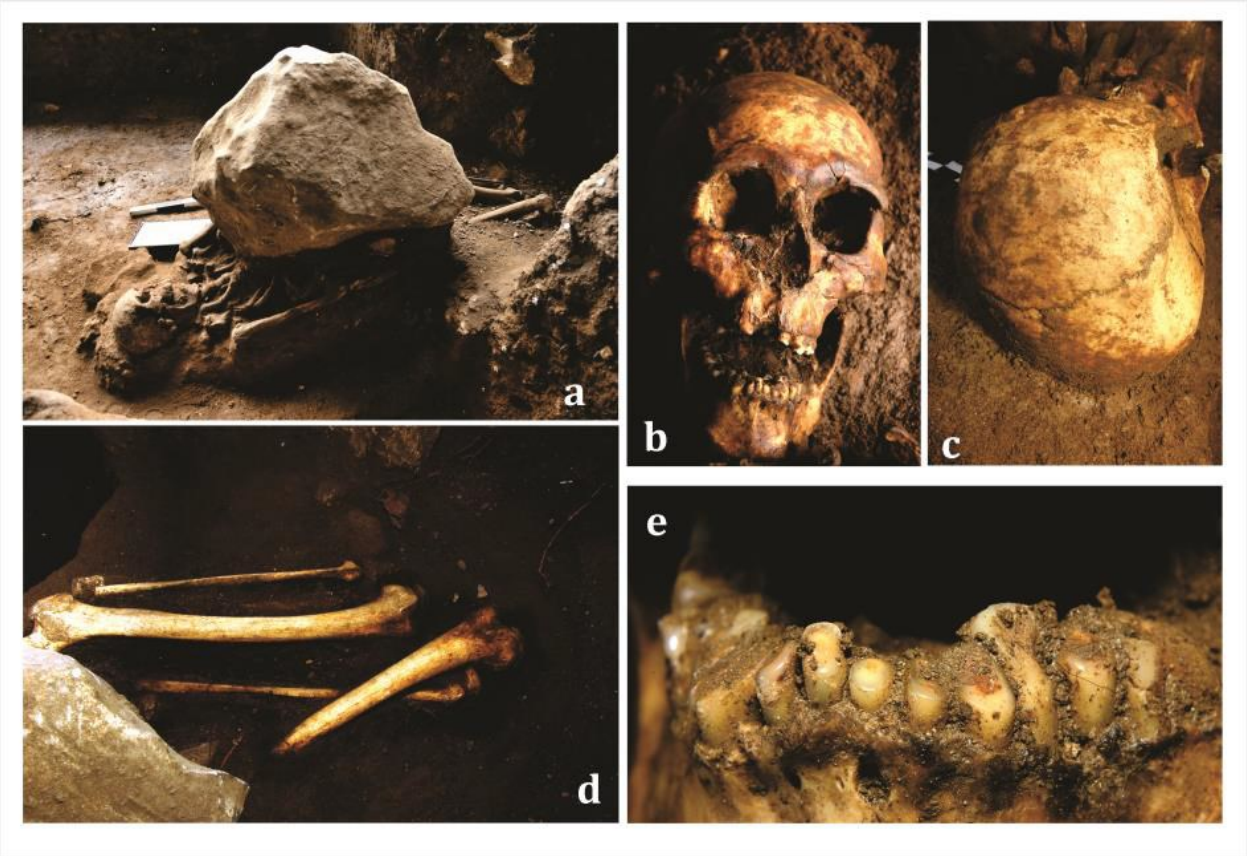


Figure 13 - A) The skeleton position with the boulder; B) Visible face features; C) Suture to identify age of death; D) The flexed legs to the left side; E) The mandible's teeth condition. Source; Balai Arkeologi Sumatra Utara in Setiawan (2016).

The LMD-FK I human remains were oriented on an east-west in the burial pit. The skeleton remained relatively intact, with its anatomy identifiable and articulated. Some areas could not be identified because of the boulders covering the burial. The body is buried supine with the upper limb extended, but the legs are flexed to the left. The shins of the feet were under the pelvis, with straight hands beside the body and the head facing upwards.

Cobblestone around the skeleton supported the boulder that was placed just above the head, chest, abdomen, and feet. On top of this burial, a concentration of burnt bone fragments and unburnt human bones were found, which were part of the LMD-FK II burial feature. The covering of the pit burial with boulder stone can be attributed to the function of security to keep the body undisturbed by wild animals or a symbolic form of the status of the deceased. In LMD-FK I, no burial goods given to the dead were found. In the burial features, some fragments of red on buff painted pottery and pieces of plain pottery were found at a depth of

60cm, but they were found outside the boulders and the cobblestones. It seems that the pottery fragments were deposited due to the transformation process during the closure of the burial pit.

The cranium was fully intact with a rounded shape with a brow ridge that is more indicative of male characteristics. The cranium is still attached to large teeth, and the mandible is still attached to the jaw point. There are suture lines at the top of the cranium, like in the adult cranium. The dentition is still relatively complete as in adult individuals; only one upper incisor has been lost when this individual was still alive (antemortem). Based on the skeletal molar teeth eruption, LMD-FK I was identified as a young adult male and associated with former tooth flattening activity (*pangur gigi*) to reach the dentine on all incisors and canines. The humerus, ulna, and radius are still in articulated connection and extend straight on the left and right sides of the body. The right metacarpal and phalanx are invisible because the boulder above this individual covered those parts. The boulder stone has mostly damaged the ribs. The pelvis is still relatively intact, but the pubis has been broken. The femur, tibia and fibula remain intact and have not undergone a positional transformation. The tibia and fibula are below the femur and are flexed to the left. The patella is found in both legs. The metatarsals were not seen as they were below the pelvis (Fig.12).

Concerning the *pangur gigi* activity, Koesbardiyati & Suriyanto (2007: 33-35) state that the *pangur gigi* pattern is an initiation rite by mutilating one's teeth in such a way as to form a specific pattern. The culture of *pangur gigi* of the incisors and canines on the maxilla began appearing from the early Neolithic period to the Paleometallic period (4000 - 1500 BP). *Pangur gigi* in LMD-FK I individuals is carried out on the enamel to dentine part of the teeth on the mandible and maxilla. The lower teeth are sharpened obliquely outward from the incisors to the premolars to appear sharp on the inside. The upper teeth are honed flat, not at an angle like the lower teeth. Some upper teeth are sharpened until only the roots of the teeth remain. The radiocarbon dating was obtained from the same square as the buried individual LMD-FK I. Samples obtained from the burnt ash and bone fragments showing 2202-1682 cal. BC (Setiawan, 2016).

LMD-FK II (Paleometallic)

The condition of the unarticulated bunt bones indicating a primary cremation, with the process happening in the same place described by Setiawan (pers. comm, August 2023). The finding of charcoal and ash also supporting the evidence of cremation activity. Some long

bone fragments and cranium fragments were found burnt and had cracks in the bones. Whiter-coloured bone fragments were found on small bones and dominantly at the bottom of the bone concentration. This funerary feature is contextualised with red on buff painted and line-decorated pottery fragments. The concentration of bones was found under flat stones that functioned as a burial cover. In this burial, at least three individuals were buried. The bone concentration of LMD-FK II was spread from near the north wall of the cave to above the LMD-FK I burial. Human skeletal parts found in LMD-FK II are fragments of long bones, costae, vertebrae, and fragments of the posterior cranium. Skeletal parts were missing, yet represented by the anterior cranium, mandible, and pelvic bones (Fig.13). Therefore, identification of the individual in LMD-FK II could not be carried out further due to the absence of reference data for sex determination and age at death. Nevertheless, the minimum number of individuals in this burial is 3. The radiocarbon dating obtained from the fragmented cremated bones showed the date of 315-208 cal. BC (Setiawan, 2016).

Figure 14 - The condition of the LMD-FK II and the appearance of pottery fragment. Source: Balai Arkeologi Sumatra Utara, in Setiawan (2016).

LMD-FK III

The corpse was placed on the pebbles in a north-south orientation, with the head to the north and the feet to the south. LMD-FK III was in Layer III which is in context with the findings of pottery and square-shaped stone adze of the Neolithic period. This layer also contains the lower jaw of a buffalo located 100cm to the southeast of the remains. This burial feature is a primary burial with a flexed position. The lower limbs were flexed to the right, from the patellae to the pelvic area so the femurs, tibias and fibulas were on top of the abdomen, with the hands were flexed in front of the chest and might have been placed under the mandible while holding the patellas (Fig.14).

The cranium was found in crushed condition and could not be further identified for the sex determination. The only remaining parts of the cranium were the maxilla and the some left upper dentals. Observation from the maxilla and the dentals revealed that this individual had M3 not-erupted yet. Therefore, it is likely that this individual age-at-death below 18 years.

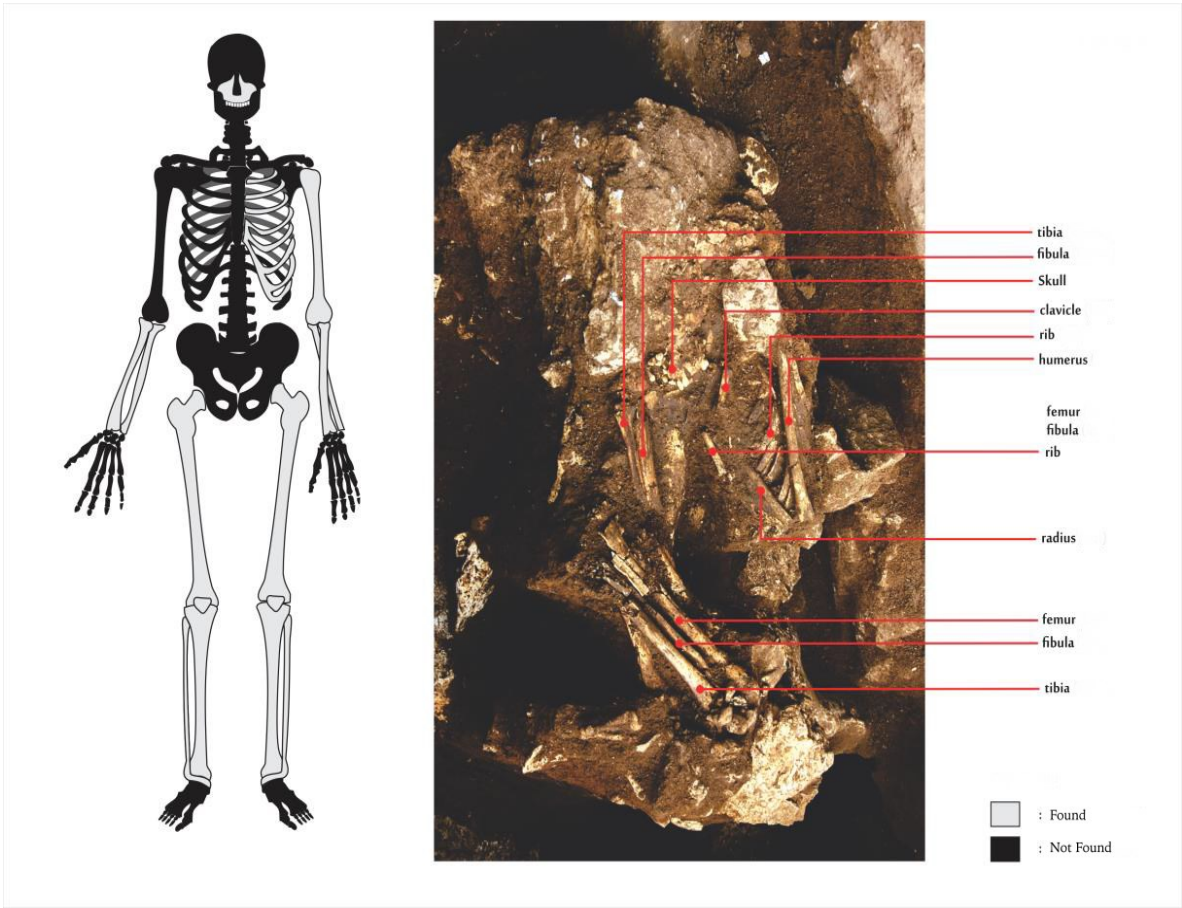


Figure 15 - The skeletal features of LMD - FK III, source Balai Arkeologi Sumatra Utara in Setiawan (2016).

The upper and lower limbs from the left part of the body were still preserved. The pelvis and vertebrae were not found. Therefore, the sex determination of this individual is difficult. Small bones were not found in this individual, either in the hands or feet probably due to the taphonomic process that occurred so that the bones were destroyed or lost. It could also be due to the inaccurate handling of the remains during excavation. In this regard, the exact nature of the burial process cannot be known. The dating has been carried out using the ash sample located on the north wall of box S3T9 at a depth of 60-70cm. The dating analysis was carried out at BATAN, Jakarta; the results obtained are 2351 - 2140 cal. BC (Setiawan, 2016).

LMD-FK IV

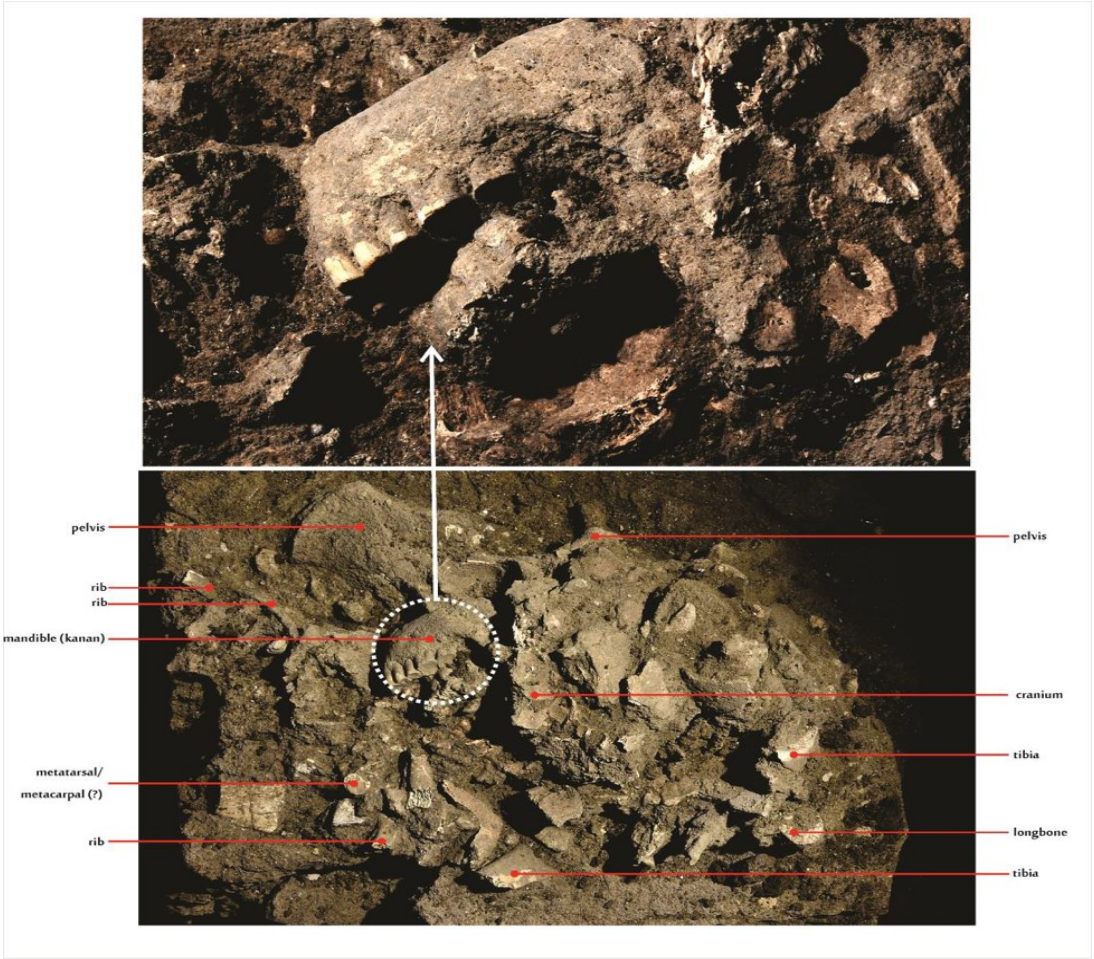


Figure 16 - The accumulation of the secondary burial of LMD - FK IV after the removal of a large boulder on top of this burial. Souce Balai Arkeologi Sumatra Utara in Setiawan (2016).

This burial feature is in the middle part of the Loyang Mendale site, found under a large boulder and in context with Mesolithic period lithic artefacts and animal bone fragment ecofacts. At the bottom, one elephant tusk fragment and one elephant femur were found. The

human bones were found concentrated in one burial pit without anatomical connection. At the time this burial feature was discovered in 2012, observations showed that the concentration of bones was under a piece of stone that served as a cover for the burial pit. This suggests that the burial was a secondary burial with the burial pit as a place to place the bones. Some of the human bone fragments found in LMD-FK IV can be identified (Fig.15). However, the right mandible is still complete with its teeth, the pre-molar and canine teeth have flat surfaces. This is likely due to the type of ingestion and possible dental activity. The third molar (M3) were not found, but the first and second molars (M1 and M2) showed a degree of dental attrition in individuals aged between 35-50. It was shown that the tooth enamel was no longer visible, and the dentine was exposed. Based on this, the minimum number of individuals was only one. Other bone fragments identified were the pelvis, costae, tibia, and several other long bones. Fragments of the cranium and maxilla were also found in a fragmented condition. No teeth were found in the maxilla. The lack of information obtained from the pelvis and cranium findings makes it difficult to determine the sex of LMD-FK IV individuals. In this layer, radiocarbon dating was performed using two samples from two locations. The first sample is a human bone fragment LMD-FK IV found at a depth of 200cm. The result from the first sample is 6479-6234 cal. BC (Setiawan, 2016).

LMD-FK V

An oval-shaped pit characterises this burial feature with a southeast-northwest orientation. In this burial feature, one human skeleton was found that was anatomically connected and relatively intact. The type of burial was a primary burial in the extended position of the upper limb, but both legs were flexed to the left and right from the patellas. The head was placed on the stone and facing to the right. The position of the hands was straight beside the body with the palms on the hips. The legs are flexed next to the thighs with the pivot on the knees. The soles of the feet are near/below the hips. The tibia and fibula bones of the left leg were found to be broken and there was a circular feature (post hole). This suggests that in later-period, wooden pillars caused the fractures. The cranium was also damaged on the left side due to mishandling of the finds during excavation. Individual LMD-FK V has a cranium with a rounded shape with a flat supraorbital ridge, the nuchal chest projection is not found, and the mastoid is not developed. The shallow pelvis and wide sciatic notch indicate that this individual is female. The dentition of this individual demonstrates that the age of death was adult, as noted in the eruption of wisdom teeth (M3). Observations on the eruption and degree

of attrition of the teeth show that this individual was approximately 15-25 years old. In the teeth of this individual, there were also indications of *pangur gigi* activity as found in the LMD-FK I skeletal teeth. *Pangur gigi* in LMD-FK V individuals is only carried out on tooth enamel (Fig.16).

This LMD-FK V burial feature has similarities in burial position with LMD-FK I. The difference lies in the head's position and the pit burial's depth used as a burial site. The burial pit used in LMD-FK V has an oval shape of only 20-30cm deep. The burial cover used is soil without using stone boulders. The position of the legs is also bent on the left and right thighs. The head is placed on a large stone that serves as a pillow for the dead. The burial hole is made with a non-flat bottom, deeper on the east side. The position of the hands placed on the body and holding the pelvis may have a particular function regarding the position of the dead's burial. The relative dating obtained from the burnt ashes of the same layer as the burial feature showed 2823 - 1291 cal. BC (Setiawan, 2016).

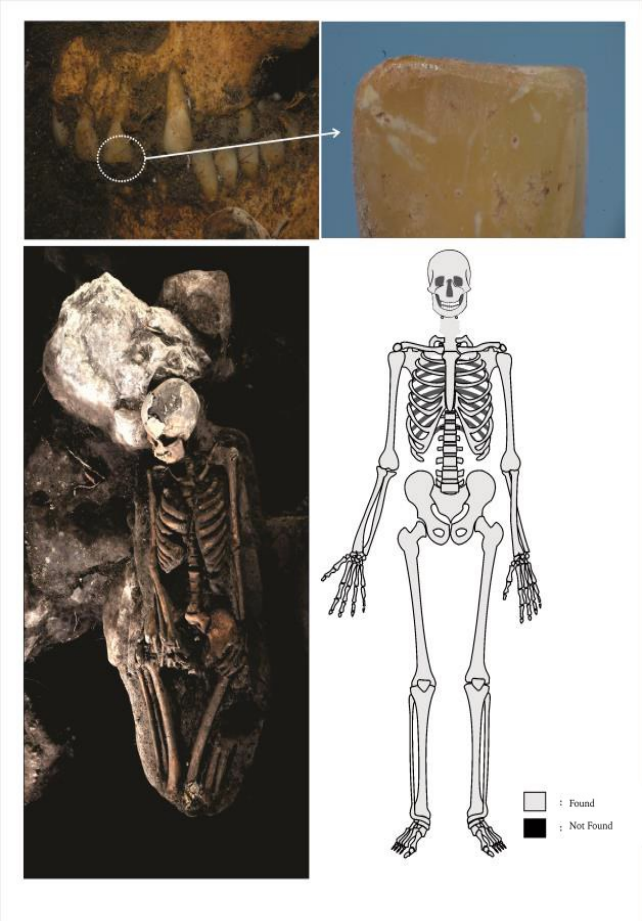


Figure 17 - LMD - FK V burial feature with the trace of Pangur Gigi. Source Balai Arkeologi Sumatra Utara in Setiawan (2016).

LMD-FK VI

Figure 18 - Individual LMD - FK VI and its skeletal state of preservation. Source Balai Arkeologi Sumatra Utara in Setiawan (2016).

This burial was identified as a pit with a southeast-northwest orientation aligned with LMD-FK V and found in the same stratigraphic layer. LMD-FK VI is another primary burial located 50cm north of LMD-FK V and adjacent to the cave wall. The dead body was buried in the supine position, extended on the upper limb but the legs were flexed, similarly to the position as found in LMD-FK I and LMD-FK V. The cranium was not found, and the skeletal condition was very fragile. The position of the hands is straight beside the body (Fig.17). The pelvis had transformed and flattened so it could not be known the sex or age of death. Both burial features LMD-FK V and LMD-FK VI were found in the same layer, namely layer II of the east part of Loyang Mendale. The absence of the LMD-FK VI cranium is most likely due to changes resulting from the shallowness of the burial pit. Besides being caused by the taphonomic factor, one other possibility related to the LMD-FK VI burial is the existence of the dismemberment burial as an effort of sacrifices. This still requires further observation. This assumption arises from the findings of headless burials found in Niah Cave, Sarawak, Malaysia. Harrison (1967 in Setiawan, 2016) mentions that these mutilation burials are indicated by losing one body part. However, the other skeletal bones are still articulated and have only changed due to the decomposition process.

2) Loyang Ujung Karang

Figure 19 - LUK - FK I individual with some grave goods. Source Balai Arkeologi Sumatra Utara in Setiawan (2016).

LUK-FK I

The burial was oriented east-west using a 40-50cm deep burial pit. The corpse was placed inside in supine and extended upper limb position but both legs were flexed to the right with the head to the east. Both hands are straight beside the body with the palms beside the pelvis. The individual's right palm is fused with the right foot bone (Fig. 18). The identification of the LUK-FK I human skeleton has been carried out by Setiawan (2011). In general, the description of the skeleton is as follows. The cranium was found intact, with a rounded supraorbital ridge. On this cranium, a large tooth mandible is still attached. The dentition in this individual is still relatively intact and complete. The teeth are arranged as in adult individuals, eight incisors, four canines, eight premolars, and eight molars. The third molar can be identified on the right maxilla. The humerus, ulna and radius are still arranged in position and extend straight on the left and right of the body. The right and left radius bones have been broken due to natural processes. The ulna bone is still relatively intact, the right and left metacarpal and phalanx bones are no longer intact and some are still covered by soil. The costae are still attached to the vertebrae. Not all of these costae are visible because they

are still covered by the features of the bottom of the pottery base, which was probably the grave good of this individual which was placed on the stomach. However, generally all parts of costae are still intact. The pelvis of this skeleton is still relatively intact, with only the pubis broken. The pelvis was identified as broad with a rather large pelvic cavity and an elongated coccyx. These morphological characteristics indicate that the buried individual was female. The pelvic bone was also articulated to the femoral heads on the left and right. Based on them, especially the cranium and pelvis, this LUK-FK I individual is female and was still an adolescent, aged 12-20 years. The tibia and fibula are intact and still articulated and showed a flexed position towards the right. The patella was still present in both legs when the skeleton was discovered. The metatarsals may still be found as they are still in the ground and under the right pelvis.

In the burial pit LUK-FK I, some lithic tools and a fragment of the base of an earthenware container. The two stone artefacts namely stoneadze and an arrowhead were located above the head and to the left of the skeleton, while the pottery base fragment was placed on the abdomen. The relative dating through radiocarbon of this burial, obtained by the fragmented bones in the same square showed 946-404 cal. BC (Setiawan, 2016).

LUK-FK II

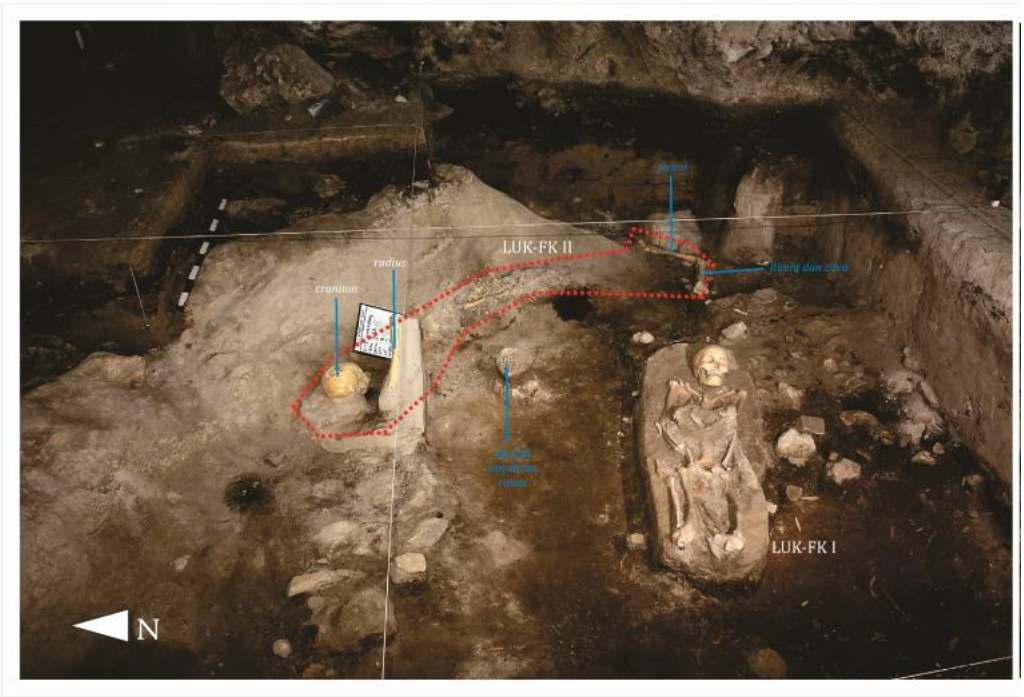


Figure 20 - The position of LUK - FK II and LUK - FK I with different burial position and chronology. Source Balai Arkeologi Sumatra Utara in Setiawan (2016).

The condition of the human skeleton in burial feature LUK-FK II has several possible interpretations. Firstly, the fragmentary and transformed bones could indicate secondary burial. Secondly, the presence of the upper skeletal bone fragments and the relatively more articulated foot bones to the south suggest that the dead was primarily buried in a loosely flexed position flexed to the right with a north-south burial orientation. The human skeleton found in the burial feature was mostly transformed and deposited on a layer of grey sandy clay with a compact structure identified as a natural layer formed by water inundating the cave floor (Fig.19). The cranium of LUK-FK II was found in relatively intact condition. The mandible was not found. Based on the identification of the mastoid and nasal crest carried out in this study, it shows that the individual is female. The rounded shape of the cranium and the projection of the supraorbital ridge further clarify the female identity. The linkage of the suture lines indicates that this individual is an adult. The analysis conducted by Wiradnyana and Setiawan (2011) shows that LUK-FK II is a secondary burial with a rattan basket covered with leaves. This is based on the findings of woven rattan and leaves that are in one stratigraphic layer and the locations of the findings are close together (Fig.20). The two findings cannot be explained in more detail about whether there is a relationship between the findings of LUK-FK II. An assumption of a relationship between LUK-FK II, rattan weaving, and leaf traces is based on the secondary burial model found at Niah Cave (Sarawak, Malaysia). This is associated with a mixed burial procession that placed the dead in bamboo or rattan baskets or rolled them in pandanus mats. This burial at Gua Niah shows some skeletal bones being burnt and then placed in a basket. Other finds give an idea of the pandanus mats that wrap the body before placing it in the burial container (Harrisson, (1967) in Setiawan (2016) .

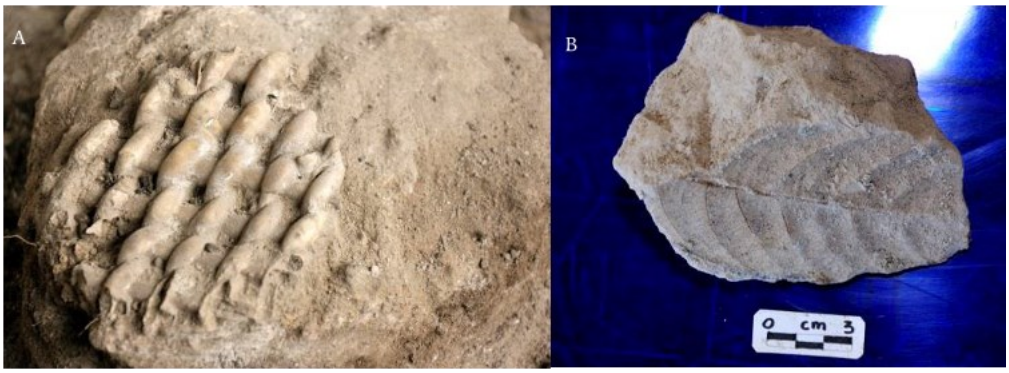


Figure 21 - A. The fragment of rattan weaving which presumably was the mats to wrap the corpse.
B. Leaf trace in the same context as LUK - FK II. Source Balai Arkeologi Sumatra Utara in Setiawan (2016).

LUK-FK IV

Figure 22 - Individual in LUK - FK IV showing the different location of the cranial and post cranial. Source Balai Arkeologi Sumatra Utara (2016).

The cranium was found 40cm south of the bone concentration and on top of some rock fragments just above the reddish-brown soil layer. The results of the stratigraphic analysis that has been carried out show that this burial feature is in the same stratigraphic layer as the LUK-FK II burial, thus made the dating relatively in the same chronology as LUK-FK II. Setiawan (2014) mentioned that this LUK-FK IV burial is secondary. This statement is based on observations of bone concentration, and the position of the cranium and mandible are no longer articulated as they have transformed due to the second burial activity (Fig.21). However, according to another anthropologist's observation of the casting of this skeleton in 2013 at the Balai Arkeologi Sumatra Utara, the skeleton was not a second burial, but a primary burial. The anthropologist mentioned that the position of the bones is still articulated as indicated by the unchanged position of the pelvis, femur, tibia, and fibula. The position of the humerus, radius, and ulna bones were also found still in position, yet to be transformed. Based on this, it can be concluded that the skeleton in LUK-FK IV was buried in a fully flexed position facing upwards. The position of the hands was tilted on top of the chest and the thighs and knees were flexed in the axis of the hips and knees to the front of the chest. Natural factors transformed the cranium and mandible positions.

The LUK-FK IV skeleton is identified as an adolescent female aged 12-20 years old. This is evidenced by the cranium shape, which tends to be rounded with the brow ridge and nasal crest not protruding. The mastoid part also appears undeveloped as in female individuals. The teeth on the maxilla and mandible show that this individual does not yet have wisdom teeth (M3) which indicates the age of this individual is still under 18 years old (Setiawan, 2016).

3) Gua Harimau

Figure 23 - The complex of burial in Gua Harimau in 2011. Source Pusat Arkeologi Nasional, in Noerwidi (2014).

Gua Harimau is located on the slopes of the limestone hills of Padang Bindu Village. The mouth of the cave is about 50 metres above the Air Kamanbasah River. This location is very strategic because besides being close to a source of drinking water in a high place, the inhabitants of Gua Harimau can also monitor the surrounding conditions freely (Kurniawan et al., 2016).

The 78 human burials in Gua Harimau illustrate the variation in prehistoric human behaviour regarding the treatment of deceased community members (Fig.22). The treatment is very clearly visible in placing the body in a particular position, orientation, or place and including several objects along with the buried individual (grave goods).

The general grouping for Gua Harimau funerary practice can be divided into several ways based on the structure of the grave such as:

- The funerary deposit: primary inhumation (34 individuals) and secondary (17 individuals), and disturbed (5 individuals).
- The number of individuals in Gua Harimau in one burial can be consist of: individual burials, plural burials (sometimes a person can be the companion of the dead), and collective burials.
- The position of the corpse: flexed (6 individuals) (Fig.23) and extended (27 individuals).
- The group affiliation: Mongoloid (28) and Australomelanesian (11 individuals).
- The funerary material: grave goods in the form of weapons, tools, even floral remains.

The commonly found orientation is north-south, but some burials show an east-west orientation. Burial goods also accompanied these burials in the form of pottery, mollusc shells, stone artifacts, and metal artifacts. From a burial, we can explore the concept of belief of the people supporting the culture concerned. Behind the burial process is a system of behavior that includes procedures, methods, series of activities, and everything that is interrelated with one another. Binford (1972 cited in Noerwidi et al., 2015) states that burial activities include the care of the body, the preparation of burial provisions, a series of ceremonies, and the implementation of burial. The activities require good management because it involves almost all community members. To understand the concept of belief of prehistoric communities supporting burial culture, it must be considered the type of burial, burial system, position, and orientation of the frame, as well as traces of the rite, both visible and invisible.

Based on the number of individuals in a burial context, there are three burials in Gua Harimau: individual burials, plural burial (paired), and collective burial. Single burials are burials with one individual, pair burials with two individuals, and collective burials with more than two individuals in one burial context. At least 7 burial features can be identified as couple burials, involving 14 individuals. Almost all individuals from the pair burials, both the primary and accompanying individuals, were buried in the primary burial system on their supine position. The complexity of burial systems and types at Gua Harimau reveals this site's procedural and technical aspects of prehistoric burials. It is thought that the burial system at Gua Harimau has recognized burial markers for individuals who are genealogically related, but died at different times, but eventually to be buried together. The remains of these burial markers may be absent\ today because they were made from non-permanent materials, such as wood. Traces of burial disassembly and the importance of burial markers are reflected

in paired burials, particularly in collective burials with one primary burial accompanied by several individuals collected from pre-existing burials. *Fagaceae* and *Leguminosae* pollen on the skeletons in Gua Harimau suggests the ritual use of flowers and hardwoods as burial containers. The direct dating from the several individuals from Gua Harimau have been carried out and revealed the oldest phase between 5565-4514 BP, later burials belong to the range between 2691-1786 BP (Fauzy et al., 2015; Matsumura et al., 2016; Noerwidi et al., 2015).

Figure 24 - Individual 8 with flexed position. Source Pusat Arkeologi Nasional in Noerwidi (2014).

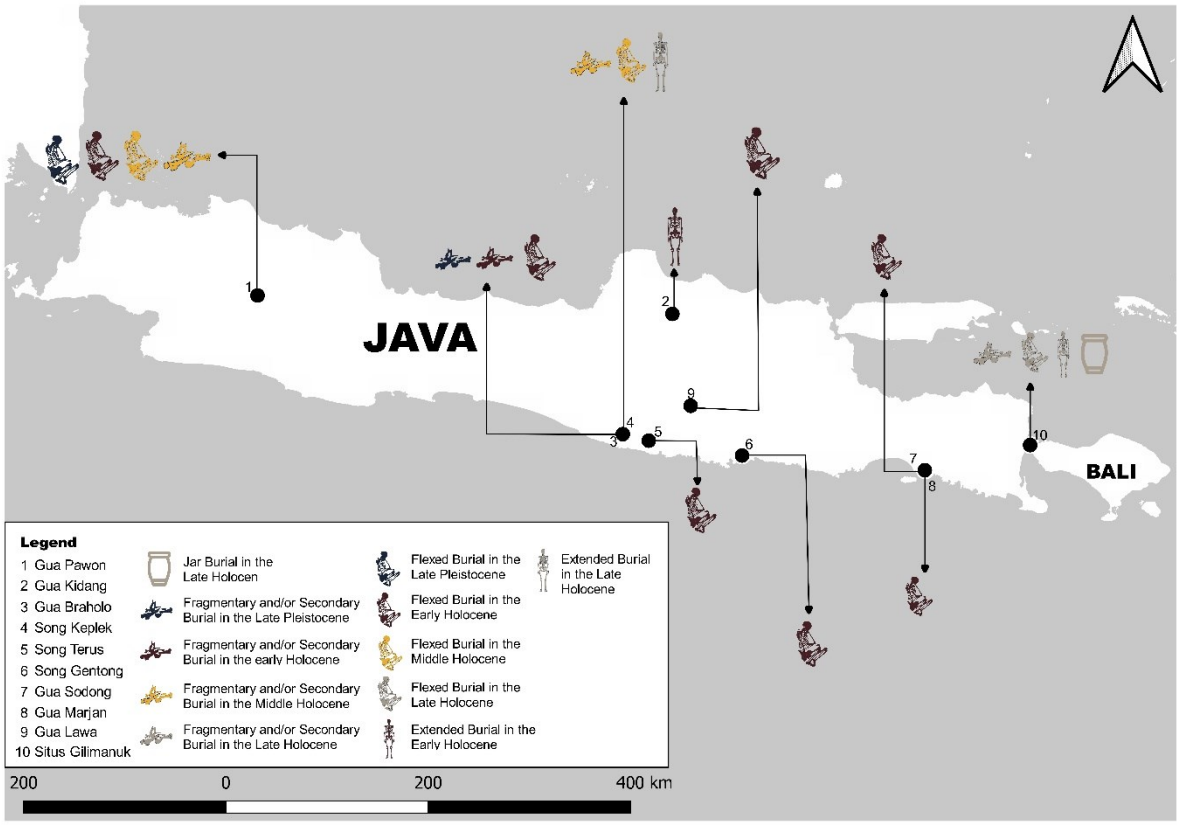


Figure 25 - The sites and funerary features in Java & Bali Island

1) Gua Pawon

Gua Pawon is a cave formed in a karst topography area located within the hills of the Rajamandala formation. This cave extends from the east to the west with the entrance in the north. Geologically, this site belongs to a group of canyons. The cave is 716 metres above sea level and in the northern part of the Pawon limestone hill, which has an area of approximately 9 hectares.

PAW1

The condition of the PAW1 at the time of discovery was already fragile (Fig. 24). Since the find only consists of part of the skeleton with a depth of 80cm from the surface of the excavation square. The part of the skeleton that was found consisted of the cranium, which was broken into several parts, the mandible which was relatively intact with the M1 until M3 still attached, and the left half of the maxilla with the teeth still attached (Fig.25). Based on the measurement of the cranium latitude with the remaining length range from the front to the back of the cranium is 13.5cm, and from the left to the right, there is an impression that the

size of the cranium tends to be rounded or brachycephaly. The cranium has a thickness of about 9 millimetres, which appears thicker and rougher than the thickness of the other skull bones, which range between 6-7 millimetres. The rest of the skull also exhibits a well-defined protrusion above the supraorbital arc that is generally absent in female individuals and very prominent in male individuals with age at death is 40-50 years. Unfortunately, due to the incompleteness of the remains, the position of this individual is indetermined, however the orientation of the remains was found in east-west direction. From the mandible which is anatomically perfectly formed and showing well-defined chin, "there is evidence the mandible and maxilla have been coloured with hematite" (Lufti Yondri, personal communication, August 2023). Dating directly from the fragments of each individual obtained through radiocarbon showing 5660 ± 170 BP as the age of PAW1, PAW2, and PAW5 (Yondri, 2021).

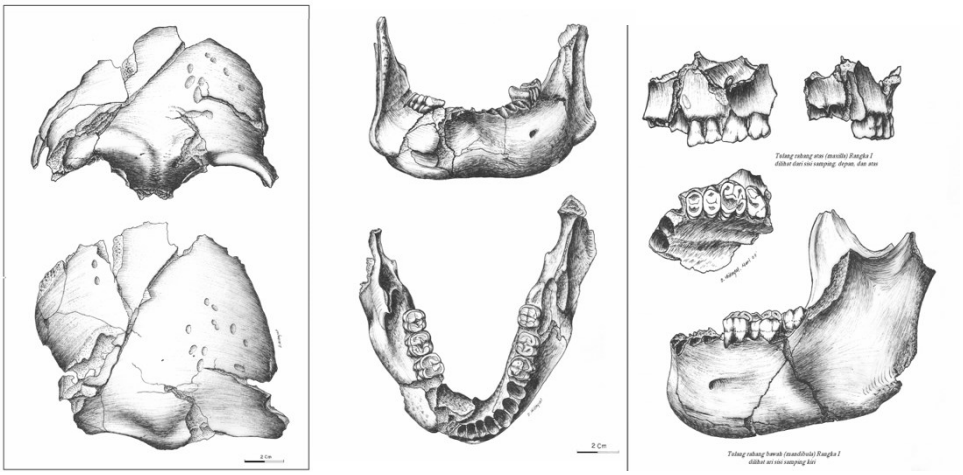


Figure 26 - The remains of PAW I from Gua Pawon. Source Yondri (2021).

PAW2

Together with the PAW1, PAW2 was found on the same soil surface as PAW1, at a depth of 90cm from the surface of the excavated square. Anatomically, in terms of quantity and quality, the findings of PAW2 are very few, namely only the posterior part of the cranium – without the evidence of hematite on the bones. Since the condition of these remains, similarly with PAW1, the orientation and initial position of the corpse remained unknown. Based on the shape of the appearance of the posterior cranium of PAW2, there is no real nuchal crest as is generally found in male's cranium. The shape of the posterior cranium is slightly rounded and smooth. Another thing that can be described in PAW2 is that the pattern of the suture appears to be fully developed. Based on this, it can be said this remains has represented an

individual who has reached adulthood. Such a developed form of suture line development is generally possessed by the cranium of adult (Yondri, 2021).

PAW3

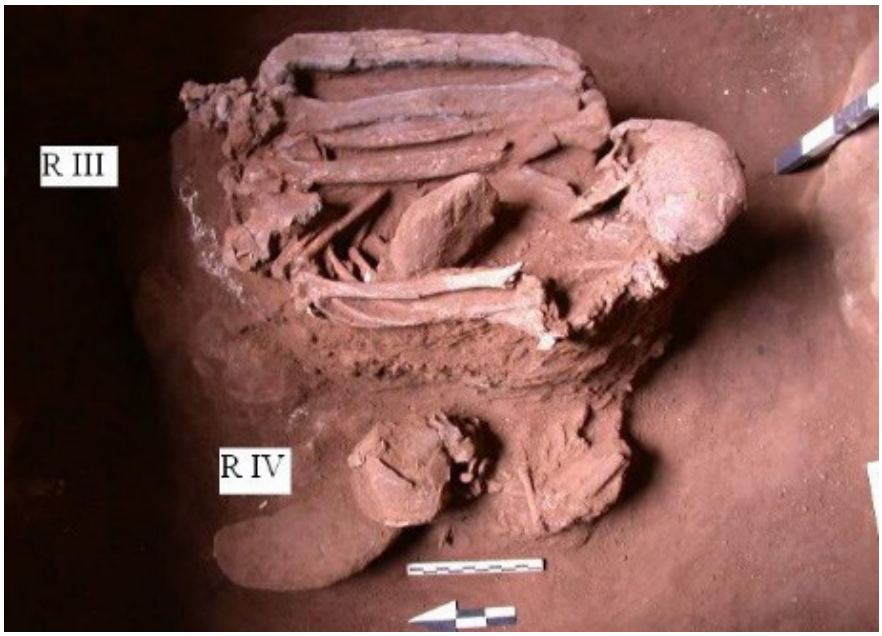


Figure 27 - The position of PAW3 and PAW4. Source Yondri (2004)

PAW 3 was discovered on slightly different squares compared to PAW 1 and PAW 2. However, in the vicinity of PAW 3, other skeletons namely PAW 4, PAW 5 and PAW 6 and PAW 7 were found. In this layer also found some artefacts in the form of flakes, bone tools, molluscs, and fragile fragments, however compared to the previous skeletal findings, PAW3 is a skeleton found quite complete both in terms of shape and anatomical connection because most of the bones still possible to be observed. The position of the skeleton is lying on its left and the whole body is fully flexed with the orientation of north-south. Anatomically, the skeletal structure from the head to the feet is still located mainly *in situ*. The skull of PAW3 was partially missing or destroyed on the right side, while the left side was still visible (Fig.26). Although partially fragile and displaced. The cross-sectional shape of the mandible of PAW3 shows a wide shape with a firm and sharp chin bone curve, it is inferred later that PAW3 is a middle adult man. In this jaw there are incisors, canines, premolars, and molars that have grown completely, with an average size that is rather large. The stature of this individual can be estimated from the accumulation of the distance between the top of the cranium and the tip of the hip bone (66.5cm), the length of the femur (49.6cm), the tibia and the rest of the calcaneus (47cm). Based on the size of each part, it can be estimated that

PAW3 has a stature range of around 147cm. The dating directly on the fragment of PAW3 through radiocarbon showed the age of 7325 ± 180 BP (Yondri, 2021).

PAW4

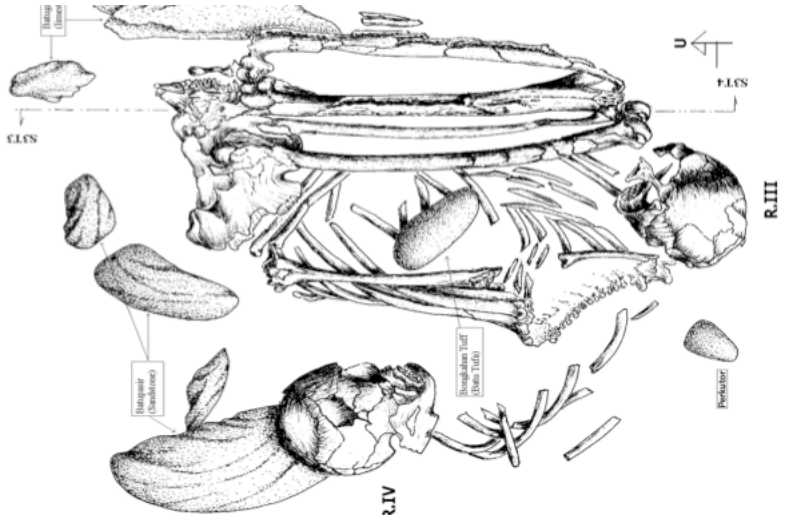


Figure 28 - The position of PAW 4 under the remains of PAW3 in the opposite direction. Source Yondri (2021).

PAW4 is the skeleton buried in a flexed position, with a northwest-southeast orientation with the head to the northwest. The head is slightly bent downwards towards the eastern side. Both legs showed the position of being flexed towards the chest (Fig.27). The skeleton was in a reddish fine clay layer containing limestone and phosphatic blocks. At the bottom of the PAW3 is a layer of white soil, a mixed layer of soil with phosphate weathering. This layer is a barrier with the soil layer at the bottom. The condition of the skeleton is very fragile, some parts of the bone structure have been lost or destroyed, but anatomically some of them can still be observed. In contrast to PAW3 where almost the entire bone placement can be observed, the placement of the two hands in PAW4 is tough to observe because most of them have been destroyed. From the remaining part of the upper arm found, it is likely that these two hands were placed in the direction of the placement of the two legs which flexed towards the chest. Based on the cross-sectional shape of the mandible owned by PAW4, it can be seen that the jaw has a relatively narrow, rather small size, and a smooth chin bone curve with a slightly oval shape inferring this individual is most probably a female. The mandible also contains incisors, canines, premolars, and molars with a small average size worn and broken at the cusp. From the fully developed growth form, although smaller in size than the findings

of PAW1 and PAW3, the wear of the tooth cusps, and the development of the suture, it can be estimated that PAW4 has reached the middle adult age. Although there are some difficulties to measure the stature of PAW4, due to most of the bones have been lost and destroyed. The radiocarbon dating from the fragment of the skeletons of PAW4 showing the age of 9325 ± 200 BP .

PAW5

PAW5 was found to be the skeleton of an adult individual, and only the maxilla and mandible were found. The teeth on the maxilla and mandible are incisors, canines, premolars, and molars, most of which have experienced attrition at the cusp. The estimated death is at young adult stage, precisely 20-24 years old (Noerwidi, 2020a). The chronology of the PAW5 burial is at the same cultural period as PAW1 and PAW2, which is 5660 ± 170 BP years ago (Yondri, 2021).

PAW6

To be compared with the position of PAW3 and PAW4, the pattern of PAW6 is located with a north-south orientation. The position of the skeleton is flexed, so the full stature of the skeleton cannot be determined. However, the stature can be estimated from the accumulation of the distance between the top of the cranium and the tip of the pelvis, the length of the femur, tibia, and the rest of the foot bone. It is estimated that PAW6 is about 160cm tall. PAW6 was found still in its anatomical connection, although found in a fragile state, overall parts of the skeleton can still be observed. Both parts of the head, neck bones, arms, and legs, but the skull of PAW6 was partially missing or destroyed on the right side, while the left side was still visible. The cross-sectional shape of the mandible of PAW6 shows a wide shape with a firm and sharp chin bone curve. In this mandible, incisors, canines, premolars, and molars have grown completely, with an average size of relatively large. The position of PAW6 is also included in the group of burials carried out in flexed position. Sandstone boulders on the right side of the body. The direction of the face is bent to the east. The bones of the members of both hands and feet are flexed to the left and right of the body, as if the position of a person is squatting who is then laid back. The skull of PAW6 is mostly found fragmented, presumably due to pressure from above. Relative dating for PAW6 obtained by radiocarbon resulting the data from 10.075 ± 180 BP (Yondri, 2021).

PAW7

The orientation of PAW7 is northwest-southeast and the head is bent towards the body while the face is pointing to the east. Although still equally included in the group of flexed burials. The flexed position of PAW7 is very much different from the flexed pattern of the previous skeletons. The position of the upper and lower forearm, thigh bone and left leg bone of PAW7 are flexed straight over the body, while the left leg bone is located slightly crossed towards the left foot. About 30cm on the east side of PAW7 there is a sandstone. Overall, four human skeletal findings at Gua Pawon were found in different stratigraphic positions from one another. These findings have been replicas to be placed back in Gua Pawon. The position of PAW3 which was buried in a flexed position occupies the position closest to the present cultural layer at a depth of 143cm, then below it at a depth of 167cm is PAW4, then in a deeper position and shifting to the north of T2S3 square at a depth of 190cm is the position of PAW7. While PAW7 is located in a different square, T3S4 with a depth of 245cm from the measuring point. So far PAW7 has the oldest dating of all the skeletons recovered from Gua Pawon, which is 11.788 ± 650 BP, this dating was obtained by radiocarbon dating method on the bone fragments from PAW7 (Yondri, 2021).

2) Gua Kidang

Gua Kidang is located in Tinapan Village, Blora, Central Java. The two caves in the dolina of Gua Kidang have relatively different finding contents in character, Gua Kidang A (this thesis), which is located in a relatively in downhill position into the cave, provides information on the presence of daily utensils findings (shells and bones), burials (human skeletons), and stratigraphy in the form of a layer of flow stone and stalagmites which indicate that it has been the surface (floor) of the cave for a relatively long time.

The 1st Individual – R I

The burial system that has been known based on the skeletal findings is the arrangement of limestone boulders, oriented to northwest-southeast, the scattering of shell mussels and red limestone crumbs, and some inclusion of vertebrate fragments such as cervidae, macaca, and suidae species around the skeleton. Based on the paleoanthropological analysis conducted by anthropologists from Airlangga University, the skeletal finding is from an adolescent aged

between 14-19 years old with the stature between 160-170cm. The gender cannot be known yet considering that the pelvis bone has not been fully exposed, because it is located in another square. Another indication of an interesting skeletal finding is that there is an accumulation of burial goods at the patellas so that the appearance of the bones becomes flat. It is not yet known whether this is part of a ritual or not. However, clearly, the flattening of the bones occurred postmortem, not during lifetime. From the lower limbs, it is shown prominently that this individual was placed in extended position (I. Nurani et al., 2014).

The 2nd Individual - R II

This finding adds information on the burial system that the inhabitants at Gua Kidang have recognized. Unlike the first individual skeletal finding, this intact skeletal finding can be identified by gender, age, stature, and affinity. East-west was the orientation of the skeleton with the head in the east tilted towards the west. The body lying on its left with flexed position and the hands were flexed under the head (presumably a "pillow" for the deceased), also the legs were flexed (Fig.28). There was a scattering of mollusc shells on the skeleton, several intact mollusc shells placed in certain parts of the skeleton, and the inclusion of animal bones around the skeleton (it cannot be confirmed whether the bone findings were *in situ* or transported) (Nurani et al., 2012). Limestones were crushed into gravel size, then was

Figure 29 - R II with flexed position and east-west general orientation. Source Nurani (2014).

placed on the base of R II skeleton as the bed for the body. The paleoanthropological analysis was successfully carried out, although in some parts of the skeleton were fragmentary. However, the position of each bone is mostly still in an anatomical position, from the results

of the age estimation identification, died in young adult age, precisely 25 - 35 years old. R II is a male, estimated stature is about 153.23 ± 3.37cm and affiliated to Australomelanesian group population (Noerwidi, 2020a; I. Nurani et al., 2014).

The 3rd Individual – R III

The results of this human skeleton showed that the skeleton was facing the west, in a seated position (Fig.29). This burial is intriguing, due to the evidence of manuports in the form of flat limestone which placed in front (west) of the skeleton. The limestone has been deliberately placed and shaped like a concave container. Not all anatomical parts of the skeleton have been found, the cranium part was not found. However, some teeth were found around the skeleton. Findings such as mollusc shells and animal bone fragments found in the burial, similarly with R I and R II. Based on the tracing of this skeleton, the position of the two hands is fused with the left foot, so that the fingers and toes are fused on the left foot. Meanwhile, the complete right foot has not yet been revealed. However, this part of the right

Figure 30 - R III individual with flexed and seated position. Source Nurani (2014).

foot has found the sole bone of the foot in the western part of the north. With these findings, the position of the right foot is likely in the right while the left foot, and both hands are

together on the left foot. Presumably the individual was seated in the flexed position. Another possibility is that the cranial part was disarticulated from the body after the whole body had decomposed (reopening grave practice). Overall, the fragility of R III is very high. The parts of R III that could be observed were the thorax, sternum, vertebrae, and pelvis fragments. On the upper extremities such as right-left ulna and radius, right-side of caput humeri fragments, right and left-hand bones, and lower extremities right and left feet. Some part of the bones that were missing *in situ* were the humerus, femur, tibia and fibula. The vertebrae and ribs were stacked (vertically) *in situ*. This position is a result of disarticulation when the body in the decomposition stage. In this case, the ribs are stacked from the first to the last costae. Regardless of the geological process that caused the shift in the location of the skeleton, the R III position shows a slightly changed anatomical arrangement of the back. For example, the location of the vertebrae shifts towards the ventral. The post-disarticulated position of the skeleton as seen in R III suggests that the position of R III's back was vertical when it was buried. Several patterns of R III sitting positions are suspected from the anatomical position of this part of the foot, including with the legs flexed in front, cross-legged, or half-cross-legged. Based on information from the diameter of the caput humeri, it can be assumed that the sex of R III is female. Furthermore, based on the length of the ulna and the length of the radius, the estimated stature of R III falls in the range of 153.28-156.09cm. A potential point of interest for further analysis of the entire excavation process is the different burial positions of R I, R II, and R III (I. Nurani et al., 2014).

3) Gua Braholo

Goa Braholo is a large cave in the western part of Gunung Sewu in the western region, near Wonosari (Simanjuntak, 2002). The entrance is approximately 40 metres wide and opens to the south-west, approximately fifteen metres above the base of the hill. The main karstic room is nearly 600 m^2 in size and is surrounded in front by a barrier of large blocks that fell from the porch. Sixteen excavation zones were established, primarily in the western section of the cave.

Numerous fossil human remains were unearthed during the excavations at Goa Braholo: at least seven individuals (possibly eight) were in primary or secondary burial, and several isolated remains were also unearthed in practically all the excavation areas (Détroit, 2002). In 2014, Noerwidi in his study could identify in total 24 minimum number of individuals recovered from Goa Braholo, and then later inferred that there is 15 evidence of burials

(Noerwidi, 2020). In this thesis however, only several individuals are able to be described based on the work of Détroit (2002) with the analysis of the funerary features.

BHL 1

Individual BHL 1 was interred in the primary inhumation, generally oriented to the east-west with the head facing to the west. The upper limb was on supine position but slightly rotated to its right side, with two large stones was placed on top of upper right limb. The left radius and ulna were perpendicular to the humerus, resting on the abdomen and bringing the left hand to the right side. According to the direction of the right forearm bones, the right hand should rest on the knees. The legs were flexed to the right and the knees were tucked upwards in reference to the upper body's level (Fig.30). On top of the ankles and feet, the third stone was placed. The bad stage of preservation of this skeleton was very fragile, probably due to the

Figure 31 - BHL 1 flexed burial with the absence of the stones on the skeleton. Source Simanjuntak in Noerwidi (2020).

dense bat guano dropping which inhabits on the upper part of the cave network. Based on the robustness of the cranial vault and mandible, BHL is presumably a male individual. On the right side of the mandible, the base of the alveolus of M3 is preserved, indicating that this tooth must have been present. Hence, BHL 1 have reached adulthood, and the average stage of the tooth wear indicating the age at death is middle adult (based on Noerwidi, (2020a) data is 35 - 40 years old). The radiocarbon dating obtained from the charcoal which found nearby the skeleton gave the age of 9780 ± 230 BP (Détroit, 2002).

BHL 2

The skeletal elements of BHL 2 were all disconnected and very fragmented, and it shown a particular arrangement inside the grave. The base of the burial yielded grey to reddish-orange colored sediment, comprised of rich content of charcoal, fragmented bones, and burnt mollusc shell with an advanced stage of incineration. Détroit (2002) perspective suggested that this burial could be a result of secondary burial which the first place of decomposition was still unknown. The visible features of the skeleton *in situ,* namely: pelvis, cranial vault, cervical vertebra, a fragment of the maxilla, the half of right mandible and its teeth, the half of left mandible and its teeth and the left maxilla with incomplete teeth (Fig. 6). Except for some cranial vault fragments, the human bones resting on the bed of ash, but did not appear to be cremated. No post-cranial human remains were found among the burnt bones in the base of sediments. The fire was most likely used during the initial stages of preparation for the burial, and possibly after the bones were placed and buried. So, if complete cremation of human bones was intended, for BHL 2 was not the case. From the *in situ* M3, the suture that clearly marking BHL 2 is a middle adult. The gracile feature of neurocranium and overall small dimensions, the gracile and small morphology of the pelvis, confirmed the sex of BHL 2 is a female. The charcoal from the grave was dated by radiocarbon and resulting the age of 8760 ± 170 BP (Détroit, 2002).

BHL 3

The BHL 3 was probably a primary burial, but the status is unclear. This individual was only represented by the post-cranial skeleton, namely long bones which has robust and large size. No cranial part was found during excavation which suggested the probability of post-burial practice, including reopening the grave and removal of the skeletal part. The dating of this individu obtained at 4120 ± 100 BP (Noerwidi, 2020).

BHL 4

Détroit (2002) described from his personal communication with H. Widianto, that BHL 4 comprised of a primary inhumation and interred in flexed position. The skeleton found in relatively complete but in very fragmentary stage. Two maxilla fragments and two mandibles were preserved from the cranial part (Fig.31). The left maxilla fragments comprised of the alveoli from I1 to I2 and Canine, with P3, P4, M1 and M2. Part of the nasal margin was also visible. Regarding the teeth, there is a slight worn trace on the distal surface of the M2, indicating the presence of an M3, which has not been found. This burial yielding the age

around Middle Holocene and the remain belongs to a young adult around 30-35 years old (Noerwidi, 2020).

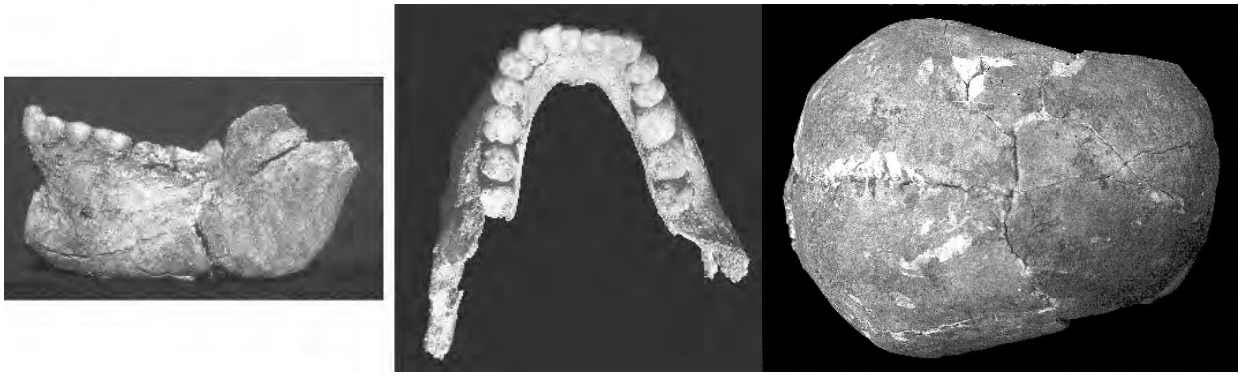


Figure 32 - Superior view of the cranial vault and the mandible of BHL 5. Source Détroit (2002).

BHL 5

This inidvidual was probably inferred in secondary inhumation (Widianto in Détroit, 2002), and only the parts of cranium, mandible, hyoid and three upper incisors were found (Fig.32). Noerwidi (2020) described BHL 5 as a young adult female individual and the age at death is around 20 - 24 years old, and dated to 9780 ± 230 BP.

BHL 6

BHL 6 belong to an individual which inferred in a primary burial with the flexed position, and this individual was lied on the right side. The general orientation of the corpse is east-west with the head on the east. The post-cranial skeleton is represented only by elements of

Figure 33 - BHL 6 in post excavation in the laboratory reconstruction. Source Détroit (2002).

the axial skeleton: numerous vertebrae or fragments of vertebrae, fragments of sternum and scapulae. The knees are strongly pulled up and against the body, positioning the femurs in a sub-parallel axis to that of the spine and bringing the knees level with the face. The left arm is flexed to its right angle, positioning the hand at pubic level. The mandible is relatively small, although the reliefs are well marked, and the teeth appear relatively large. There is little trace of wear on occlusal surfaces and the right M2 has no distal contact facet. This is probably a young individual with the M3 was not erupted. Overall, the bones are quite small, but their morphology is rather robust. Noerwidi (2020) inferred BHL 6 as a female which died at the age less than 18 years old and dated to 9780 ± 231 BP.

BHL 7

This individual was challenging to be inferred due to the context which unclear due to the fragmentary state of the skeleton during the excavation. Presumably that the corpse was dismembered after some times had been buried. The skull is represented only by a left fragment of the occipital bone, including a portion of the superior and highest nuchal lines, the external occipital protuberance, and a section of the lambdoid suture on either side of the left asterion.

From the dental observation, BHL 7 is probably a young individual whose M3s were not yet in occlusion. Meanwhile, the post-cranial skeleton is represented only by axial skeletal elements: numerous vertebrae or fragments of vertebrae, fragments of sternum and scapulae (Détroit, 2002).

BHL 8

There is a chance that BHL 8 is a part of BHL 7 because they came from the same square and were discovered in the deep level. The two individuals were complementary because BHL has only representation of the left foot (calcaneum, talus, several phalanges) and the fragments of the lower limbs (patella, femoral and tibial diaphyses, fibula epiphysis). Since no burial structure was found during the excavation, this may be a single reworked burial (BHL 7 and BHL 8) (Détroit, 2002).

4) Song Keplek

Song Keplek is located in the eastern part of Gunung Sewu mountain range (Simanjuntak, 2002), precisely in Punung, Pacitan, East Java. Song Keplek faces southeast, at 333 metres

above sea level. The collapsed limestone blocks that currently fill the cave's main chamber have enclosed the cave's entrance passages, leaving the remaining section with the impression of a rock shelter. The mouth of the cave is facing to the east, and the floor surface is relatively on the same level as the vicinity. From the initial excavation in the 1990s until the last in 1998 Song Keplek yielded 5 human remains (SK1, SK2, SK3, e and SK5), even though only 2 last remains namely SK4 and SK5 which have better state of preservation and thus analysed later morphologically in the following years by Handini & Widianto (1998), Détroit (2002) and Noerwidi (2012). The significance of Song Keplek is recorded with the rarity of the occupation by two different population groups in Java. The SK1 and SK4 belonged to Australomelanesian affinity and related to Pre-Neolithic cultural tradition (Noerwidi, 2020). Meanwhile, SK5 presents Southeast Asian affinity which corresponds to Austronesian language speakers and the Neolithic tradition (Noerwidi, 2012). Hence, Song Keplek is the site beared a transition occupation among two different groups of populations.

SK1

SK1 burial consist of a posterior part of the calvarium, the left temporal part, the maxilla fragment of the left alveolaris with several teeth. The size of the teeth is very large with perfect cusps development for P1 to M3. The size and morphology of the occlusal part of the tooth suggest belonging to a middle adult individual. The degree of tooth wear reaching the dentine indicates an age between 35-40 years. Based on the large size of the mastoid process and the development of the muscle insertion at the nuchal plane, this skull elements represents a male individual. Based on the width and depth of the mandibular fossa, this opinion is also supporting the large size of the mandible (Handini & Widianto, 1998).

SK2

This individual consists of the left temporal fragment. The physical morphology shows that this individual is more muscular than the first individual, based on the larger size of the zygomatic process. The anterior and posterior zygomatic bone are more developed. The temporal bones are more intensively developed. The superior petrous is wider and deeper, similarly with mandibular fossa. Clearly representing a male individual, its age cannot be estimated given the absence of parameters for individual age determination (Handini & Widianto, 1998).

SK3

This individual found only with the posterior part of the cranial vault, comprising the right and left parietal and the right occipital part that includes the occipital and nuchal plan. The two sutures were not fully fused. Based on the smoothness of the cranial and the closure of the suture, this individual represents a child. The shape of the calvarium, although still a child, has shown an elongated elongated (dolichocephalic) shape (Handini & Widianto, 1998). Détroit (2002) argued that individual SK3 died around the age of 5-10 years old.

SK4

Based on the anatomical connection and the evidence that even with such a flexed position, the pelvis has not been rotated, the entire skeleton has not collapsed through time, so it can be said that SK4 is a primary inhumation. The flexed position of this individual is quite complex, with both legs flexed and the feet were brought up until almost under the buttocks of this individual (Fig. 4). Northwest-southeast was the general orientation of the body and the head to the southeast and the face was gazed to the northeast. From the almost complete skeleton of SK4, it gained the biological data that this individual was a middle adult female who died around 35-40 years old. Noerwidi (2020) determined the age of SK4 to be 5900 ± 180 BP.

Some lithic tools and flakes were discovered all around the skeletons and a relatively big flake was between the knees. The presence of animal and mollusc remains were fairly abundant but showing incomplete anatomical connection, thus it could not appear as an intentional deposit (Détroit, 2006).

SK5

This remain is considerably almost in anatomical connection, thus can be inferred as primary burial. There was no indication of a burial pit during excavation, yet the *"effets de paroi"* are visible on either side of the body. The position of the corpse showed that the body was extended with the east-west orientation and the head was placed on the east. Both legs were extended, meanwhile the arms were flexed and brought on the chest (Fig. 5). The right wrist was above the center of the sternum and the left wrist was on the opposing side, slightly below the right wrist. The cranium of SK5 was placed upward and the face was tucked and

gazed downward toward the foot's direction. The biological profile of SK5 was a middle adult female, died at the age of 40-50 years and uniquely showing the Mongoloid affinity, differently to SK4. Through radiocarbon, it is shown that SK5 yielded the dating on 3053 ± 65 BP, the dating was obtained directly from the fragment the costae (Noerwidi, 2012a).

5) Song Terus

Another site in the range of Gunung Sewu is Song Terus, it is located 3km from Song Keplek and situated on a small hill in the Punung locality. Song Terus is a cave with a horizontal mouth direction in the form of a passage with cave mouths at both ends. The floor surface of Song Terus is divided into 3 levels, with the slope in the cave decreasing from west to east. The space inside the cave is quite spacious, and some stalactites and stalagmites were found in the inner chamber. Part of the roof has collapsed, probably caused by an earthquake, as stone blocks were found on the ground or buried in the cave.

ST1

The skeleton of ST1 was found in almost complete condition, although the cranium part was not preserved. Based on the strong and robust features of the cranial part, showing the most probability that this individual is a male, even though further diagnosis from the pelvis was impossible due to the bad stage of preservation. From visibility of the sutures and the degree of teeth worn is in the high state, showing the middle adult age, more than 45 years old (Détroit, 2002). Several limestone blocks were placed on top of the burial to cover it and ST1 was placed in the northern part of the wall of the cave, in its natural depression. The ST1 is inferred as primary inhumation thanks to the appearance of anatomical connection of the skeleton (Fig. 7). The position of the body was placed in supine and flexed position and lying on its sideways to the right. East-west was the orientation of the body, and the head was on the west. The flexion below the knees made the right femur and tibia parallel to each other, and the feet were below the pelvis. The hands were placed differently, the right arm flexed along the torso, and the hand was placed as a support to hold the face. Meanwhile, the left forearm was placed perpendicular to the humerus and the hand was brought in between two legs at the level of the knees. A possible explanation of the parallel position from the upper and lower legs because of the wrap before the interment. There was an indication of a burnt on the left tibia, most probably the fire activity when muscle still attached to the bone (Détroit in Sofwan 2020).

Ingicco (2020) mentioned the appearance of prominent faunal remains found in this burial as grave goods of ST1 individual. The 983 fragments of East Javan Lutung - ebony leaf monkey *(Trachypithecus auratus)* recovered from the burial, suggesting the use of monkey as a part of ritual in the funerary practice. From these fragments, one occipital bone belonged to a male adult *Lutung* featuring some cut-marks and partial indirect burning. Interestingly, this only one complete occipital bone of the monkey was placed on the left side of the chest of ST1. Some other fragments of monkey were also recovered which were directly associated to this interment, such as eight mandibles were also placed in the vicinity of ST1 individual. Noerwidi (2020) mentioned, that there were also other faunal remains such as the molar of *Elephas,* the teeth of *Suidae,* porcupine, small carnivores and also mollusc shells. A.M Sémah found many ecofact such as fern spores around the skeleton. Other artefacts associated with the grave goods such as chert flake placed near the face and retouched flake on the left hand of the skeleton. Based on the shell that was found in the floor of ST1 burial, a chronometric dating was obtained and gives the age of 9330 ± 90 BP (Sémah, 2004).

6) Song Gentong

Song Gentong is located in Besole village, a cluster of sites in the Wajak area, in the karstic area in southern Tulungagung, East Java. Wajak itself is the discovery site of the ancient human skeleton of Wajak Man. Song Gentong is inferred as a preneolithic to neolithic habitation site that is consistent with the results of charcoal dating from 7000 - 5000 years ago, which still needs to be continued as the research has not been fully completed (Setiyabudi et al., 2019). The excavation found various vertebrate fauna, molluscs, artefacts and human bone fragments. The first excavation in 1996 excavation has not yet reached the bottom of the cave, so it is estimated that deposits containing human remains, artefacts or ecofacts from the past subsistence have not yet been identified. Until today, Song Gentong research has not been carried out in detail, considering that these activities require high costs and time-consuming. Besides, Song Gentong is located in the concession area of the marble mining company PT Marmer Indonesia (Setiyabudi et al., 2019).

In 1996, Marliac & Simanjuntak found at the bottom of the third layer of Song Gentong II, a flexed human burial to the left side of the body, with the north-south orientation of the corpse and the head directing to the south (Détroit, 2002). Similarly with other flexed burial in Southeast Asia, the human remains of Song Gentong are associated with the trace of hematite powder which coated on the chest area and the nodules of hematite that was placed nearby

the legs (Marliac & Simanjuntak, 1996). Later, Detroit (2002) affirmed the utilisation of pigment on Javanese funerary practice. During that time the context of this layer of solid clay could not be determined yet. In the third layer feature where the human remains are found, the archaeological finds of lithic artefacts and faunal remains were decreasing. Because the potsherds have vanished, this layer presumably belongs to the preneolothic to neolithic period (Détroit, 2002).

7) Gua Sodong

Gua Sodong and Gua Marjan yielded some interesting findings, it is located in the northern edge of the Watangan karstic massif in East Java. The rock shelter is divided into two terraces separated by a large stalagmite, with a two-metre difference in level. The skeleton of an adult pygmy, estimated to be 142cm tall, was found at the bottom of the lower terrace. Unfortunately, apart from the right side of the lower jaw, the skull was missing, which had remarkably small, badly worn teeth. There was the wisdom-tooth. The upper body was on the back, with the ribs and the remains of the spinal column visible between them. The lower extremities are crossed over each other, and the right upper and lower leg are flat on the ground. The left leg was discovered where the knee protrudes slightly laterally from the middle of the right upper leg.

The right leg is flexed at the hip and slightly flexed at the knee. Part of the pelvis appears above the cranial part of the right femur. The right tibia and fibula are parallel, with the fibula slightly behind and cranial to the tibia. Both are shattered into several pieces. The left tibia and fibula are not as parallel as the right tibia and fibula. The condyles are slightly crossed, with the fibula on top and the cranial parts separating by about 6cm. The left femur, broken into five pieces, is closer to the surface (Van Heekeren H. R., 1972).

8) Gua Marjan

Meanwhile, many human skeletal remains were discovered in Gua Marjan, but only one appeared to have been buried; it was lying on its back in an east-west direction, the head facing east, and three limestone rocks surrounded it. The skull was fractured and missing some parts of the facial region, but this thick-walled skull was otherwise in good condition. The mandible was massive and well-constructed. This small cave was also littered with sub-fossil human skeletal remains such as ulna fragments, skulls, isolated teeth, and jaws. The ulna had been split lengthwise in some cases and showed traces of burning, indicating

cannibalism. Unfortunately, the material from Gua Sodong and Gua Marjan was lost during the war before an expert could examine it (Van Heekeren H. R., 1972).

9) Gua Lawa

The location of Gua Lawa is in the locality of Sampung, East Java and to be named as the "centre of Sampung community" (Nurani, 2003) due to the trace of a complexity from human substance in the past, of which this cave yielded. The layer inside Gua Lawa comprises the Neolithic until historic times. Apart from the historical excavation done in the 1920s, in 1999 an advance excavation was done to revisit the site by Pusat Penelitian Arkeologi. This work aimed to find the new stratigraphic layer to compare what was done by van Es and van Stein Callafels (Détroit, 2002). Two trenches were opened and revealing the volcanic ashes that has not been dated previously, S. Hameau obtained the initial age of 18.100 ± 1200 BP from a tooth found in the lower ashes. A year later, two new human burials were discovered and were studied *in situ* in the same year.

Burial 1 (trench TT2, square KI)

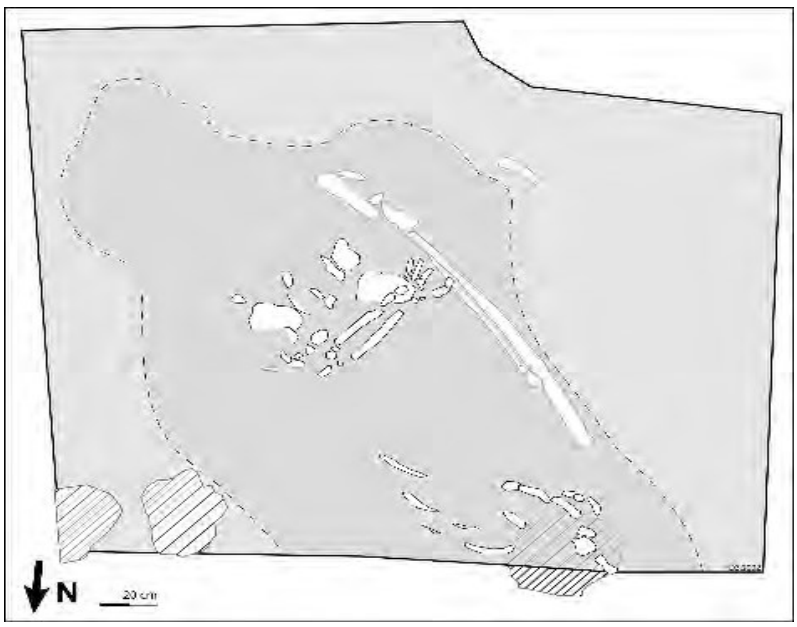


Figure 34 - Square TT2 of Gua Lawa with human remains.
Source Détroit (2002).

The first burial contained a body lies in the diagonal of the excavation square, and the corpse was oriented northwest-southeast, with the cranium part on the southeast. The upper limb was

visible, contrary the lower limb (under the pelvis) was invisible (Fig.33). However, the excavated space is sufficiently large in the direction of the lower limbs, so it is likely that the lower part of the skeleton is present. Since, the upper part of the body still appears to be in its primary position, undisturbed by secondary treatment of the body. On the other hand, the burial pit clearly extends to include the lower limbs of the buried individual. Hence, this burial was inferred most probably in primary inhumation with the long bone fragments showed flexed position (Détroit, 2002).

Burial 2 (trench TT2, square KII)

The second burial was found on the very edge of excavation square KII. It shows a large concentration of cremated human bones, with only some bones got selected. This circular burial form features human and non-human cremated bones within 40-50cm diameter, on the ashy sediment. Except the skull, mandible, teeth, a very few rib fragments and unidentified long bones were discovered, indicating that not all of the bones in the skeleton had been cremated. However, the bones have reached an advanced stage of incineration. Their general colour is grey, with blue grey to white areas. The surface of these fragments is cracked, blistered, and usually eroded. The enamel of all the teeth has shattered. The mandible and maxilla indicate an adult individual (eruption of M3) that is probably not very robust (Détroit, 2002).

10) Gilimanuk Necropolis Site

The Gilimanuk site is located in the bay of Gilimanuk and West Bali National Park areas. Administratively, located in Gilimanuk Village, Jembrana, Melaya, Bali Island and bordering in the east and south with mangrove forests. The coastal shores in this area have often eroded, and many artefacts and ecofacts were found through the sea abrasion. As a consequence of the findings, indicating the presence of remnants of past human activities, an excavation was attempted in 1962. From the excavation trial, it was concluded that the Gilimanuk site was thought to be a former settlement area during the Paleometallic (Early Metal Age).

Selective excavation in 1963 began at the highest point on the plain away from the cliffs facing the bay shore. The excavation of three squares (sectors) yielded interesting results. In addition to the large number of fragments of stoneware seashells and other artefacts, the most important finds at the Gilimanuk Site are human burials, among them a double-jar burial, an important archaeological find in Bali. Large-scale excavations were carried out over a

continuous period of three months, from September to November 1964. The excavation covered 16 sectors, and the most important results were the burials of more than 100 individuals (adults and children), most of whose skeletons were intact. Most of the skeletons in these burials were accompanied by burial goods such as pottery, body jewellery (such as beads, bracelets, etc.), bronze axes, iron weapons, and sacrificial animals (pigs, dogs and poultry). Living objects indicating daily activities in a dwelling (pots, hooks, shell tools and so on) have been found in this excavation.

Excavations continued in April 1973 in three sectors. Finds were similar to previous excavations, including two infant burials accompanied by earthenware pottery, usually round-bottomed and decorated with marked nets, and several bronze objects (e.g. bracelets). During the 1973 excavation, for the first time, charcoal particles from various elevation points in the cultural layer were collected to date the Gilimanuk Site using the C-14 method (Soejono, 2008b).

Looking at the burial patterns and numerous grave goods in most burials, it seems that the inhabitants of Gilimanuk gave special attention to the dead and the burial of their bodies. The skeletal attitudes found in Gilimanuk burials are numerous and diverse, making it difficult to distinguish patterns in burial. A more in-depth look at these burials, complete and incomplete or commingled, can provide interesting conclusions about people's attitudes towards the dead and beliefs in the spirits of the dead who are seen as capable of acting in the living environment. Skeletons were found without skulls, limb bones, shins, legs or other body parts. Similarly, double burials of adults and children were found, which usually did not exceed three persons. These double burials' skeletons were found on each other or close together. Symptoms were seen in some burials, and the old burial frame was removed for the new burial. The bones of the old burial frame were arranged in a second burial pattern on top of the new one. The new body was usually buried in a longitudinal position.

The arrangement of the bones for the second burial follows a particular pattern, with the long bones (thighs, arms, etc.) flanking the ribs and other small bones, while the skull is placed at the top of this arrangement. Grave goods in the form of jewellery, ceremonial, and domestic animals attest to the desire to provide for the dead in the afterlife. Some burials were given to an enslaved person or slain enemies. The facing direction (latitudinal direction) of the burial is generally with the head more or less to the south-west so that the face of the corpse looks to the north-east, i.e. towards Gilimanuk Bay. This facing direction was not always followed, as several skeletons were found with different latitudinal directions:

R.P. Soejono in his deep investigation divided the burial in Gilimanuk into four patterns namely:

1. Pattern 1 - Primary Burial

This burial pattern includes one or two bodies. Bodies in single burials are placed in various positions, while bodies in double burials are stacked side by side. The first burial can be divided into:

- Single primary burial with corpses in various positions.
- Double primary burial with bodies stacked on top of each other.
- Double primary burial with corpses having conflicting directions.

The positioning of the corpses in these first burial patterns are found in a variety of ways, among which the most obvious are:

A. Extended.
B. Semi-flexed with the body dorsal and the limbs flexed with the thighs and knees pointing to the left or the limbs flexed with the thighs and knees pulled slightly upwards; dorsal flexed*, i.e.*, limbs with the calves close to the thighs flexed towards the chest.
C. Dorsal with both thighs open such that the heels of the feet meet.
D. Dorsal with the leg below the knee pulled back as if kneeling.
E. Prone position.

2. Pattern 2 - Secondary Burial

In the various arrangements, the second pattern still follows the pattern of the skeletal bones. As well as being individually separated, the second tombs were joined together. The arrangement of the second tombs found in the excavation consists of:

- A single secondary burial.
- Double secondary burials arranged on top of each other.
- Double secondary burial arranged side by side.
- Double secondary burial arranged side by side.
- Triple secondary burial.
- Double secondary tomb arranged in sequence.

3. Mixed Burials

This burial pattern contains a primary combined with a secondary burial. Combining elements of the two patterns gives an idea of implementing a very complex burial, so it is sometimes difficult to distinguish each pattern.

The mixed burials include patterns:

- A single primary burial is joined by a single secondary burial.
- Single primary burial joined by double secondary burial arranged in a stack.
- Single primary burial joined by double secondary burial arranged in sequence.

Some burials could not be determined because the bones were irregularly located. These seemingly stirred-up burials appear to have been moved from their original place to make room for a corpse later buried there. The old burials that were set aside appear to have been left undisturbed.

4. Double Urn Burial

The use of two stacked jars for burial purposes has been found at Gilimanuk. This burial pattern was encountered twice during the excavation. The lower jar, which contained the bones of a person buried for the second time, was covered by the upper jar placed upside down on top of the jar below. Any burial goods did not accompany the skeletons in this jar at Gilimanuk. Underneath one of the jar burials - a pair of Gilimanuk a skeleton of a person was found in a prostrate position with elbows drawn back, legs flexed back and head up. The person clearly showed signs of being forcibly killed. The person buried in the urn included a victim as his companion. Looking at the placement of the burials in the stratigraphic context of Gilimanuk, it is impossible to establish the time sequence (chronology) of the burials, as almost all are found in burial layers containing inserts of cultural layers. In the stratigraphic context, the burials, which are pockets in the burial layer, are located within the unity of the cultural layer whose age in the lower parts according to C-14 dating ranges around 1900 B.P (Maloney, Dilkes-Hall, Vlok, et al., 2022; Soejono, 2008b).

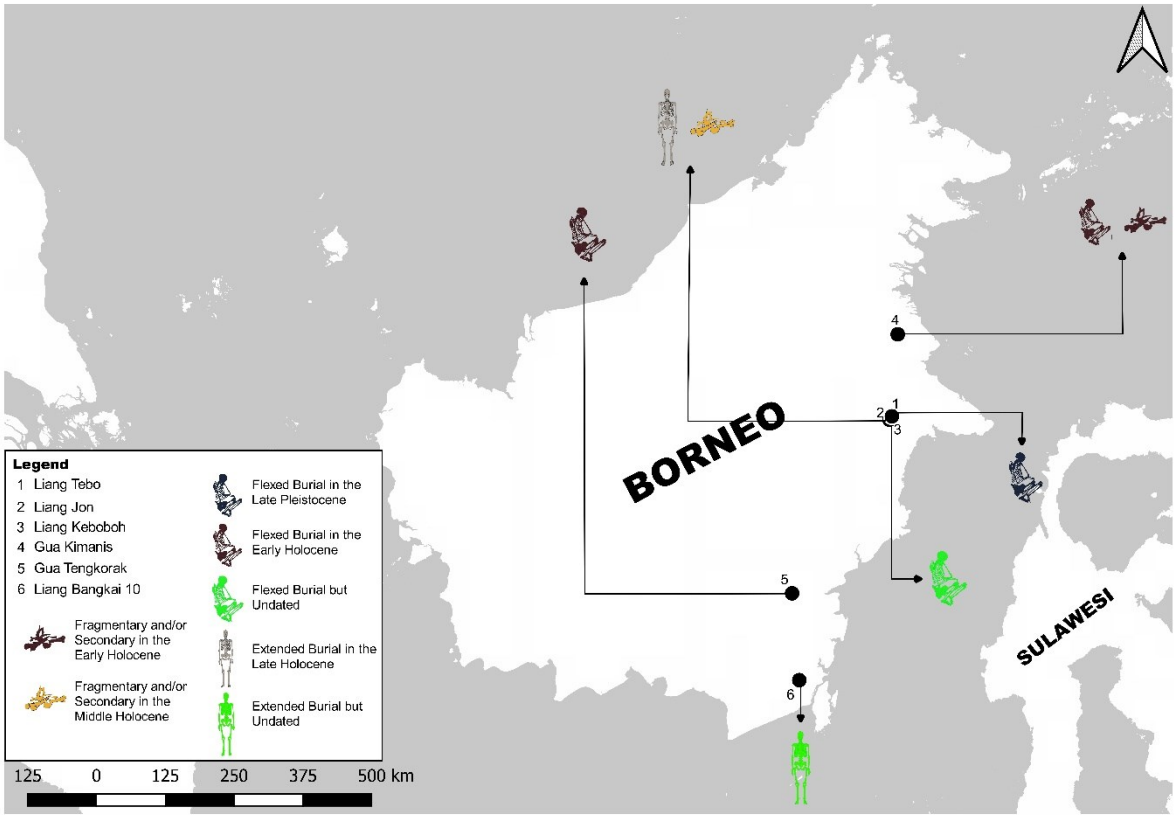


Figure 37 - The sites and funerary features in Kalimantan.

1) Liang Tebo

Liang Tebo is one of the numerous caves in the Sangkulirang-Mangkalihat Peninsula in East Kalimantan (Fig. 36). Liang Tebo consists of a three-chambered and considerably large size of limestone cave, also yielding a preserved parietal art dated at least 40.000 years ago. An excavation was conducted after the geophysical survey of the cave. The excavation reached a 1.5m depth in the central floor and not yet reaching the bedrock. During the excavation, a burial feature with a fully articulated individual appeared, first exposed in the 0.87m depth, then named TB1 individual (Fig. 2). As mentioned in the previous chapter, the burial exhibited a strong and defined stratigraphic boundary and appeared to be a distinctive sediment (grave fill). Limestone rocks were placed above the individual's head and arms, directly on top of the grave infill. These findings were inferred as a marker, making this unique compared to other horizontal strata, confirming the “manufacture” of deliberate human burial.

TB1's bones were reddish brown in appearance due to the post-depositional burial environment. The corpse of TB1 is positioned supine, with north-south orientation, and both legs flexed. The right knee is placed on the chest, and the left knee is flexed below the pelvis (under the femur), with the left hand inferior and the right superior to the pelvis.

The lack of movement among fragile bone elements suggests sedimentation and decomposition occur quickly within a restricted area. Flaked chert artefacts and a nodule of red ochre (a natural earth pigment) recovered near the mandible were among the cultural materials recovered from the burial. The condition of TB1 skeletons is well preserved, then the biological feature can be reconstructed. The combination of epiphyseal fusion, pubic symphysis, auricular surface stages, and dental formation analyses indicate that TB1 died as a young adult, between the ages of 19 and 20. Compared to the stature of other pre-Last Glacial Maximum skeletons, TB1's is typical for males and more than (>1) standard deviation (SD) taller than females. Incorporating the electron spin resonance age into the Bayesian model yields a modelled date of 31.201 to 30.714 years ago for the burial. To summarise, the researchers inferred a secure Late Pleistocene age of between 31.000 and 30.000 years for TB1, making this the oldest intentional primary burial of a modern human currently known from ISEA (Maloney, Dilkes-Hall, Vlok, et al., 2022).

2) Liang Jon

Liang Jon is a rock shelter located in the eastern part of Kalimantan, precisely 35m above the Meteng river, the opening of the shelter is afoot on the western side of Gunung Gergaji. The orientation of Liang Jon is facing the west and very well-protected by the tropical rainforest. Liang Jon is likely occupied by human since the Late Pleistocene, this is proven by the finding in the test pit showing the dating from 10.260 ± 60 BP (Plutniak, 2015).

ST1

The skeleton had no skull, instead, a large pebble had taken its place, the upper part of which appeared within and beneath a circle of stones containing charcoal. However, some skull bones belonging to 2 or 3 individuals appeared approximately 60cm away, just at the foot of the cliff. Preliminary observation of the cervical vertebra and foramen magnum holes did not reveal forced removal. Unveiled during excavation, a line of three stones above the burial can be interpreted as burial markers. The position of the feet, arms, and hands indicate that

the body had been wrapped in a mat or tied with rope, bark or barkcloth strips before being placed in the shallow burial pit.

The individual lies in supine position with the knees extended, and the left elbow flexed. Most of the bones are located in their original anatomical position and connected to each other. Two major elements are missing: the skull (cranium and mandible) and the right humerus (Fig.37). An isolated tooth nonetheless represents the skull. Based on the coxae bone, the observable criteria indicate a feminine morphology. The age at death of this woman was young adult, based on the partial fusion of the clavicle medial epiphysis. Several bones are disarticulated and displaced, notably the atlas, axis, right scapula, and right clavicle in front of the right thorax and forearm (radius and ulna). We can also note that a limestone block is present in the head region and that the area corresponding to the left shoulder has been truncated. No evidence of cut marks, percussion marks, or gnawing marks has been identified.

The analysis of this structure, conducted using the methods of archaeothanatology (Duday, 2009), has led to the following interpretations: the structure ST1 represents a primary individual inhumation. After the decomposition of the body happened, the burial was reopened, and the skull and the right humerus were removed. The installation of structure ST2 probably caused the truncation of the left shoulder area. The limestone block located in the head region may have been placed in the burial initially or after the removal of the skull. Due to the absence of collagen, direct radiocarbon dating of the skeleton was performed on

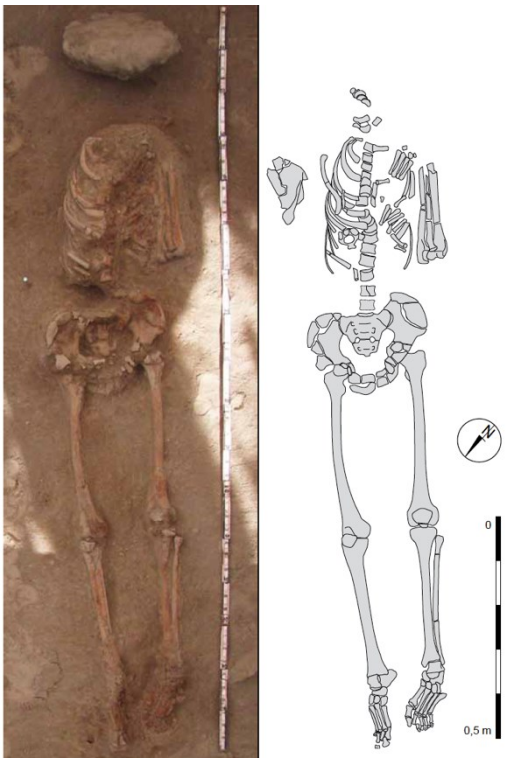


Figure 38 - ST1 Primary burial in extended position with the removal of the cranium. Source Chazine (2015).

bioapatite (mineral fraction of the bone). The age obtained for ST1 is: 2544 ± 30 BP (Ferrié et al., 2015).

ST3

Located 80cm south of the skeleton ST1 and near the rock wall, the structure of ST3 is a deposit of bones. The bones are grouped in an oval space of about 40 x 30cm. No digging limit of a pit has been perceived during the excavation, but "wall effects" are visible on the bones located at the periphery (Fig.38). Only human bones are present except for a phalanx of pig and a large mammal rib fragment. A total of 24 human remains were identified: 16 pieces belong to the cranium ; 2 mandibles (almost complete) ; 1 cervical vertebra (body) ; 1 left scapula (almost complete) ; 3 fragments of right scapula ; 1 distal portion of a left tibia. Only two pieces were in connection *in situ*, all the other bones being isolated. During the analysis, eleven refitting has been made between different cranial pieces, and one refitting (pairing) made between the left and the right scapula. Considering the refitting and the

Figure 39 - The view of ST3 structure during the excavation. Source Chazine (2015).

absence of duplicates, the 16 cranial pieces belong to a single cranium. Considering the 24 human remains, a minimum of 2 individuals are present based on the mandibles.

Anthropic modifications have been identified on cranial bones, showing cutmarks on the frontal, right parietal and left temporal. A series of 6 percussion notches, associated with internal vault releases, are located on the right parietal and frontal. All the human bones are covered with a thin residual layer of red ochre. The analysis has shown that the presence of

ochre is not accidental but is more likely the result of a deliberate action. As for ST1, direct radiocarbon dating of a tooth and a bone was performed on bioapatite. Two dates were obtained 5539 ± 33 BP and 5634 ± 35 BP (Ferrié et al., 2015).

3) Gua Keboboh

Gua Keboboh is located on the edge of Jelai river, Gunung Tebok and it is still in the same karstic area as the previous cave sites of Sangkulirang-Mangkalihat. Two burials with still-articulated bones were found in Gua Keboboh, the bodies being buried in flexed - fetal position, sitting or lying on their left sides (Chazine, 2005). In 2004, traces of two burial features were found near the cave entrance and in the interior of the cave. One individual buried near the entrance was a juvenile, observed from the dentals and the general morphology of the size of the skeleton (Noerwidi, 2022). Then, the individual found in the interior was an adult buried in a flexed position with grave goods in the form of a freshwater snail shell scattering and lithic artefacts made from chalcedony. The first visible remnant of the burial was a broken skull but still in one unit (Sugiyanto, 2009).

4) Gua Kimanis

Gua Kimanis is one of the rock shelters in the karstic area of Upper Birang Sites in the eastern part of Kalimantan, located at 230m above sea level. The condition of Gua Kimanis is relatively dry and spacious to be habitable, and during the extreme condition such as heavy rain, the condition in the front of this rock shelter remains dry (Arifin, 2004).

Primary burial was found in the 130cm from the surface, the unit of this stratigraphy is associated with lithic tools and some faunal remains, the square is KMS/TP. The recovered skeleton belong to one tall adult man only with the lower limb exposed such as legs, lower part of the hands, lower part of vertebral columns until the hip, and the distal part of the ribs. The rest of the skeletons were outside of the excavation area. This individual was placed on his left side with east-west spinal orientation and the head on the east facing the back of the rock shelter wall. The legs were loosely flexed with the hands positioned between the legs. On top of the body around the ribs, a calcified wooden fragment was cemented on the pit wall, the size is around 20cm long and 5cm thick. It is unclear whether this belonged to a burial container or not since it extended outside the excavation area.

Another primary burial was found in KMS/C4 square, in contrast with the other burial, the upper limb of this individual appeared. This individual was lying on its left side with the northwest-southeast orientation and the head was southeast. Like the previous individual, this second individual was also facing the inner wall of the rockshelter. The legs were invisible from the excavation area and the body was lying on a soil deposit of many *Brotia* freshwater shells. Both primary flexed burials were left *in situ* without any bones taken for the analysis. Only a small part of each site has been excavated, there is still possibility that other larger parts of human burials are still in the sites (Arifin, 2004).

The secondary burial is shown in the same square the previous one with a head sitting on top of very fragmentary, mostly long bones. After further examination, the assemblages were from a secondary burial in which multiple bones were laid together. The assemblages consist of the cranial elements (almost all teeth, except two upper incisors, and three lower molars, and the basal cranium fragments), the element of the legs (both femurs, left fibula and one/both tibia), left foot (1 carpal) and both hands (2 right carpals, 3 left metacarpals, and 3 left manual phalanges). The skull, which was very thin and fragile, crumbled into tiny pieces during the excavation, and the mandible and maxilla were not found.

There is a possibility of cannibalism of individual C's long-bone shaft fragment which showed transverse cut marks indicating evidence of defleshing. Some of the bones were also slightly burnt, especially those belonging to individual H, this might also indicate the product of cannibalism. However, there is another possibility that the bone fragments might have been incorporated in the walls of a hearth or had a heat treatment for a mortuary such as seen in Niah Cave, Sarawak. Arifin (2004) described that the three burials have not obtained any dating until the excavation was done due to some uneasy process of the exhumation with the local people in the area.

5. Gua Tengkorak

Gua Tengkorak is located on the western side of Mount Batubuli, this cave has two small rooms. A single, nearly intact human burial feature in a flexed position was found in this cave. The morphological characteristics of the anatomical remains indicate that the grave belonged to an adult female aged 40-60 years old and has Australomelanesian affinity features. The archaeological context of the Gua Tengkorak burial is associated with a Pre-Neolithic culture of flakes, bone tools (spatula), and also hammers from the shell-bed of Gua Babi dated to around 7000 years old (Widianto and Handini 2003). From the findings, it can

be confirmed that this is a special burial location with several artefacts considered grave goods (Sugiyanto, 2009).

There is a peculiarity of this cave: inside Gua Tengkorak it contains several handprints in red colour in the interior part of the cave. The handprints in Gua Tengkorak yielded some decorations (tattoos) as found in other painted caves in this region. There seems to be a difference in the portrayal of handprintings in the dwelling caves and the caves specialised for "religious" purposes. The purpose of the different style rock art in the dwelling or funerary caves remain unknown (Sugiyanto, 2009).

6. **Liang Bangkai 10**

This site is in Tanah Bumbu, one in the vast karstic Bangkai hill in Dukuherjo village, South Kalimantan. Even today, in these karstic hills, Dayak people still choose and utilise a cave or rock shelter as their sacred burial place. Karstic mountains and hills are their ideal burial places and are very common in Dayak people's lives in almost all Kalimantan regions, not only in this southern part of Kalimantan (Sugiyanto, 2017). Liang Bangkai 10 yielded two burials named Individual R.1 and R.2. Individual R.1 was buried direct primary burial, as indicated by several post-cranial bone fragments that appeared to be connected to the cranial fragments and were still in their anatomical position. Individual R.1 was most likely buried in supine position, with an east-west body orientation, with the head to the east, and the approximate position of the feet to the west (Fig.39). Approximately 10cm above the mouth and neck, an oval-shaped limestone slab approximately 30cm in diameter was placed. The

Figure 40 - The cranium of first individual (R. 1) in Liang Bangkai. Source Balai Arkeologi Kalimantan Selatan in Noerwidi (2022).

face was facing upwards, with the mandible falling downwards (open mouth). This indicates that when R.1 was buried, there was a space between the mandible and the neck. This position is usually found on bodies buried using a container. No features or remains of the container were found, possibly due to the organic nature of the material. This assumption is also reinforced by the position of the clavicle, which is slightly rotated around 45 degrees. It is tentatively assumed that individual R.1 was buried in a narrow pit, with the body wrapped around or tied with a non-permanent or organic container. In future research, it will be necessary to analyse the soil matrix of R.1's burial feature to determine the organic anomaly of the burial container. Another funerary treatment is the discovery of ochre traces on the bones' surface and the soil around the skeleton (grave feature). This indicates the presence of burial rituals using the colour red as a means of the process. In addition, many freshwater mussel shells and lithic tools were found around the skeleton, but the cultural association between the skeleton and these finds has not yet been studied.

Meanwhile, Individual R.2 was found in a single primary burial context with most skeletal members still in anatomical connection. The skeleton was buried in the supine position, orientated east-west, with the head positioned to the east (Fig.40). Fragments of the lower cranium and mandible were found *in situ*. Based on these findings, it is known that the face was facing upwards, slightly tilted to the right, with the upper and lower jaws closed. The overall skeletal position slightly sloped towards the north, which may have resulted from

Figure 41 - Second individual (R 2) with supine and extended position. Source Balai Arkeologi Kalimantan Selatan in Noerwidi (2022).

post-burial taphonomy. The anterior position of the left hand faces downwards, while in contrast the anterior position of the right hand faces upwards. The position of the lower legs (calves) crossed each other, with the right leg located below the left leg (Noerwidi et al., 2022).

At the time of discovery, upper parts of the cranium were no longer *in situ*. In addition, there were also several faunal bones, human bones from children and adults, and a tooth from an adult. Thus, it is thought that the bones were mixed into grave context R.2 due to biotic taphonomy processes or due to the activities of animals living within the Liang Bangkai 10 site, such as porcupines (rodents) that sometimes still live at the site. This assumption is strengthened by the condition of the upper part of the cranium of R.2, which is scattered and the position of other bone findings that do not show a pattern or artificial arrangement. Surrounding the skeleton of R.2 were also many faunal bones, stone artefacts, shells, and fireplace ash charcoal located at the top of the feet of individual R.2. However, it is not yet possible to determine the exact association between these finds and Individual R.2. This is due to the difficulty in determining burial features because the structure of the rock on the floor tends to be homogeneous. Based on the archaeological context, the chronological context of the humans in this site is unknown. Until now, the absolute chronological analysis of the skeletons is still in process, so the historical position of humans of Liang Bangkai 10 site is not precisely known (Noerwidi et al., 2022).

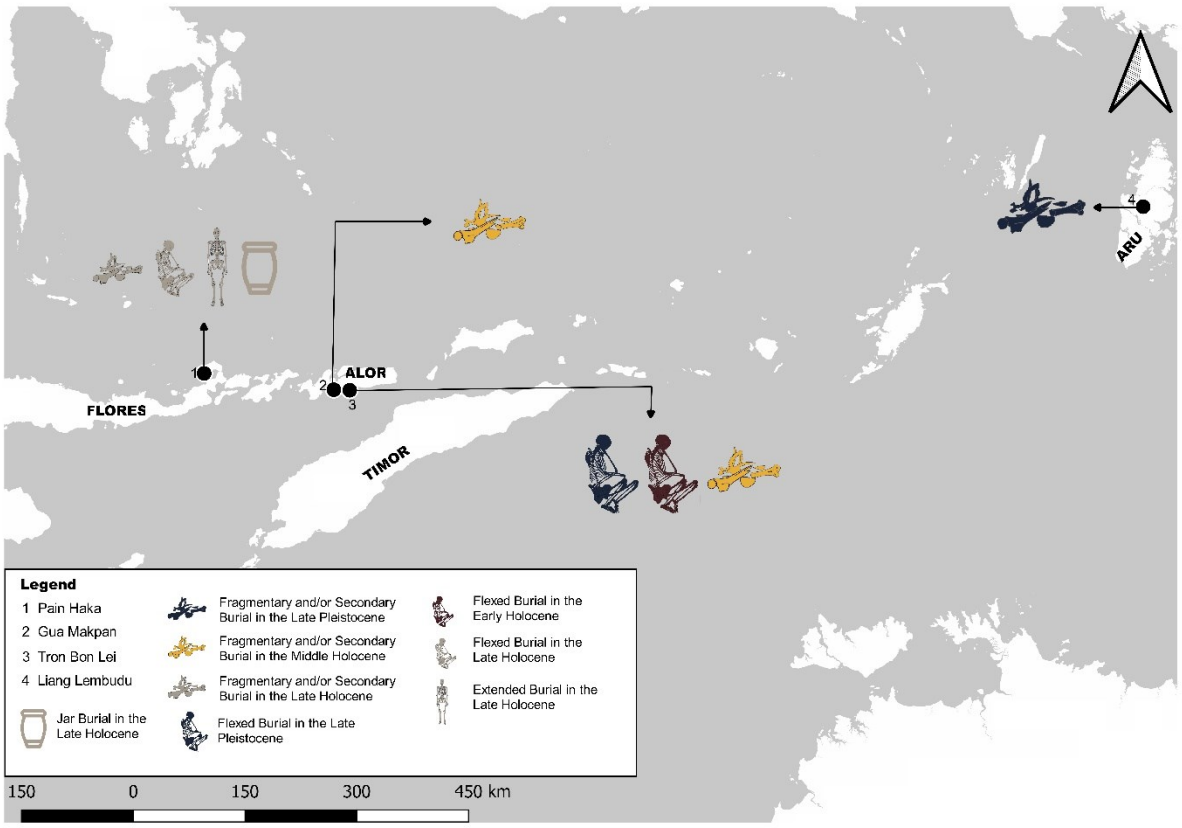


Figure 42 - The sites and funerary features in Nusa Tenggara and Alor Island

1) Pain Haka

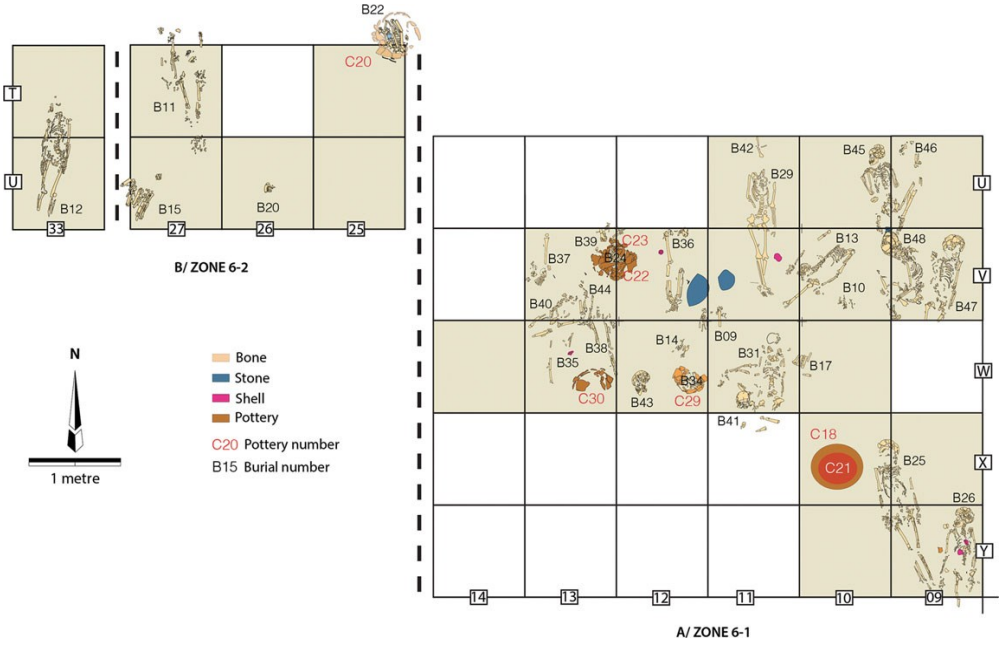


Figure 43 - Zone 6 of Pain Haka A) eastern B) western part of excavated area. Source Galipaud (2016).

The Pain Haka burial ground is located on the northeast peninsula of Flores Island, in the East Nusa Tenggara province of Indonesia. A total of 48 burials were discovered at the site. However, only 44 were excavated because of time constraints. The unexcavated skeletons only partly extended into the excavation area (Fig.42). Thirty-six of the total burials can be determined as primary burial, however only 31 cases of this primary burial that can be determined later about the position of the corpse. The rest 5 of the primary burials, secondary burials, and commingled ones having indetermined position (Fig. 43).

The funerary practice aspect of Pain Haka is already well-studied by Galipaud resulting the regional significance of Pain Haka including:

1. Vast burial position variety: limbs extended (18/31 cases), and limbs flexed (3/31), but individuals were also interred in extended prone (1/31), flexed (5/31), seated (2/31), and unknown other unidentified with lower limbs flexed (2/31).
2. The primary and secondary interment.
3. Post-burial practice including reopening the grave and dismemberment of the corpse.
4. Burial containers including loose organic wrapping and pottery jars.

The chronology of Pain Haka securely dated from the human bones showed around 3000 BP

Figure 44 – One burial that has potentially more than one individual interred in around one burial pit simultaneously. Source Galipaud, 2016.

until 2100 BP—no evidence of metal or glass artefacts on the site. Attribution to Neolithic period includes using coastal dunes for interment and the rims that were removed from the jar burial. The association with artefacts and ecofacts such as quadrangular stone adzes *Cassis* sp. adzes, *Trochus* sp., *Tridacna* sp., and *Conus* sp. jewellery and shells interred in the Pain Haka cemetery are all associated with the 'Neolithic package' in other parts of ISEA and the Pacific islands (Spriggs, 2011 in Galipaud et al., 2016). These factors, taken together, attest to a shared maritime cultural identity within the Neolithic region.

The sequence of the jar burial based on the human bones dating obtained some significant shifts from time to time. In the first phase around 3000-2800 cal BP, jar burial is distinguished by undecorated, red-slipped globular jars with broken rim. Followed by the second phase around 2500 BP there was a dominant style of red slip and broken rim in some zones of the cemetery. Two elaborate pots with complex forms, appliqué decorations, and bright red slips were also deposited during this stage. In the last third stage around 2200 BP, the appearance of small and large vessels of various shapes, sometimes with foot rings and covers and pottery flasks, diversifies the pottery (Galipaud et al., 2016).

2.Gua Makpan

Gua Makpan is in a large coastal lava cave near the Halmin village on Alor Island,

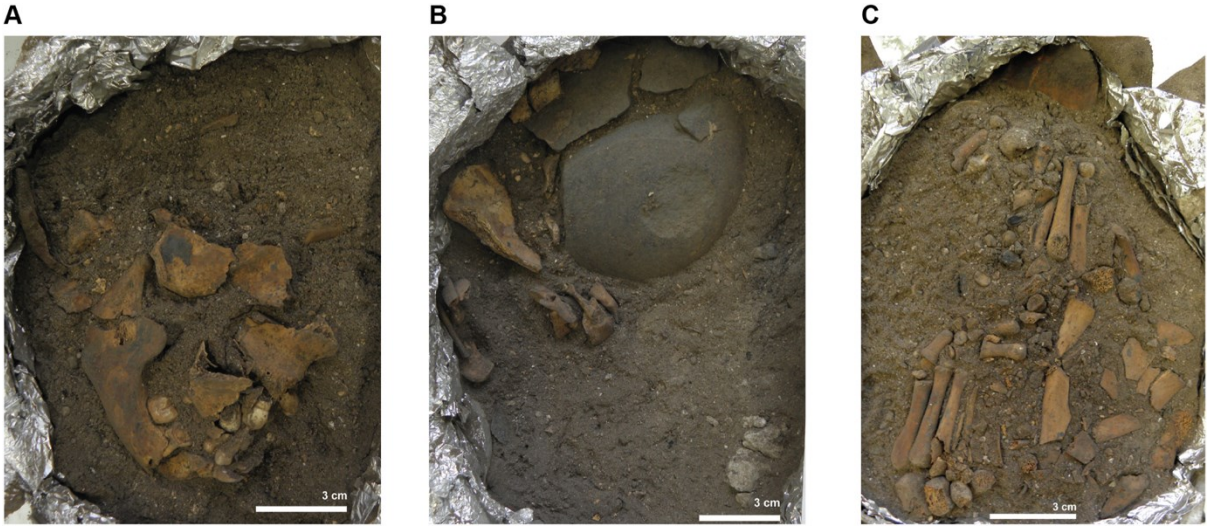


Figure 45 - A) Detail of the position of the fragmented mandible and cranial vault. B) Detail of the cobble located below the fragmented cranial vault. C) Articulated left foot (bottom left) and right foot (centre). Close-up image of the cranial and post-cranial packages excavated in the ANU laboratory. Source Samper-Carro (2021).

approximately 386m from the shoreline and about 35m above sea level. Based on the

dentition on the maxilla and mandible, the human remains belonged to a child roughly between the age of 6 to 8 years. However, the degree of the fusion in the post-cranial elements indicates the age is around 4 to 5 years old (Fig.44). This intriguing discrepancy in the age-at-death estimation of this juvenile individual suggests a delayed maturation process, which could have been influenced by factors such as malnutrition or health issues. Nonetheless, the investigation of the Gua Makpan burial child faces some obstacles in archaeothanatology application. The absence of long bone diaphyses, disarticulation of skeletal components, and the fragmentation of the remains all contribute to these limitations. These difficulties constrain in determining key aspects such as the use of mortuary practices, the positioning of the remains within the burial context, and the timing of secondary treatment events. Because of the position and degree of anatomical connection, this burial can be primary delayed or secondary inhumation. This research, however, provides an invaluable insight into the cultural practices of the population inhabiting Alor Island during the Holocene epoch through the meticulous amalgamation of bioskeletal analysis about the juvenile remains and their contextual contrast within the broader archaeological framework of the burial site. The 14C dating on the enamel of the mandible tooth yielded the age of 7950 - 7795 cal. BP (Samper-Carro et al., 2021).

Tron Bon Lei

Tron Bon Lei comprises two adjoining shelters located within a series of shelters in the volcanic ridge that runs along the southern coast of Alor, near Lerabain village. Tron Bon Lei remained a significant location for the groups inhabiting the area until the late Holocene, as suggested by the presence of red pigment rock art on the walls of the rockshelter, with some of these motifs interpreted as compatible with motif repertoire of the Austronesian Painting Tradition, dated within the last 3000 years. There are three burials in the similar location inside the rockshelter, but it is distinct in the burial types, the position of the corpse, and associated grave goods. This differentiation indicates changing in sociocultural practises from the Pleistocene to the mid-Holocene.

Burial TLB-1

TLB-1 individual was found with almost complete articulated skeleton, such as the cranial and post-cranial remains thus inferred as primary burial—the age at death of this female individual minimum 45 years old. The stature estimation based on the maximum length of the

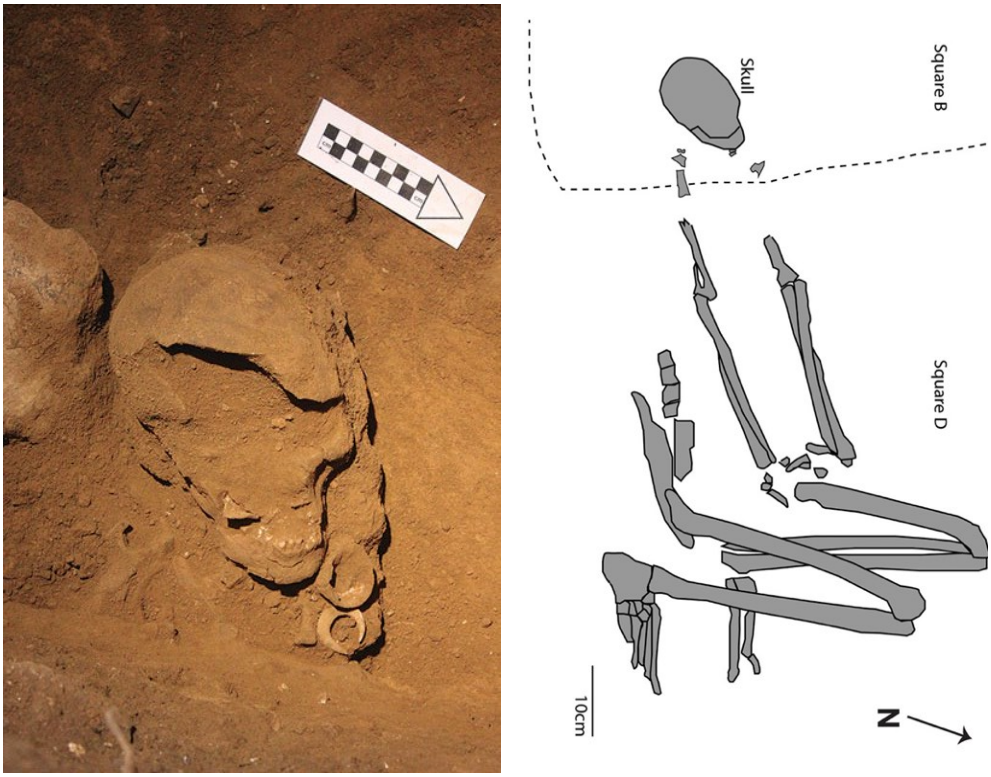


Figure 46 - TLB-1 skeletal remains with the association of the grave goods, and the rest of the remains which were from two different excavation squares. Source Samper-Carro (2017; 2022).

left tibia is 151.9 ± 5.94cm. The corpse's position is generally west-east, with the head facing the north and lying on her left side. Both legs were flexed thus making the femurs nearly parallel with the tibia and fibula. Meanwhile, both hands rested on the left coxae and flexed inward. There was evidence of grave good, such as five shell hooks and perforated bivalves placed around the neck of the TLB-1 individual. Another broken fishhook with a J-shaped was also found. The manuport was also found in the form of cobbles coated by ochre (Fig.45). These manuports were recovered from above and beside the cranial remains. Some samples (charcoal and fishhooks) were dated through radiocarbon dating suggesting that this burial was manufactured around 12.000 cal. BP (Samper-Carro et al., 2022).

Burial DE B2

The elements of DE B2 are poorly preserved and covered with calcareous, with big cracks penetrating the cortex of the bone, and comprise some parts of the right maxilla, fragmented mandible, and the post-cranial skeleton but incomplete (Fig.46). From the remaining long bones, the fused epiphysis indicates adult age, and the estimation of the age of death is over 55 years old, confirmed by the pattern of tooth wear, which exceeds the description from the description by Lovejoy in the phase I. Even though the greater sciatic notch assessment

indicates female, it should be considered carefully due to the lack of another indicator from the skeleton's assessment. The individual DE B2 also has a similar orientation as TLB-1 (west-east), and the part of cranial elements was on the west side. The left femur and tibia are

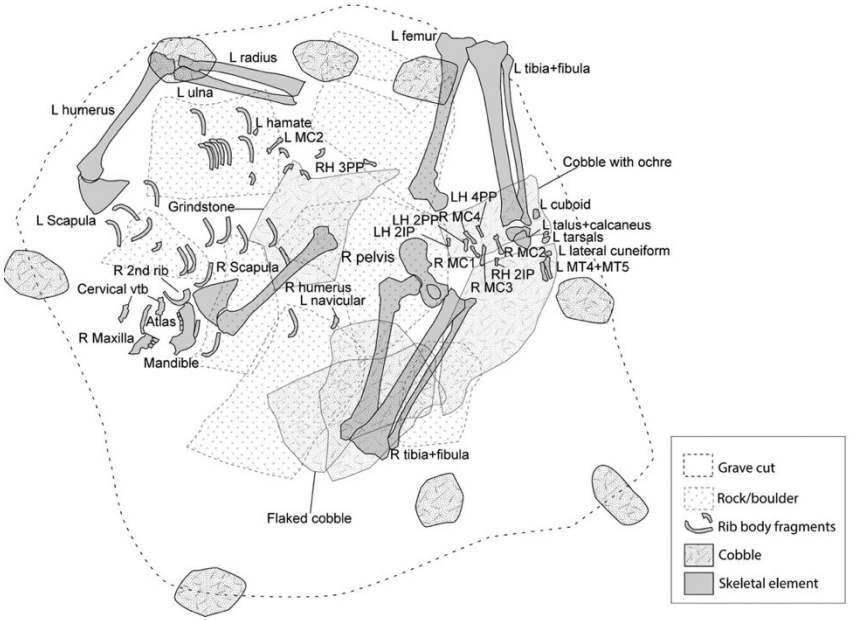


Figure 47 - The skeletal diagram indicating the elements in DE B2 burial. Source Samper-Carro (2022).

oriented vertically on the east side of the burial. The right leg was vertical and splayed outwards, thus making the knees brought upwards. Some lithics in the form of basalt and chert flakes, and a large polished grindstone were documented throughout the burial infilling, two small pieces of ochre. The burial was also covered with large rocks and cobbles recovered from the infilling. Even though incompleteness and the bad stage of preservation, it is still possible to infer that DE B2 is a primary burial and this individual was seated. The charcoal association dated this burial, resulting in the age around 9500 - 10.200 cal. BP (Samper-Carro et al., 2022).

Burial E16b

The skeleton of this burial is also in the bad stage of preservation, similar to the previous individual. Those incomplete skeletons comprised some fragmented cranial, the axial part of the skeleton and the distal elements of the limb (Fig.47). No long bones nor mandible were found. Only from the molar dental wear patterns can it be inferred that the age at death is over 20 years old. The biological sex of this individual was estimated from the fragmentary right pelvis. The greater sciatic notch note (4 or 5) shows that this individual is asserted as a

Figure 48 - In situ condition of the burial E16b. Souce Samper-Carro (2022).

male. Individuals from burial E16b are generally oriented to the east-west, but it is difficult to infer the body's position due to the absence of long bones. The hematite trace of this body on the several fragmented ribs and two linear marks on a rib indicate cut marks. The upper dentition was found to have a reddish residue, which was more noticeable on the buccal side of the incisors and molars. The researchers suggest this phenomenon could be associated with betel nut (*Areca nut*) chewing and consumption or with deliberate application of the residue before or after death. Calibrated dating obtained from the charcoal resulted in the age of this burial in 7400 - 7500 BP. Eight large angular rocks and rounded cobbles were associated with the burial, positioned around the edge, on top of the burial cut, or directly associated with the skeleton. All eight rocks have ochre on them. During excavation, a large ochre nodule was discovered on top of the thorax. A large cobble with a cupule and ochre coating was placed directly on top of the cranium, which likely caused its fragmentation. Based on the state of preservation and the recovered bones, there are two possibilities regarding the interment. The first scenario involves delayed primary burial, exposing the skeleton before its final interment. The second scenario inferred that the burial is from secondary burial with the removal of somebody previously buried in a different location and reburied in this final burial (Samper-Carro et al., 2022).

Liang Lembudu

The earliest evidence of intentional burial east of the Wallace Line comes from Liang Lembudu (Aru Island), dated by associated charcoal. Although Aru Island was part of the

Sahul continental shelf then, it is included in this review due to its proximity to Wallacean islands to the west. The Liang Lembudu individual was identified as an adult female interred in a secondary burial. There was evidence of dismemberment in cut marks on the upper limbs and selective removal of elements such as hands and feet. The arrangement of skeletal elements suggests that the burial practices involved the interment of skeletal elements in bundles, presumably wrapped in some organic material, with the individual seated. The late Pleistocene individual from Liang Lembudu was buried without hands or feet, suggesting dismemberment and exclusion of these body parts from the main burial deposit (Bulbeck, 2006).

Lembudu Woman was found tightly flexed and seated in a “hocker” position. After the hands and feet (except the parts closest to the articulation with the limbs) had been removed. It seems to be a reopening grave practice. The burial in Liang Lembudu shows a woman. The funeral for Lemdubu Woman most likely took place around 17.000 radiocarbon years ago—an age at death of approximately 30 years old strikes a balance between the various indications. During excavation, a large flat boulder was discovered partially covering the burial and was interpreted as having been placed initially to cover the interment. The "Lembudu woman" represents the earliest documented evidence of intentional removal of skeletal elements, dismemberment, and burial (Bulbeck, 2007).

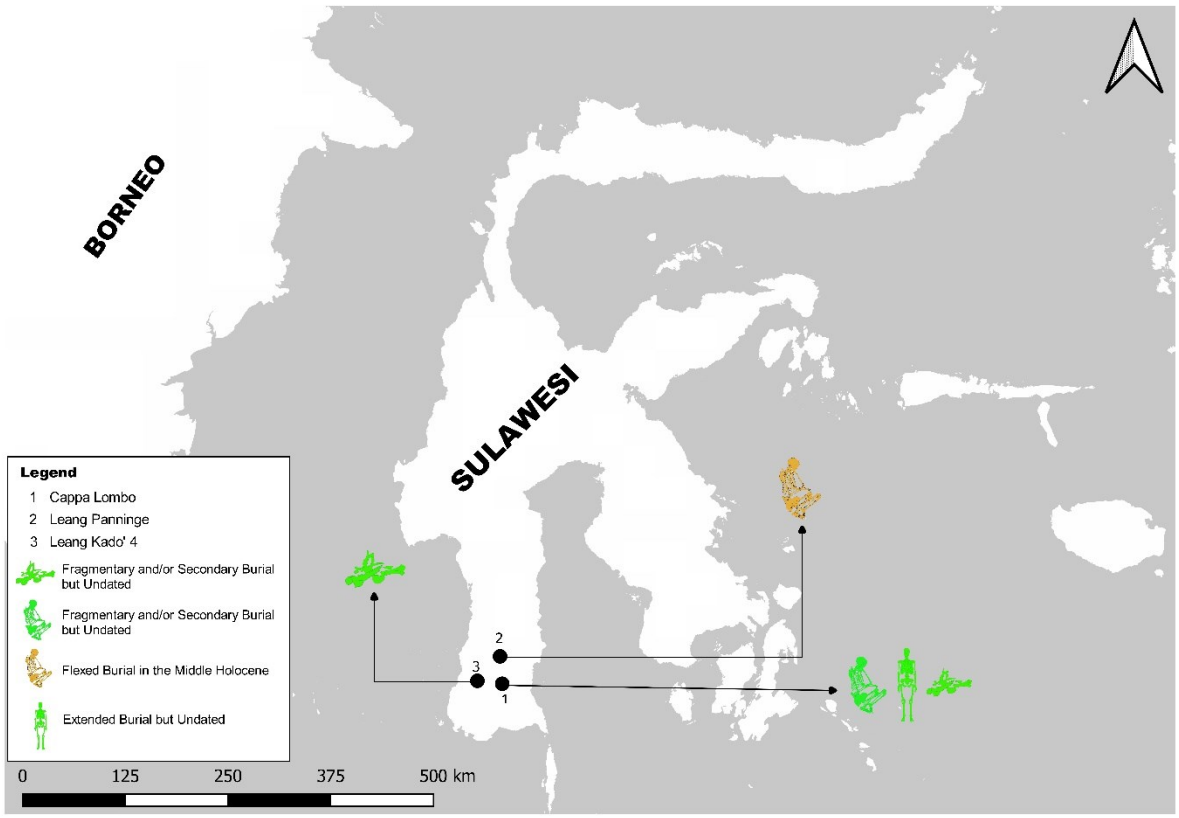


Figure 49 - The sites and funerary features in Sulawesi.

Prehistoric Funerary Practice in Sulawesi Island

1.Cappa Lombo

Pattuku village, South Sulawesi, is the administrative location of the site of Cappa Lombo. This site is 80 m^2, has a sloping floor surface, and most settling soil has a sandy texture. The site is one of the human occupation spaces on the Bontocani karst hills. Cappa Lombo is a niche-shelter site on a northwest-facing karst cliff wall about 10 metres wide and 40 metres long. Seven human remains were found on this site: five infants to adolescents and two adults.This site shows two cultural layers based on stratigraphic observations, dating data and frequency of findings. The first layer is the middle Holocene cultural strata dated between 7500 to 3500 years ago where all the seven burials were found. Archaeological indications found are stone, bone and ochre artefacts. The second layer is the late Holocene pottery culture layer, estimated to date no more than 3500 years ago.

CPL_R1

The human remains were that of a 2-4-year-old child buried in the extended and supine position on the floor of a stone niche with the head orientated southwest and the feet longitudinally to the northeast (Fig.49). Stature ranged from 79-104cm., affiliated with Sahul-Pacific Australomelanesian populations, with influences from Western Eurasian and Sino-

Figure 50 - CPL_R1 remains which was found on the floor of the cave's natural depression. Source Fakhri (2021).

American Mongoloid populations. Some parts of the cranial fragments were identified as having a red ochre-like colour. XRF (X-ray fluorescence) identification will be necessary to confirm the colouring material attached to the cranial fragments (Fakhri, 2021).

CPL_R2

CPL_R2 remains were found at a depth of 69cm below ground level and based on the observation *in situ,* this individual was interred in a primary burial. Though, the skeletal anatomy was incomplete. Only the cranial part was found, while the body trunk bones, hands and feet were not found (Fig.50). The skeletal findings included some stone artefacts and burnt animal bones. The remaining bones of these fauna are likely the remains of their consumption. Observations of the structure and composition of the teeth, which were very worn, indicate the habit of life of these humans. It is even known that some teeth were removed before death.

Based on dental observations, it is estimated that this skeleton belongs to a middle adult male in the age around 32.6 to 57.8 years old and affiliated with the Mongoloid population. This population affiliation still requires more careful testing, considering the dating context of this

Figure 51 - CPL_R2 remains without the post-cranial until the end of excavation. Source Fakhri (2021).

site is in the middle Holocene period, with a dating range of 7580 to 6410 cal. BP. As for the observation of tooth morphology, it is known that during his lifetime, this human utilised his dentition continuously for strenuous activities such as peeling something hard, like pulling bark from a tree trunk or peeling fruit skin (Fakhri, 2021).

CPL_R3

Figure 52- The remains of CPL_R3 shows a flexed burial position associated with the discovery of lithic artefacts and some hematites.

CPL_R3 is the human skeleton of an infant less than one year old. Based on the dental observations, it is estimated that the age of this female baby is between 0 to 2 months. The burial position shows a flexed burial with the hands in front of the chest and the legs bent until the knees touch the chest. Some of the bone parts found and still observable from this skeleton include the cranium, vertebra, phalanges of the fingers, forearm bones, femur bones, and sternum (Fig.51) (Fakhri, 2021).

CPL_R4

These skeletal remains belonged to a girl, found piled up between one bone and another. This condition indicates a secondary burial (Fig.52). This procession was continued by collecting the bones and returning them to the residential location where they lived. Some remaining bones include the cranium, mandible, vertebrae fragments and several long bones. Based on observations in the mandible, there is still incomplete dental growth, so it is estimated that CPL_R4 is an infant of 6-12 months old (Fakhri, 2021).

Figure 53- CPL_R4 that was discovered in its anatomical connection. Source Fakhri (2021).

Figure 54- Skeletal of CPL_R5 with flexed position. Associated with limestone arrangement to the left of the skeleton. Still connected anatomically. Source Fakhri (2021).

CPL_R5

The CPL_R5 skeleton was found at 72cm below ground level. Some parts of burnt animal bones, lithic tools, and bone were also found along with the skeleton. The skeleton was found in a flexed position, and a limestone arrangement was located on the left side of the skeleton (Fig.53). Some of the remaining parts of the CPL_R5 human skeleton include cranium fragments, dental, vertebra, humerus, radius, femur, and fibula. It is concluded that this individual has characteristics of the Australomelanesian population with the influence of Mongoloid population elements. Based on the observation of tooth growth on the CPL_R5 skeleton, is a child of 9.5 - 14.5 years old (Fakhri, 2021).

CPL_R6

The remains CPL_R6, which belonged to a child aged between 9.5 - and 14.5 years, were found at a depth of 71cm where the bones were piled up on a rock surface. It was concluded that this skeleton showed a secondary burial (Fig.54). The bones were found in a fragile condition, yellowish-brown in colour, and together with life-supporting tools such as denticulated arrowhead, bone points and food residue from animal bones and freshwater mussels. Bone fragments from the skeletal remains of CPL_R6 include cranium fragments, dental, phalanx and distal phalanx, femur

costae. The population affiliation of the observed bone characteristics is Australomelanesian population with Mongoloid population influence with a stature between 143.47-156.04cm

Figure 55 - CPL_R6 with the skeleton disconnected anatomically, stacked on the natural depression of the cave. Source Fakhri (2021).

(Fakhri, 2021).

CPL_R7

CPL_R7 is skeletal remains found during the second phase of the research. The skeleton's position was on the Northeast corner wall of the excavation square at a depth of 72cm (Fig.55). CL_R7 is affiliated with the Western Eurasian population with the influence of Sino-American population elements (Proto-Mongoloid) aged 25-35. Based on observations of the position of the human skeleton at the Cappa Lombo site, stratigraphically, it is known that there are two cultural layers of this site. The first cultural layer found is the occupation layer of Austronesian-speaking communities, with indications of pottery fragments and faunal remains assumed to be no older than 3000 years ago. This layer was found from the ground surface to a depth of 40cm. The second cultural layer is the Pre-Neolithic community occupation, which shows the characteristics of Toalian technology in the form of complex techno stone artefacts. In this second layer, human skeletal findings were associated with denticulated arrowheads, microliths, flake tools, backed blades, bone point (monopoint and bipoint), freshwater mollusc shell remains and some ochre (Fakhri, 2021).

Figure 56 - CPL_R7 which was found in the north-east corner of the excavation square. Source Fakhri (2021).

Leang Panninge

In the Mallawa district of the Maros Regency, South Sulawesi, Leang Panninge is a limestone cave with a height of 169.8 metres above sea level. The cave form is via a relict river cut, extending for 120 m across the thin karst slope of the hill. Situated in the upper Walanae valley and separated from the lowland karsts of Maros-Pangkep by the Western Dividing Range, Mallawa is strategically positioned on the main pass through the rugged cordillera that loops behind the southern and western coastal lowlands of the peninsula. Limited archaeological research has taken place in this area. The condition of the remains is incomplete, but it implies a primary inhumation. The five large water-worn volcanic cobbles covering the human remains. Other than these cobbles, the grave infilling also contained large number of stone artefacts, bone, and tooth tools precisely Maros point from Toalean culture found within. Some associated faunal remains, modified and unmodified were also recovered from the burial of Leang Panninge woman.

The condition of large portion of the skull was presented but fragile (Fig.56). There is fragmented right clavicle shaft, left and right scapula, distal right radius, and both hands were almost complete. The fragmented sacrum aligned the left and right pelves with well-

preserved left and right greater sciatic notches, left and right distal fibulae. The remaining post-crania were underrepresented. Upper limb elements included a fragmented right clavicular shaft, left and right scapulae, distal right radius, and relatively complete left and right hands. Fragments of the distal right tibia, the distal left fibula, and relatively complete left and right feet were recovered from the recovered lower limbs.

As observed during the 2015 and 2018 fieldwork, the Leang Panninge skeleton was orientated in a north-south direction and lying in a tightly flexed or crouched position, with the skull facing left (towards the east) in the southern end of S16T6. In S17T6, the majority of postcranial remains were found. The cranium was crushed post-mortem, although the position and orientation of the cranial elements recovered suggest it was intact when interred. The determination of the age and sex of Leang Panninge individual were based on the status of the M3 and the post-cranial epiphyses. The M3 of Leang Panninge showed that the roots are not completely formed, and the teeth are unerupted.

Meanwhile, the fused bones only showed from the right ischium, the right 2nd and 3rd metacarpals, the left and right 1st distal phalanges and the right 5th distal phalanx also the left 2nd metatarsal, left 1st proximal phalanx, and left first distal phalanx. The individual is mature enough to be assessed for the shape of the pelvis's greater sciatic and the cranium's gracileness. Hence, observed by the pelvic bones, and due to the nonerupted M3s and the unfused bones, it is inferred that the individual of Leang Panninge was a female who died

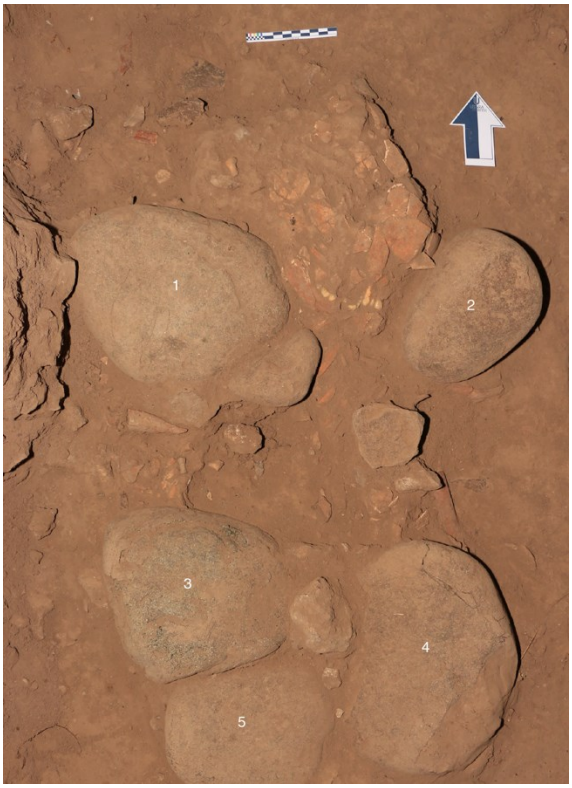


Figure 57 - Leang Panninge burial with the placement of several large cobbles. Source Carlhoff (2021).

around 17-18 years old. The individual of Leang Panninge was interred in a secure Toalean context, with distinctive Toalean artefacts recovered from the burial fill and surrounding and overlying deposits. In addition to more generic flakes and cores of generally small dimensions, Toalean assemblages are often characterised by the presence of distinctive artefact types, such as small points made from osseous materials, small stone Maros points, or microliths, which occur in combination with more generic flakes and cores of generally small dimensions. The Accelerator Mass Spectrometer 14C dates in situ from the plan charcoal, seeds and freshwater gastropod shells and the burial inferred age from 7300 - 7200 cal. BP (Carlhoff et al., 2021).

Leang Kado' 4

Human skeletal remains were discovered in a dry state, scattered on the cave floor, and not in their anatomical position. Because of the taphonomic process during decomposition, they were discovered commingled from several individuals. They were discovered alongside other discoveries, such as pottery and faunal fragments. Several skeleton parts were discovered, separated, and evenly distributed in the map area. Leang Kado' 4 is a cave used for funerals or burials. As for finding samples, 47 bone fragments were collected in total.

Based on the analysis of the number of individuals, it can be seen that at least six individuals were buried at the site primarily and secondarily. Certainly, this needs to be analysed further by looking for other data variables that can prove the burial models practised at Leang Kado' 4. Based on the morphological features of the teeth findings, it can be seen that the inhabitants of the site had an affinity with the Mongoloid and Australomelanesian populations.

esults of the examination of the mandible, radius, and humerus fragments belong to two males and four females individuals. As to the attrition of the occlusal surfaces of molars, both from maxilla molars and isolated teeth, six molars show occlusal surfaces with no attrition (no wear) and a low level of dental erosion on the enamel, indicating that the individual was aged 17-25. One half-fractured molar (left M2) shows a high occlusal attrition so that a little part of dentin can be seen, indicating an individual aged 25-35 (Brothwell, 1981). Based on the fragments of the femur and teeth, the individuals from Leang Kado' 4 are, an average, 17-25 years old, while one individual is 25-35. The estimation shows that the average statures of the individuals whose skeletal remains were found at Leang Kado' 4 are 147-153cm (short) and 154-160cm (tall) (Fakhri et al., 2021).

V. Discussion

The trend of funerary practice throughout the prehistoric time of Indonesia

Late Pleistocene Funerary Practice

A. Primary Inhumation

As far as we know today, the earliest known prehistoric human burials in Indonesia and ISEA is at the Liang Tebo site, on the island of Borneo (Maloney, Dilkes-Hall, Vlok, et al., 2022). In the late Pleistocene period, at least this emergence brought a recognisable feature through primary burials that positioned the deceased body supine, with the lower limb flexed forward. It can be argued that the flexed primary burial is the oldest trend of funerary practice in Indonesia even in ISEA (Maloney, Dilkes-Hall, Vlok, et al., 2022). In addition to this first type of burial, the individual at Liang Tebo was also found to have a grave good that was given to this individual intentionally as it was placed in a specific position near the body. Another interesting point is that this individual died at a young age, he also had a disability during his life until there are indications that his left leg was amputated, and he survived several years afterwards. It could be argued that this individual was cared for by his community at Liang Tebo during his lifetime until his death when he was buried in a particular behaviour (Maloney, Dilkes-Hall, Vlok, et al., 2022). Primary burial with the flexed position was also found ca. 12.000 years ago at Tron Bon Lei, an individual lying on its left side and no indication of post-mortem manipulation (Samper-Carro et al., 2022). Flexed burials during the late Pleistocene were also found at Pawon Cave. This is interesting, because of the location of Pawon Cave which is far to the west of Liang Tebo and Tron Bon Lei, although this burial also dates to approximately 12.000 years ago (Yondri, 2021).

B. Secondary Inhumation

After primary inhumation dating from ca. 30.000 years ago, the appearance of a grave at Liang Lembudu at ca. 17.000 years ago adds an interesting form of burial to be observed in Indonesia. The individual buried in Liang Lembudu were buried in a seated "hocker" position. When buried, this individual was placed in an organic wrapper that also supported a tightly flexed stance, it is also interesting that this individual has indications that before burial, there was a procession of decapitation of several limbs as evidenced by cutmarks (Bulbeck, 2007; O'Connor et al., 2006).

There are similarities between the burial practices at Liang Lembudu and as Raath (cited in Bulbeck, 2007:280) described, the Western Australian Aborigines community also involved the dismemberment of body parts in their funerary practice. Burial in Liang Lembudu seems to have a commonality with one burial case in Niah Cave Sarawak. An individual found with the evidence of a single articulated left foot and various other parts of human bones which found in the midden layer and dated to ca. 16.000 years ago (Lloyd-Smith, 2012).

There are also indications of a secondary burial with the discovery of parts of human remains at Braholo Cave dating from ca. 12.000 ago (Détroit, 2002; Handini & Widianto, 1999). Interestingly, funerary practice in Indonesia during the late Pleistocene period was characterised by both primary and secondary burials, with the flexed position (even the secondary positioned in flexed "hocker" position) with the placement of corpses in the supine position (Bulbeck, 2007; Détroit, 2002; Handini & Widianto, 1998; Maloney, Dilkes-Hall, Vlok, et al., 2022; O'Connor et al., 2006; Samper-Carro et al., 2022; Yondri, 2021). The presence of grave goods, although less sophisticated than in later periods, already indicates that the technology for daily life (flaked chert and fishhooks), as well as the accessories worn (perforated bivalve) and the way of thinking of the community - the living bury the dead in their community in a particular manner - illustrate the complex life of prehistoric humans (idem).

Early Holocene Funerary Practice

A. Primary Inhumation

Funerary practice in the Early Holocene period in Indonesia is similar to the late Pleistocene period. Primary flexed graves survived from ca. 10,000 to ca. 8500 years ago and the frequency of funerary practices generally increased (Maloney, Dilkes-Hall, Setiawan, et al., 2022). Indications of the presence of these primary - flexed burials can be found in various sites in different islands of Indonesia, namely Gua Pawon, Gua Braholo, Song Terus, Song Gentong, Gua Sodong, Gua Marjan, Gua Lawa, Gua Kimanis, Gua Tengkorak, and Tron Bon Lei (Arifin, 2004; Détroit, 2002; I. A. Nurani, 1995; Widianto & Handini, 2003; Yondri, 2021). An interesting phenomenon is a grave in Gua Kidang where the individual was buried in a primary grave but extended, with straight legs aligned in a supine position (I. Nurani et al., 2014). This can be an "anomaly" because this is so far the first case since Late

Pleistocene, and the existence of sites did not show the same phenomenon until the Late Holocene. In addition to the primary extended burial, there is the burial feature of two ochre nodules recorded in one burial within the infill of Tron Bon Lei, along with basalt and chert flakes (Samper-Carro et al., 2022). The presence of nodule-shaped ochre was also recorded at Liang Tebo earlier (Maloney, Dilkes-Hall, Vlok, et al., 2022). In addition, at Song Gentong, there are also indications of the presence of hematite in the burials applied to the corpse and the existence of the hematite nodules in the vicinity of the legs (Marliac & Simanjuntak, 1996). However, is this an anomaly in the trend of funerary practice in Indonesia or the beginning of a new funerary practice of extended grave behaviour? This may require additional data on primary burials with extended positions in the early Holocene period. The burial data may still be underground, so more data exploration is needed in Indonesia. Speaking broader in the ISEA context, during the same period at the West Mouth of Niah Cave in Sarawak, flexed-seated primary burials were also found, which are thought to have appeared ca. 10.000 - 5500 BC (Lloyd-Smith, 2013). In Palawan Island, Philippines, at the Ille site, it appeared that in Early Holocene, the inhumation consisted of the primary burial with extended and flexed position. (Lara et al., 2013).

B. Secondary Inhumation

Secondary inhumation can also be found in Gua Braholo, with some indications of at least three individuals. One burial showed the usage of fire, although the human remains did not show the diagnostic of being combusted, the fire was likely made before the process of the inhumation of the decomposed skeletons (Détroit, 2002; Handini & Widianto, 1999) and one grave in Gua Kimanis (Arifin, 2004; Bellwood, 2017). Two individuals at Gua Braholo were also observed to be buried with ochre. If previously the presence of ochre was only as a grave good, this time it was found to be used as a coating on the skeleton of the dead. For the meaning of the use or presence of ochre on a buried individual, Hovers et al. (2003) state that its interpretation is not always clear to us, as its use varies considerably between different times and spaces. Lloyd-Smith (2012) stated that the evidence of secondary burial was widespread approximately during this period, as early as 8000 BC, with fire as one of the aspects of the secondary burial rituals.

Middle Holocene Funerary Practice

A. Primary Inhumation

The presence of primary burials in the Middle Holocene seems to be still dominated by the presence of primary burials with flexed skeletal positions found in Gua Pawon, Gua Braholo, and Song Keplek (Détroit, 2002; Handini & Widianto, 1999; Noerwidi, 2012a; Yondri, 2021). When viewed regionally, the presence of these graves is only clustered on the island of Java. Neither is their evidence of the use of ochre in the form of being applied to the skeleton nor is it found in the form of a nodule as in the previous period it was put into the grave. Primary inhumation practice dated to the Middle Holocene have been found outside Indonesia, namely in Pha Phen rock shelter, northeast Laos. This burial site was dated to 7000 BP cal. (Tayles et al., 2015) with the feature of a flexed position of the corpse and lying on its its right side; Ban Tha Si rock shelter is dated to the similar chronology (7047 ± 53 BP), it is located in northeast Thailand and features a primary burial and body lying on its right side (Zeitoun et al., 2013).

B. Secondary Inhumation

Unlike primary inhumation, secondary inhumation can be seen on various islands in Indonesia such as Loyang Mendale, Liang Jon, Gua Makpan, Gua Pawon, and Song Keplek (Détroit, 2002; Ferrié et al., 2015; Samper-Carro et al., 2021; Setiawan, 2016; Yondri, 2021). There are indications of ochre being applied to the buried skeletons at Gua Pawon and Gua Makpan. At Gua Pawon, the mandible and maxilla were coated with ochre, slightly different from the individuals at Gua Makpan, where the frontal bone and maxilla were coated (Samper-Carro et al., 2021). At Liang Jon, the entire bone is under a thin layer of ochre that is thought to look well-made. In addition to the ochre, there are indications that the secondary burial at Liang Jon contained two individuals based on the number of mandibles. Moreover, the buried bones also indicate anthropic modification in the form of cutmarks and percussion notches on the cranium (Ferrié et al., 2015).

Late Holocene Funerary Practice

A. Primary Inhumation

During the late Holocene, funerary practice in Indonesia reached a more complex stage than the previous chronology. The position of placing the corpse has been diversified after a hiatus from primary burial in an extended position at Gua Kidang

during the Early Holocene, started ca. 3000 years ago at Song Keplek, which shows more concrete evidence of primary burial in an extended position (Détroit, 2002; Noerwidi, 2012a). Later, extended primary burials were also found in several individuals at Gua Harimau, Liang Jon, and Pain Haka (Ferrié et al., 2015; Galipaud et al., 2016; Noerwidi et al., 2015) There is interesting data at the Gilimanuk site, namely the placement of corpses in the extended - prone position. Whereas most burials in previous times were only placed on average supine or lying on left/right side (Soejono, 2008a). Although the extended position has emerged, the existence of the flexed position on the corpse that originated in the late Pleistocene era was recorded to survive in the late Holocene, namely at Loyang Mendale, Loyang Ujung Karang, Gua Harimau, Gilimanuk site, and Pain Haka (Galipaud et al., 2016; Noerwidi et al., 2015; Setiawan, 2016; Soejono, 2008a). From the available data, there are primary burials. Still, it is not known how the bodies were positioned in Braholo Cave, but interestingly, there are indications of ochre utilisation in the burials (Détroit, 2002). Similarly, what happened during Late Holocene with the new waves of funerary practice in West Mouth of Niah Cave. Around 1500 BC, the existence of primary-flexed burial then followed by the paired and rowed extended burials, continued by the exhumation of some of the skulls from the selected extended burials then the paired and rowed extended burials were seen, and followed by the exhumation of some of the skulls from the selected extended burials until around 1200 BC (Buckley & Oxenham, 2015).

B. Secondary Inhumation

The presence of secondary burials until the late Holocene is also still evident at sites such as Loyang Ujung Karang, Gua Harimau, Gua Braholo, and Pain Haka (Détroit, 2002; Galipaud et al., 2016; Handini & Widianto, 1999; Noerwidi et al., 2015; Setiawan, 2016). Unlike before, there is no use of ochre in secondary burials as far as available data. Another comparison in the neighbouring region is the secondary burial in Niah Cave which also presented burial which containing only skull, similarly to what happened in Gua Harimau (Buckley & Oxenham, 2015; Noerwidi et al., 2015).

C. Primary Cremation

Burial practices involving cremation in the late Holocene are also worth noting. The data obtained at Loyang Mendale is the first clear indication in late prehistoric Indonesia of primary cremation (Setiawan, 2016). The inhumation process was

carried out in the same place after the cremation, so the skeleton still showed a degree of anatomical connection (intact) despite the burning. There are indeed burial discoveries with cremation cases in the previous chronology, but whether the practice belongs to the primary or secondary cremation category is unclear. The earliest cremation practice in ISEA found in Ille site dated to Early Holocene, around ca. 9000 – 95000 cal BP. This study also explained that before the cremation process, the corpse was modified, including the series of disarticulation, fragmentation, burning and re-fragmentation (Lara et al., 2013). During the same period at Niah Cave, additional burials were discovered. This included cremation, as well as solely cremated remains. Some of the remains were charred and placed in various containers for burial, including bamboo coffins, sher-covers, and jars (Buckley & Oxenham, 2015).

D. Commingled/Collective/Multiple

This commingled burial practice was also encountered at Gua Harimau in the late Holocene. The condition of comingled burial was very concentrated of the scattered along with three cranial vaults. At least three individuals were placed in the same burial. It is mentioned that bronze axes and bracelets, also there were two iron spatulas as grave goods in this burial (Fauzy et al., 2015).

E. Jar Burial

Jar burial here is shown to be unique to the late Holocene. If we follow Henri Duday's definition (Duday, 2009), jar is one of the burial containers. Supporting this statement, the jar burial findings at the Pain Haka site also indicate how the dead were treated beforehand. Two treatments can be observed at the Pain Haka site: primary and secondary deposition, which have the same meaning as explained in the previous sections. In Pain Haka, it was found that the corpse was placed directly or primarily in a jar (container) and even positioned folded, after which it was buried. There is also a secondary treatment of the corpse, which is then placed in a jar and buried afterwards (Galipaud et al., 2016).

<u>Unknown (no period, no type of interment, no position).</u>

Since the organisation of this thesis is based on the chronology, the data as far as today that does not have indication from which period it belongs, is grouped in this part. Those

individuals are also essential to understand the whole context of funerary practice in Indonesia, we can infer them in the related period with the characteristic of the interment.

A. Primary Burial

Cases of primary burials that have no precise dating were found at many sites until today, namely, several skeletons located at Loyang Mendale Loyang Ujung Karang, Gua Harimau, Gua Kidang, Gua Lawa, Gua Keboboh, Gua Kimanis, Liang Bangkai 10, Pain Haka and Cappa Lombo (Arifin, 2004; J. M. Chazine, 2005; Fakhri, 2021; Galipaud et al., 2016; Noerwidi et al., 2022; I. Nurani et al., 2014; I. A. Nurani, 1995; Setiawan, 2016). Although these primary burials are not dated, some can be seen in the position of the bodies. For example, flexed primary burials are still found at the sites of 1 individual at Loyang Mendale, 1 individual at Loyang Ujung Karang, 2 individuals at Gua Harimau, 2 individuals at Gua Kidang, 2 individuals at Gua Keboboh, 1 individual at Gua Kimanis, 6 individuals at Pain Haka, and 2 individuals at Cappa Lombo. When following burial patterns from earlier times and judging from the character of the sites, primary burials in this flexed posture are highly distributed from the Late Pleistocene to the Late Holocene. Further interpretation can be made if the dating can be performed. Furthermore, extended-position primary burials are also common and have a higher frequency than flexed-position primary burials. This type can be seen in 20 individuals in Gua Harimau, 2 individuals in Liang Bangkai 10, 10 individuals in Pain Haka and 1 individual in Cappa Lombo. This could represent that primary burial in an extended position that has "emerged" in the Early Holocene at Gua Kidang also shows its existence and coexists with primary burial procedures in a flexed position.

B. Secondary Burial

Secondary burials were also found at several sites such as 14 individuals at Gua Harimau, 6 individuals at Pain Haka, and 2 individuals at Cappa Lombo (Fakhri, 2021; Galipaud et al., 2016; Noerwidi et al., 2015). These burials, which occur throughout Indonesia's prehistoric period, suggest that prehistoric communities maintained longstanding traditions, and that secondary burials can still be found in ethnic groups in Indonesia and perhaps around the world today.

C. Commingled

Burial arrangements that commingled several individuals were seen at several sites, such as 2 cases at Gua Harimau, 2 cases at Pain Haka, and 1 case at Leang Kado 4' (Fakhri et al., 2021; Galipaud et al., 2016; Noerwidi et al., 2015). However, the individuals from Leang Kado are indetermined because it is likely that these graves contained fragmented bones from several individual who were mixed up and buried at uncertain times. Thus, if dating can be done from the graves, this will add further interpretation with the possibility of other burial practices such as post-burial practices (secondary burial, reopening grave, etc).

D. Jar Burials

Burial processes involving jar burials as containers were found in 11 individuals at Pain Haka (Galipaud et al., 2016). In terms of its presence in the prehistoric time of Indonesia, jar burial as a container started only in the late Holocene. However, whether or not these eleven individuals also belong to prehistoric burials will require dating.

E. Not Fully Excavated

Six individuals that have not been fully excavated at Gua Harimau (Noerwidi, 2020a), making neither interpretation of the burial nor biological profiles possible.

F. Burials that cannot yet be interpreted

There are at least a total of 24 individuals whose funerary practices could not be studied from several sites, namely 18 individuals at Gua Harimau, 5 individuals at Pain Haka, and 1 individual at Cappa Lombo (Fakhri, 2021; Galipaud et al., 2016; Noerwidi, 2020a). Influencing factors could be due to the very poorly preserved state of the skeleton or due to taphonomic changes that make interpretation very limited or even unrecognisable.

Given the characteristics of the sites, it could be argued that the chronostratigraphy could have generalised these undated burials. However, this cannot be a reference due to lack of precision and would only be an assumption, as several sites were inhabited over a long period and went through different phases of chronostratigraphy. Dating is very important for the interpretation of prehistoric burial practices in Indonesia because, for example, there are burials at the Loyang Mendale and Loyang Ujung Karang sites that were occupied from prehistoric times until entering the historical period of Indonesia (Setiawan, 2016).

It is worth noting that changes in the form of funerary practice in the prehistoric period in Indonesia occurred more significantly and diversely during the Late Holocene. When viewed, several sites state a clear presence of Mongoloid affinity groups. These sites are Gua Harimau and Song Keplek (Détroit, 2002; Noerwidi et al., 2015), which record traces of two different groups, and also bear different funerary practices—leaving aside the anomalous data at Gua Kidang regarding primary burials in the extended position in the early Holocene period (I. Nurani et al., 2014). The arrival of this Mongoloid group is marked by primary burials in the extended position, when looking at the Late Holocene period, a form of commingled burial was also found in the same space and time at Gua Harimau. Previously, flexed primary burial affiliated with the Australomelanesian group were also found at this site. Likewise, Song Keplek in the Late Holocene period features an extended primary burial affiliated with the Mongoloid population. Prior to this feature, flexed primary graves were also found in the Early Holocene which also related to the Australomelanesian (Détroit, 2002; Handini & Widianto, 1998; Matsumura et al., 2016; Noerwidi, 2012a; Noerwidi et al., 2015).

The grave goods for the different sex

Female Burials

Two burials of Tron Bon Lei show the significance of female burial during prehistoric times, one individual who has been interred, accompanied by some grave goods in the form of fishhooks, a perforated bivalve around the neck and cobble manuports as “the grave pillows”. The second female was found in with some grave goods in the form of lithic tools and cobbles (Samper-Carro et al., 2022). Another female burial in Song Keplek also features some interesting facts. One primary flexed burial with some lithics and animal remains, which suggested to be intentionally deposited, such treatment to this individual. Another individual from Song Keplek, even more, shows the sophistication of the funerary treatment devoted to the women. This individual was found with some stones on top of the body and the face of a macaque which placed on the chest (Détroit, 2002; Handini & Widianto, 1998; Noerwidi, 2012a). In Gua Kidang, one of the burials is shown to have a manuport in the form of limestone that has been shaped in advance and then deliberately place for the deceased. Another animal remains and mollusc shells were also recovered from this burial (I. Nurani et al., 2014). One female burial was also found with some funerary material in Loyang

Ujung Karang (Setiawan, 2016). One burial bearing some grave goods some lithic tools in the form of stone adze and arrowhead, an earthenware was placed around the body. Leang Panninge is also yielding a female burial with five large water-worn volcanic cobbles and some other smaller stones were deliberately arranged over the human remains. Some bone or tooth tools were also recovered from the burial called Maros point. Other than that, the existence of faunal remains also found in the grave of this female individual (Carlhoff et al., 2021).

Suppose the existence of tools, decorated fashion, and the manuports can be interred as cultural entities. In that case, it seems through the age of death of this individual that she might have demonstrated the significance of authority in the communities (Samper-Carro et al., 2022). Even though the existence of burials with confirmed female individuals is more frequent than the male ones, there is no grave good recovered, thus not being discussed here. Regarding burial practices that show the ratio that female burials were found more frequently since the Late Pleistocene to the Late Holocene period (Tab. 4), the opinion of Samper-Carro et al., (2022) implies that this position represents the significance of women in society in the past. As discussed by a number of scholars, including Samper-Carro, the gender role of female individuals in the prehistoric context, specifically in ISEA, is indeed important (Samper Carro et al., 2022). Earlier publication on Tron Bon Lei indicated that women were responsible for hook and line fishing on the example of Alor Island, and cross-references were found in Australia (O'Connor et al., 2017).

Male Burials

The male burials which existed in Indonesia commenced in Liang Tebo. This individual shows the presence of grave goods in the form of nodules of hematite and some flaked chert, which are placed near the mandible. The existence of rock art in the same cave (also found in Gua Tengkorak), where this individual was buried, might also show the form of ritualism for the dead. However, the aligned dating of the burial and rock art is not yet confirmed (Maloney et al., et al., 2022). Another remarkable example of male burial can be found in Song Terus. The numerous faunal remains also has some unique feature (only the mandible or only the face of the animal), lithic flake and even some ecofact recovered from the burial. Such placement and treatment in advance for these animal remains on the skeleton gave the living communities

interpretation of the thoughtful process and consideration (Détroit, 2002; Ingicco et al., 2020).

To recognise that in prehistoric Indonesia, gender roles shaped how grave goods were given requires further investigation. Some scenarios suggest that at Tron Bon Lei women had an essential role in the daily life of hook and line fishing (O'Connor et al., 2017). However, it is necessary to remember that these scenarios would fit to reflect the life of the deceased (Gaydarska et al., 2023). In another case, it was also found that the grave good included in the grave of an individual in Song Keplek could have complexity with the specifications included being the head of a Macaca and not a tiny amount (Ingicco et al., 2020). The difference based on the existing data is the inclusion of grave goods for females and males in these cases, if only seen from the quantity, it would be very difficult to assess, such as a case at Cappa Lombo where an individual whose gender could not be determined was buried with several arrows, stone tools, some shell remains, and ochre (Fakhri, 2021). Looking only at island and period similarities, this case can also be found at Leang Panninge where it was confirmed that the individual buried here was a woman buried with more or less grave good complexity (Carlhoff et al., 2021). However, it would be unwise to generalise and conclude that female grave goods are more complex than their male burial counterparts. Thus, given the complexity (or perhaps the bias of the data), it would be difficult to say that the social hierarchy is based solely on the provision of grave goods based on the sexes. Studies have emerged in the recent decades on gender roles and social status that depart from the findings of grave goods in prehistoric communities around the world (Burchell, 2006; Elliott et al., 2023; Gaydarska et al., 2023; Haas et al., 2020; Rebay-Salisbury et al., 2022; Rivollat et al., 2023), and this will also be another noteworthy discussion if applied in Indonesia to give more vivid about the past social hierarchy.

Limitation

Although this rich recording of prehistoric funerary sites, some islands of Indonesia could not present the funerary practice. This could happen due to the first, the differences on the funerary practice (maybe some prehistoric communities only sometimes buried the dead), the occupation of the sites in the different chronology. Second, probably about the study exploration which can meet obstacles due to inaccessible remote places, the speed and the

quality of excavation process, and also some insufficient discoveries (Maurellie & Knüsel, 2022).

The use of methodology archaeothanatology to infer human burial is very crucial and this methodology provides the details of the process of funerary itself. The prior-during-post funerary practice can be recorded with this methodology. Although this methodology is coined around 1980s, archaeothanatology started to be used in early 2000s. Some studied indeed thoroughly about the human skeleton and the burials, however sometimes forgotten in the recording/documentation of the burial is the surrounding area around the burial (Taufiqurrahman Setiawan, pers. comm. August 2023). To understand the funeral container, as described by Harris J. et al. (2015) such as the presence of a coffin or body wrapping. In Indonesia, most cases do not have this information, so in this investigation, understanding the whole funeral context will became more challenging.

During the data collection of this thesis, the encountered including the diverse methodologies that has been used by the scholars. Also, the quality of documentation (photography or drawing) is sometimes in low definition. There is a possibility that assessing human burials through the photography and drawing, as it is done by Harris & Tayles, 2012 and Stjerna et al., 2019. Another obstacle is the inaccessible data for the public, and there is also the need for the digitalisation of old books or local journals so that they can be accessible remotely.

Another challenge is inferring burials at highly complex necropolis sites and different chronologies. If there is an opportunity to re-examine earlier documents, it would be a significant contribution to understanding burial practices on a regional scale. The difficulties in inferring about the burial which is described as “disturbed” or “intrusion”. There are also possibilities that burials consist of more than one - which can be plural or multiple burials, such as in Gua Harimau, Gilimanuk and Pain Haka sites and the individuals inside the pit grave were found in the stacked/piled up position (Galipaud et al., 2016; Noerwidi et al., 2015; Soejono, 2008a). Determining whether the burial, which has mixed remains, was deposited simultaneously or separately is challenging.

VI. Conclusion

The study of funerary practice in Indonesia has developed rapidly with the application of archaeothanatology as a bridge between various methodologies in anthropology and archaeology. With many studies featuring prehistoric human burial features in Indonesia, this thesis reviewed how these studies were conducted and the results achieved to date in the horizon of funerary practice in Indonesia. The results of secondary data obtained from a review of available literature provide an overview of 26 prehistoric burial sites in Indonesia, with 219 individuals forming the database for this study. Based on processing the secondary data, it was found that the prehistoric societies in Indonesia had started interring the dead from the Late Pleistocene period. New burial patterns emerged in the Late Holocene, starting from primary flexed burial. This emergence also signals that there is the presence of specific population groups that provide new patterns in burials that were previously more homogeneous. When analysing funerary practices in prehistoric times of Indonesia, it is worth noting that females seem more commonly buried. However, to thoroughly investigate this phenomenon, we need a more comprehensive variable to examine. This is because a significant amount of the data gathered is inconclusive regarding the sex of the buried individual. However, it is worth mentioning that prehistoric communities provided grave goods that could show how thoughtful it was to bury the dead. There are also parallels and contrasts in prehistoric funerary practices in Indonesia even to Southeast Asia; these communities undeniably had different subsistence and ideas and the influence of local genius. The parallels can be seen as a trend from period to period, starting from the location of the burial in the cave, the type of burial and the positioning of the corpse, giving special marks such as ochre. A very clear contrast is seen in the provision of grave goods. Some can have a simple grave good, while others have a very sophisticated grave good, even though the graves come from the same period and are not far apart. This has much to do with the socio-ecological system of societies living in different times and spaces. Ultimately, what connects the diverse dots in prehistoric burials in Indonesia is that there is a culture that dates back tens of thousands of years that persists and has a consistent pattern, then co-exists with other cultural practices - in this case, newer funerary practices. Taking a forward-thinking approach, it is crucial to adopt an all-encompassing and interdisciplinary methodology when studying funerary customs. By doing so, we can utilize our discoveries on funerary practices as a foundation to delve into multiple interconnected subjects It is certain that a more in-depth exploration of the funerary practices discussed in this thesis could be beneficial, particularly if we expand the comparison into Southeast Asia. Such an approach would allow for a greater understanding of the similarities and differences between these practices, as well as provide insight into the cultural and social factors that influence them. As a result, I recommend further research in this area to shed light on this important topic. For instance, we can explore how subsistence patterns evolved in prehistoric Indonesian societies, carry out gender-focused analyses on funerary practices, investigate the attitudes towards childcare and vulnerable populations in past communities, and investigating about symbolic behaviour. Furthermore, by revisiting funerary sites and utilizing

archaeothanatology techniques, we could unveil previously disregarded complexities and enhance our comprehension of these funerary practices.

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Annexes

All individual burials data

Human Remains	Sex	Age at Death	Burial Type	Position of the Corpse	Orientation	Dating
Liang Tebo TB1	Male	Adolescent	Primary	Flexed	N-S	31.201 - 30.714 BP
Individu 1 Liang Lembudu	Female	Young Adult	Secondary	Flexed	N/A	Ca. 17.000 cal BP
BHL 8	N/A	Adult	Secondary	N/A	N/A	12.200 ± 160
TLB-1	Female	Middle Adult	Primary	Flexed	W-E	Ca. 12.000 cal BP
BHL 7	N/A	Adolescent	Primary	N/A	N/A	11.940 ± 160
BHL-F4-4	N/A	Adult	N/A	N/A	N/A	11.940 ± 160
BHL-H8-4	Female	Adult	Secondary	N/A	N/A	11.940 ± 160
PAW7	N/A	N/A	Primary	Flexed	NW - SE	11.788 ± 650 BP
PAW6	N/A	N/A	Primary	Flexed	N - S	10.075 ± 560 BP
DE B2	Female	Old Adult	Primary	Flexed	W-E	Ca. 10.000 cal BP
BHL 1	Male	Middle Adult	Primary	Flexed	E - W	9780 ± 230
BHL 5	Female	Young Adult	Secondary	N/A	N/A	9780 ± 230
BHL-F4-3	Female	Adolescent	N/A	N/A	N/A	9780 ± 230
BHL-F8-3	Male	Adult	N/A	N/A	N/A	9780 ± 230
BHL-G6-3	Female	Adult	N/A	N/A	N/A	9780 ± 230
BHL-H8-3	Female	Adult	Primary	N/A	N/A	9780 ± 230
BHL-I8-3	Male	Adult	N/A	N/A	N/A	9780 ± 230
BHL 6	Female	Adolescent	Primary	Flexed	E - W	9780 ± 231
R I Gua Kidang	N/A	Adolescent	Primary	Extended	NW - SE	9440 ± 220 BP
PAW4	Female	Middle Adult	Primary	Flexed	NW - SE	9325 ± 200 BP.
ST1	Male	Old Adult	Primary	Flexed	E-W	9330 ± 90
BHL 2	Female	Old Adult	Secondary	N/A	N/A	8760 ± 170
BHL-D5-3	Female	Adult	Secondary	N/A	N/A	8760 ± 170

Song Gentong	N/A	N/A	Primary (?)	Flexed	N-S	Early Holocene
Gua Sodong	N/A	Adult	Primary (?)	Flexed	N/A	Early Holocene
Gua Marjan	N/A	N/A	N/A	N/A	E-W	Early Holocene
Burial 1 Gua Lawa	N/A	N/A	Primary	Flexed	NW-SE	Early Holocene
KMS/C4 1	N/A	N/A	Primary	Flexed	NW-SE	Early Holocene
KMS/C4 2	N/A	N/A	Secondary	N/A	N/A	Early Holocene
Gua Tengkorak	Female	Middle Adult	Primary	Flexed	N/A	Early Holocene
CPL_R2	Male	Middle Adult	Primary	N/A	N/A	7580-6410 BP
E16b	Male	Young Adult	Secondary	N/A	E-W	Ca. 7500 cal BP
PAW3	Male	Middle Adult	Primary	Flexed	N - S	7325 ± 180 BP
Individual 1 Leang Panninge	N/A	N/A	Primary	Flexed	N-S	7300 - 7200 cal. BP
Individual 1 Gua Makpan	N/A	Child	Secondary	N/A	N/A	7041 ± 36 BP
LMD-FK IV	N/A	Middle Adult	Secondary	N/A	N/A	6479-6234 cal. BC
Liang Jon ST3	N/A	N/A	Secondary	N/A	N/A	5634-5539 BP.
SK4	Female	Middle Adult	Primary	Flexed	NW-SE	5900 ± 180 BP
PAW1	Male	Middle Adult	Secondary	Flexed	N/A	5660 ± 170 BP
PAW2	Female	Adult	Secondary	N/A	N/A	5660 ± 170 BP
PAW5	Female	Young Adult	Primary (?)	N/A	N/A	5660 ± 170 BP
HRM 74	Male	Middle Adult	Primary	Flexed	N - S	4572 - 4514 BP
HRM 79	N/A	N/A	Primary	Flexed	NE - SW	4514 - 5565 BP
BHL 4	N/A	Young Adult	Primary	N/A	N/A	Middle Holocene
BHL-F8-2	Female	Adult	Primary	N/A	N/A	Middle Holocene
BHL-I7-2	Male	Adult	N/A	N/A	N/A	Middle Holocene
BHL-L8-2	N/A	Adult	N/A	N/A	N/A	Middle Holocene
SK1	Male	Middle Adult	Secondary	N/A	N/A	Middle Holocene
SK2	Male	Adult	Secondary	N/A	N/A	Middle Holocene
SK3	N/A	Child	Secondary	N/A	N/A	Middle Holocene

BHL 3	N/A	Adult	Primary (?)	N/A	N/A	4120 ± 100
BHL-F4-1	N/A	Adolescent	N/A	N/A	N/A	4120 ± 100
BHL-F7	Female	Young Adult	Secondary	N/A	N/A	4120 ± 100
BHL-F8-1	Male	Adult	Secondary	N/A	N/A	4120 ± 100
BHL-H8-2	Male	Adult	Primary	N/A	N/A	4120 ± 100
BHL-I7-1	N/A	Adolescent	N/A	N/A	N/A	4120 ± 100
LUK-FK II	N/A	N/A	Secondary	N/A	N/A	3375-2853 cal. BC
SK5	Female	Middle Adult	Primary	Extended	E-W	3053 ± 65 BP
Individual 22 Pain Haka	Male	Adolescent	Secondary	N/A	N/A	3003 - 2859 BP
LMD-FK V	N/A	Adolescent	Primary	Flexed	SE-NW	2823-1291 cal. BC
Indvidual 26 Pain Haka	Female	Middle Adult	Primary	Extended	N-S	2760 - 2620 BP
Individual 23 Pain Haka (ST3)	Male	Old Adult	Primary	Flexed	W-E	2755 - 2543 BP
Individual 45 Pain Haka	Female	Adolescent	Primary	Flexed	N-S	2743–2551 BP
Indvidual 48 Pain Haka	Female	Young Adult	Primary	Flexed	N-S	2740–2540 BP
HRM 44	N/A	N/A	Secondary	N/A	N/A	2691 ± 56 BP
HRM 11	Male	N/A	Secondary	N/A	N/A	2588 ± 88 BP
Liang Jon ST1	Female	Young Adult	Primary	Extended	N/A	2544 ± 30 BP
HRM 18	N/A	N/A	Secondary	N/A	N/A	2354 ± 5 BP
LMD-FK III	N/A	Adolescent	Primary	Flexed	N-S	2351-2140 cal. BC
HRM 40	N/A	N/A	Commingled	N/A	N/A	2339 ± 9 BP
Individual 21A Pain Haka	Female	Young Adult	Primary	Flexed	E-W	2339 - 2157 BP
HRM 43	Female	N/A	Primary	Extended	E - W	2335 ± 9 BP
HRM 58	N/A	N/A	N/A	N/A	N/A	2261 ± 64 BP
HRM 54	N/A	N/A	Primary	Flexed	N/A	2230 ± 63 BP
LMD-FK I	Male	Middle Adult	Primary	Flexed	E-W	2202-1682 cal. BC
HRM 2	Male	N/A	Primary	Extended	E-W	2196 ± 84 BP
HRM 13	Female	Middle Adult	Primary	Extended	NE - SW	2014 ± 30 BP

HRM 8	Male	Middle Adult	Primary	Flexed	N-S	1951 ± 28 BP
HRM 4	Male	N/A	Primary	Extended	E-W	1872 ± 24 BP
HRM 56	Male	N/A	Primary	Extended	N/A	1860 ± 21 BP
HRM 3	Female	N/A	Primary	Extended	E-W	1840 ± 23 BP
HRM 27	N/A	N/A	Primary	Extended	E - W	1786 ± 36 BP
LUK-FK I	Female	Adolescent	Primary	Flexed	E-W	946-404 cal. BC
LMD-FK II	N/A	N/A	Primary cremation	N/A	N/A	315-208 cal. BC
LMD-FK VI	N/A	N/A	Primary	Flexed	SE-NW	N/A
LUK-FK IV	Female	Adolescent	Primary	Flexed		N/A
HRM 1	Female	Young Adult	Primary	Extended	E-W	N/A
HRM 5	N/A	N/A	N/A	N/A	N/A	N/A
HRM 6	N/A	N/A	N/A	N/A	N/A	N/A
HRM 7	N/A	N/A	N/A	N/A	N/A	N/A
HRM 9	Male	Adolescent	Primary	Extended	NE-SW	N/A
HRM 10	Female	N/A	Secondary	N/A	N/A	N/A
HRM 12	Male	Young Adult	Secondary	N/A	N/A	N/A
HRM 14	Female	Old Adult	Primary	Extended	E - W	N/A
HRM 15	N/A	N/A	Primary	Extended	NE - SW	N/A
HRM 16	N/A	N/A	N/A	N/A	N/A	N/A
HRM 17	Male	Adolescent	Secondary	N/A	N/A	N/A
HRM 19	Male	N/A	Primary	Extended	E - W	N/A
HRM 20	Female	N/A	Primary	Extended	E - W	N/A
HRM 21	Female	Young Adult	Primary	Extended	N - S	N/A
HRM 22	N/A	Young Adult	Primary	Extended	N - S	N/A
HRM 23	N/A	Adolescent	Primary	Extended	E - W	N/A
HRM 24	N/A	Middle Adult	Primary	Extended	E - W	N/A
HRM 25	N/A	Adolescent	Primary	Extended	E - W	N/A

HRM 26	N/A	N/A	Secondary	N/A	N/A	N/A
HRM 28	N/A	N/A	N/A	N/A	N/A	N/A
HRM 29	N/A	N/A	N/A	N/A	N/A	N/A
HRM 30	N/A	N/A	Secondary	N/A	N/A	N/A
HRM 31	N/A	N/A	Secondary	N/A	N/A	N/A
HRM 32	N/A	N/A	Secondary	N/A	N/A	N/A
HRM 33	N/A	N/A	N/A	N/A	N/A	N/A
HRM 34	N/A	N/A	N/A	N/A	N/A	N/A
HRM 35	N/A	N/A	Primary	N/A	N/A	N/A
HRM 36	N/A	Middle Adult	Commingled	N/A	N/A	N/A
HRM 37	N/A	Middle Adult	Commingled	N/A	N/A	N/A
HRM 38	N/A	N/A	Commingled	N/A	N/A	N/A
HRM 39	N/A	N/A	Commingled	N/A	N/A	N/A
HRM 41	N/A	N/A	Secondary	N/A	N/A	N/A
HRM 42	Male	N/A	Primary	Extended	NE - SW	N/A
HRM 45	N/A	N/A	N/A	N/A	N/A	N/A
HRM 46	N/A	N/A	Primary	Extended	E - W	N/A
HRM 47	N/A	N/A	Primary	Extended	E - W	N/A
HRM 48	Female	N/A	Secondary	N/A	N/A	N/A
HRM 49	N/A	N/A	N/A	N/A	N/A	N/A
HRM 50	N/A	N/A	Primary	Extended	E - W	N/A
HRM 51	Female	N/A	Primary	Extended	E - W	N/A
HRM 52	N/A	N/A	Secondary	N/A	N/A	N/A
HRM 53	Male	N/A	Secondary	N/A	N/A	N/A
HRM 55	Female	N/A	N/A	N/A	N/A	N/A
HRM 57	Female	N/A	Secondary	N/A	N/A	N/A
HRM 59	Female	N/A	Secondary	N/A	N/A	N/A

HRM 60	Male	Young Adult	Secondary	N/A	N/A	N/A
HRM 61	N/A	N/A	N/A	N/A	N/A	N/A
HRM 62	N/A	N/A	N/A	N/A	N/A	N/A
HRM 63	N/A	N/A	Primary	Extended	N/A	N/A
HRM 64	N/A	N/A	Not fully excavated	N/A	N/A	N/A
HRM 65	N/A	N/A	Not fully excavated	N/A	N/A	N/A
HRM 66	N/A	N/A	Not fully excavated	N/A	N/A	N/A
HRM 67	N/A	N/A	Not fully excavated	N/A	N/A	N/A
HRM 68	N/A	N/A	N/A	N/A	N/A	N/A
HRM 69	N/A	N/A	Primary	Extended	N/A	N/A
HRM 70	N/A	N/A	N/A	N/A	N/A	N/A
HRM 71	N/A	N/A	Primary	Extended	NE - SW	N/A
HRM 72	N/A	N/A	Not fully excavated	N/A	N/A	N/A
HRM 73	N/A	N/A	Not fully excavated	N/A	N/A	N/A
HRM 75	N/A	N/A	Primary	Flexed	N - S	N/A
HRM 76	N/A	N/A	Primary	Flexed	N/A	N/A
HRM 77	N/A	N/A	N/A	N/A	N/A	N/A
HRM 78	N/A	N/A	N/A	N/A	N/A	N/A
HRM 80	N/A	N/A	N/A	N/A	N/A	N/A
HRM 81	N/A	N/A	Primary	Extended	E - W	N/A
R II Gua Kidang	Male	Young Adult	Primary	Flexed	E - W	N/A
R III Gua Kidang	Female	Middle Adult	Primary	Flexed	N/A	N/A
Burial 2 Gua Lawa	N/A	Adult (?)	Primary	N/A	N/A	N/A
Individual I Gua Keboboh	N/A	Adolescent	Primary	Flexed	N/A	N/A

Individual II Gua Keboboh	N/A	Adult	Primary	Flexed	N/A	N/A
KMS/TP 1	Male	Adult	Primary	Flexed	E-W	N/A
R.1 LB10	N/A	N/A	Primary	Extended	E-W	N/A
R.2 LB10	N/A	N/A	Primary	Extended	E-W	N/A
Individual 1 Pain Haka	N/A	Infant	Primary	Flexed	N-S	N/A
Individual 2 Pain Haka (ST1)	N/A	Infant	N/A	N/A	N/A	N/A
Indvidual 3 Pain Haka (ST4)	N/A	Child	N/A	N/A	N/A	N/A
Indvidual 4 Pain Haka (ST2)	N/A	Adult	N/A	N/A	N/A	N/A
Indvidual 5A Pain Haka (ST5)	N/A	Adult	N/A	N/A	N/A	N/A
Indvidual 5B Pain Haka (ST5)	N/A	Infant	N/A	N/A	N/A	N/A
Indvidual 6 Pain Haka (SQ2)	Female	Young Adult	Primary	Extended	N-S	N/A
Individual 7A Pain Haka (SQ1)	Male	Old Adult	Primary	Extended	N-NW	N/A
Individual 7B Pain Haka (SQ1)	N/A	Adult	Commingled	N/A	N/A	N/A
Individual 8 Pain Haka (ST4)	N/A	Infant	N/A	N/A	N/A	N/A
Individual 9A Pain Haka	N/A	Young Adult	Primary	Flexed	N-S	N/A
Individual 9B Pain Haka	N/A	Child	Commingled	N/A	N/A	N/A
Individual 10 Pain Haka	N/A	Child	Primary	Extended	E-W	N/A
Individual 11a Pain Haka	Female?	Old Adult	Primary	Extended	N-S	N/A
Individual 11b Pain Haka	N/A	Infant	Commingled	N/A	N/A	N/A
Indvidual 12 Pain Haka	Male?	Young Adult	Primary	Extended	N-S	N/A
Individual 13 Pain Haka	Female	Middle Adult	Primary	Extended	NE-SW	N/A
Individual 14 Pain Haka	N/A	Adult	Primary	N/A	N/A	N/A
Inidvidual 15A Pain Haka	N/A	Adult	Secondary	N/A	N/A	N/A
Individual 15B Pain Haka	N/A	Adult	Secondary	N/A	N/A	N/A
Individual 16 Pain Haka (SQ6)	N/A	Adult	Primary	Flexed	N-S	N/A
Inidividual 17 Pain Haka	N/A	Adult	Secondary	N/A	N/A	N/A
Indvidual 18 Pain Haka (ST5)	N/A	Infant	Primary	N/A	N/A	N/A

Individual 19 Pain Haka (SQ4)	Female?	Adult	Primary	Flexed	E-W	N/A
Individual 20 Pain Haka	N/A	Middle Adult	Primary	N/A	N/A	N/A
Inidvidual 21B Pain Haka	N/A	Adult	Primary	Flexed	S-N	N/A
Individual 21C Pain Haka	N/A	Adult	N/A	N/A	N/A	N/A
Individual 21D Pain Haka	Male	Young Adult	Primary	Extended	W-E	N/A
Individual 24 Pain Haka	N/A	Infant	N/A	N/A	N/A	N/A
Inidvidual 25 Pain Haka	Female	Young Adult	Primary	Extended	N-S	N/A
Individual 27 Pain Haka	N/A	N/A	N/A	N/A	N/A	N/A
Inidvidual 28 Pain Haka	Female?	Middle Adult	Secondary	N/A	N/A	N/A
Individual 29A Pain Haka	N/A	Adolescent	Primary	Extended	N-S	N/A
Individual 29B Pain Haka	N/A	Adult	Secondary	N/A	N-S	N/A
Individual 30 Pain Haka	N/A	N/A	N/A	N/A	N/A	N/A
Individual 31A Pain Haka	Female	Old Adult	Primary	Flexed	N-S	N/A
Indvidual 31B Pain Haka	N/A	Young Adult	Primary	Extended	W-E	N/A
Individual 32 Pain Haka	N/A	N/A	N/A	N/A	N/A	N/A
Individual 33 Pain Haka	N/A	N/A	N/A	N/A	N/A	N/A
Inidividual 34 Pain Haka	N/A	Child	Primary	Flexed	N/A	N/A
Individual 35 Pain Haka	N/A	Adolescent	Primary	Extended	N-S	N/A
Individual 36 Pain Haka	Male	Young Adult	Primary	Extended	N-S	N/A
Individual 37 Pain Haka	Male?	Adult	Primary	Extended	N-S	N/A
Individual 38 Pain Haka	Female?	Adult	Primary	Extended	N-S	N/A
Individual 39 Pain Haka	N/A	Adult	Primary	Extended	N-S	N/A
Individual 40 Pain Haka	N/A	Adult	Primary	Extended	E-W	N/A
Individual 41 Pain Haka	Female	Middle Adult	Secondary	N/A	N/A	N/A
Individual 42 Pain Haka	N/A	Adult	Primary	N/A	N/A	N/A
Inidvidual 43 Pain Haka	Male	Middle Adult	Secondary	N/A	E-W	N/A
Inidvidual 44 Pain Haka	N/A	Adult	Primary	N/A	N-S	N/A

Inidvidual 46 Pain Haka	N/A	Middle Adult	Primary	Extended	N-S	N/A
Individual 47A Pain Haka	Male	Middle Adult	Primary	Extended	N-S	N/A
Inidvidual 47B Pain Haka	N/A	Adolescent	Primary	Flexed	N-S	N/A
CPL_R1	N/A	Child	Primary	Extended	NE-SW	N/A
CPL_R3	Female	Infant	Primary	Flexed	N/A	N/A
CPL_R4	Female	Child	Secondary	N/A	N/A	N/A
CPL_R5	N/A	Child	Primary	Flexed	N/A	N/A
CPL_R6	N/A	Child	Secondary	N/A	N/A	N/A
CPL_R7	N/A	Young Adult	N/A	N/A	N/A	N/A
Burial Leang Kado 4'	N/A	Young Adult	Commingled	N/A	N/A	N/A