

MENGUAK TABIR KEHIDUPAN MASA LALU DAN KINI

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Pengantar Editor

Seungguhnya eksistensi arkeologi patut diperhitungkan dalam mengemban tugasnya untuk mengkaji peninggalan budaya bendawi dari masyarakat masa lampau. Beberapa penelitian arkeologi telah dilakukan oleh Balai Arkeologi (Balar) Makassar dan Pusat Penelitian Arkeologi Nasional telah diperoleh gambaran mengenai berbagai aspek kehidupan manusia. Akumulasi data yang dihimpun para arkeolog dan ilmuwan bidang lainnya menunjukkan betapa pentingnya mengungkap *event* sejarah budaya yang pernah berjalan dan berperan pada masanya. Peran itu apabila dicermati sesungguhnya dapat menjadi sumber pengetahuan, pembentuk identitas dan sumber inspirasi kebudayaan. Dalam ranah pengetahuan yang dikaji memang diperlukan pemahaman yang mendalam fenomena budaya bendawai dengan berbagai aspek, bentuk, strategi dan konteks kebudayaan masa lampau.

Pencapaian tujuan penelitian yang maksimal tentunya dibutuhkan jaringan informasi mengenai berbagai unsur pendukung dalam usaha pemutakhiran pengetahuan arkeologi (dengan mengesampingkan egoisme pribadi atau kelompok), dalam meningkatkan sensitivitas menghargai hasil karya dan kerja para arkeolog lainnya, ataupun pihak lain yang memberi andil bagi tercapainya pengungkapan masa lalu. Arkeologi juga senantiasa memberi peluang bagi terselenggaranya penelitian masyarakat masa kini dalam konteks budaya hidup, dilakukan untuk memperoleh penjelasan mengenai relevansinya dengan aspek budaya dalam masyarakat dan budaya kontemporer.

Sejumlah peneliti yang telah berkarya dalam buku ini mencoba mencari relevansi pengetahuan arkeologi dengan permasalahannya masing-masing dan melalui disiplin ilmunya masing-masing. Oleh karena itu, tidak jarang dari penelitian yang telah dilakukan

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THE HUMAN FOSSIL CRANIUM FROM LEANG BATU TUNPA, SELAYAR, SULAWESI SELATAN

David Bulbeck¹ and Budianto Hakim²

1. Introduction

The Leang Batu Tunpa human cranium was recorded by a team consisting of the authors and Muh. Husni (director of Balai Arkeologi Makassar) during a visit to Selayar Island from 13 through 15 July 2004. Bulbeck had already photographed the fossil in 1986 during an earlier visit in the company of Professor Dr R.P. Soejono, Sonny Wibisono, Naniek Harkatiningsih and Nurhadi, but did not

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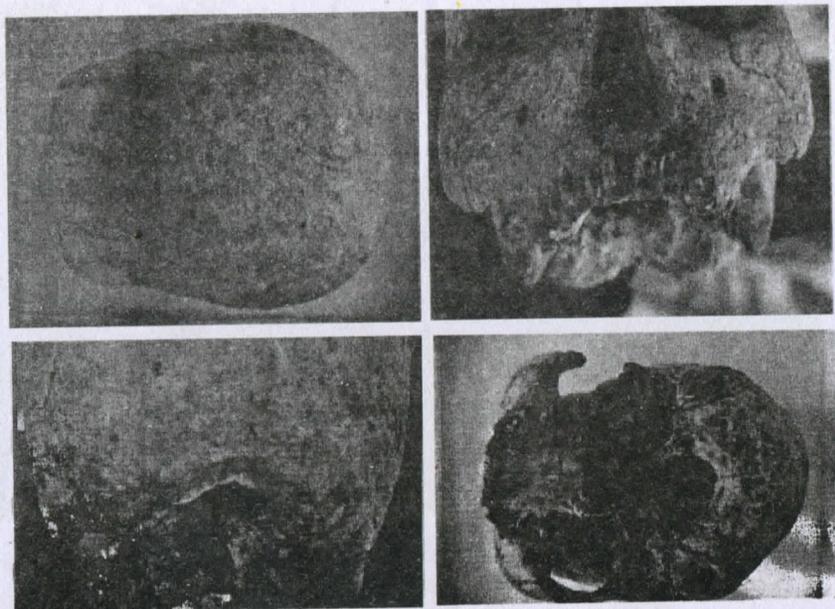
have the opportunity to record the specimen in detail. In addition, apart from knowing the skull was stored in a local businessman's house slightly south of Selayar's capital of Benteng (specifically, in Parangeang), Bulbeck did not know the detail of the fossil's original location. Finally, we hoped to be able to take a small portion of the cranium to attempt to determine the specimen's age through Accelerator Mass Spectrometry (AMS) dating.

The fossil is owned By Haji Malkawaru, and we gratefully acknowledge his permission to record the specimen in detail and, in particular, to take the lateral two roots of the right second upper molar, which, we hope, will be sufficient to provide a reliable AMS date. We also thank Haji Arifin, of Benteng, who acted as our guide for the day, and took us to the far south of Selayar, within view of the cave where the cranium had been found (Plate 1). We should also point out that Haji Malkawaru has repeatedly refused offers from visitors to purchase the fossil, on the grounds that it belongs to the heritage of Selayar, and this custodial attitude towards Selayar's ancient remains has permitted us, as well as other interested visitors, to marvel at this important and, in many ways, unique specimen.

In anticipation of the result from the AMS dating assay, our expectation is that the fossil represents the Toalean people who occupied the South Sulawesi peninsula between about 8,000 years ago (or earlier) and approximately 3,000 years ago. The Toaleans are renowned in Indonesian archaeology for their production of a range of polished bone points, and fine microliths (small tools) which consist of unifacially retouched projectile points, and microliths with a blunted back created through bipolar retouch (Bulbeck 1996-97). Many of these tools have corresponding similar forms in Australia, including the backed blades and geometric microliths, and the projectile points which lack serrated edges ("pirri points"), although



Maros points (projectile points with serrated edges and a hollowed base) have closer parallels in Japan than in Australia (Bellwood 1997). The Toalean is evidenced in Selayar through Hakim's discovery of a Maros point at Batang Matasapo, in the central range of Selayar (Hakim 2000). It is possible that Toalean microliths would also occur at Leang Batu Tunpa, where the fossil had been discovered, based on information from Pak Ajo, who used to operate a garden near the site. When shown drawings of typical Toalean artifacts such as a Maros point, a blade and a flake, Pak Ajo advised the team that he had often seen these in Leang Batu Tunpa, and when we showed him examples of chert which we found across the bay from the site, he advised us that this sort of stone was present in the site.



2. Condition of the fossil

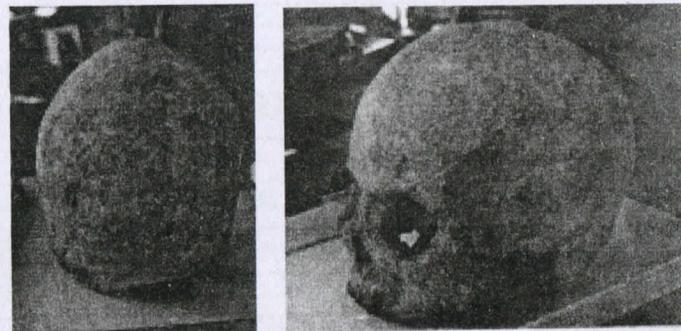
The Leang Batu Tunpa cranium is comprehensively fossilised, and very heavy (as a result of its thick cranial bone, discussed below). Leang Batu Tunpa is a limestone tunnel cave on a cliff face overlooking the sea, which explains the preservation of this burial. Human remains are frequently encountered in Selayar's limestone caves and rock shelters, associated with pre-Islamic historical burials, as recorded in detail by Sonny Wibisono, but this specimen stands out because of its fossilised status. There are two gashes from a digging implement on the top of the cranium, made at the time of its discovery in the sediments (Plate 2). In addition, all of the teeth crowns are missing. The central incisors had been lost well before death, probably during a tooth evulsion ritual to mark the individual's transition to adulthood, as recorded amongst numerous Aboriginal populations in the semi-arid belts of Australia. The other

teeth had evidently been present when the fossil had been discovered, but were unfortunately knocked out shortly afterwards, leaving only the roots intact in the sockets (Plate 3).

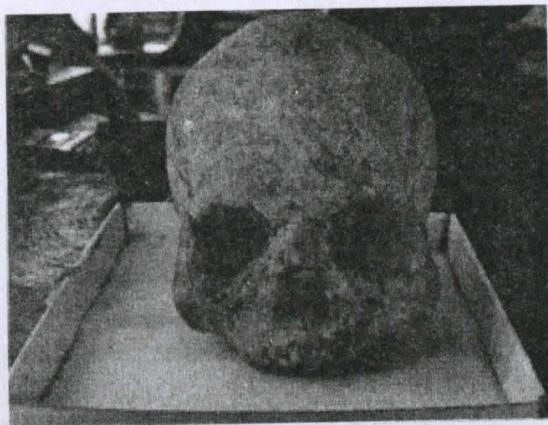
Certain important anatomical landmarks are not preserved, compelling Bulbeck to estimate the cranial measurements which rely on these landmarks. Prosthion is missing, as a result of the evulsion of the central incisors (noted above). The cranial base has been damaged, so both basion and opisthion (the fore and aft points of the foramen magnum) are missing, and the right mastoid process is slightly damaged. The posterior cranial base has a peculiar medial depression where the nuchal plane bends towards opisthion (Plate 4). It is not clear whether this is a natural pathological condition, or is the result of post-depositional pressure (from below) which had also damaged the region of the foramen magnum. In addition, the left zygomatic arch is damaged posteriorly, and so measurements of the cheek region were taken on the right side.

The sockets of all of the teeth including the third molars are present, indicating an adult status. Moreover, the cranial sutures are all closed, and most of the coronal, sagittal and lambdoid ectocranial sutures are completely fused over (Plate 2). Age determination via the extent of sutural closure is not very reliable, but the evidence we do have suggests a minimum age at death of 30 to 40 years. That being the case, the alveolar crests of the maxilla indicate a healthy, functioning dentition, without any loss of teeth, apart from the knocked-out central incisors (Plate 5). The alveolar crests are squat, and indicate that there had been considerable loss of alveolar bone through the age-related process of "blunting resorption", but the only signs of specific infection of the alveolar bone are "fenestrations" at the canines and some pitting of the bone around the second molars. Amongst populations which lack modern dental hygiene, this healthy status of the alveolar crests would be more consistent with a hunter-gatherer than an agricultural diet (Hillson 1996).

Australasia" project (see Acknowledgments). Measurements followed the prescriptions of Howells (1973) and Pietrusewsky (1984), reported here to the nearest millimetre except where the measurement landed on a half-millimetre gradation. Twenty-two major anatomical observations, as defined by Larnach and Macintosh (1966), were taken. The data are presented in Tables 1 and 2 below.



The shape of the braincase is neither narrow nor broad, but intermediate (mesocranic). It is a very tall braincase (Plate 7) with a basion-bregma height not much less than the maximum cranial breadth. The median contour of the vault is rounded with a bulging frontal bone and pronounced occipital bun. Despite the bulging frontal bone (Plate 8), the frontal curvature index is merely medium (24,0) because the frontal chord is remarkably elongated, in contrast to the short parietal chord. The occipital chord is equally elongated. There is a very distinct ridge along the frontal bone extending a short distance posterior to bregma, before the vault flattens off and dips into a pronounced obelionic depression. The merest trace of a mound-shaped, transverse torus runs across the bottom of the occipital bun. The frontal crests are strongly developed, and the sides of the frontal bone dip medially beneath the crests. Thickness of the skull vault could not be measured with the instruments at hand, but is estimated to vary between 10 and 30 mm (depending on location), which is remarkably thick.



The sexual status of the cranium is difficult to determine. It is of moderate size and could be either male or female on that score. The supraorbital region is remarkably gracile with a small glabella, superciliary ridges and zygomatic trigones, and the malar tuberosity is also slight (Plate 6). On the other hand, the mastoid processes are large (with a module of 129 on the right side and 147 on the left), the nuchal markings on the occipital bone are rugged, and the palate is of moderate size with a module of 37 (Plate 5). Even with reference to Larnach and Freedman's sexing criteria for New South Wales coastal Aborigines (see Bulbeck 1981), the Selayar cranium would scrape in as "male" with a total score of 12. A male status seems more likely, especially as the skulls of Indonesia's Holocene inhabitants were probably less robust than those of Australian Aborigines, but it should be noted that a female status is by no means ruled out.

3. Description of the fossil

Bulbeck recorded the cranium according to the system employed in "The Contribution of South Asia to the Peopling of

Measurement	Result (mm)
Maximum cranial length (GOL, Martin No. 1)	189
Naso-occipital length (NOL, Martin No. 1d)	187
Basion-nasion length (BNL, Martin No. 5)	~94 (1 mm error)
Basion-bregma height (BBH, Martin No. 17)	~ 140 (2 mm error)
Maximum cranial breadth (XCB, Martin No. 8)	149
Maximum frontal breadth (XFB, Martin No. 10)	117
Minimum frontal breadth (Martin No. 9)	103
Bi-stephanic breadth (STB)	117 (sic!)
Bizygomatic breadth (ZYB, Martin No. 45)	136
Bi-auricular breadth (AUB, Martin No. 11b)	127
Minimum cranial breadth (WCB, Martin No. 14)	71
Bi-asterionic breadth (ASB, Martin No. 12)	113
Basion-prosthion length (BPL, Martin No. 40)	~100 (2 mm error)
Nasion-prosthion upper facial height (NPH, Martin No. 48)	~ 67 (1 mm error)
Nasal height (NLH), nasal height (Martin No. 55)	49, 51
Nasal breadth (NLB, Martin No. 54)	29,5
Orbital height (OBH, Martin No. 52)	32
Orbital breadth (OBB), orbital breadth (Martin No. 51a)	42, 41
Bijugal breadth (IUB, Martin No. 45(1))	128
Alveolar breadth (MAB, Martin No. 61)	70 (M'/M ² junction)
Alveolar length (Martin No. 60)	~ 53 (1 mm error)
Mastoid height (MDH)	31
Mastoid breadth (MDB)	17
Bimaxillary breadth (ZMB), bimaxillary breadth (No. 46)	112, 113
Zygo-maxillary subtense (SSS)	17,5
Bifrontal breadth (FMB), bifrontal breadth (Martin No. 43)	101, 110
Nasio-frontal subtense (NAS)	16
Bi-orbital breadth (EKB)	106
Dacryon subtense (DKS)	13
Interorbital breadth (DKB, Martin No. 49a)	27,5
Naso-dacryal subtense (NDS)	13
Least nasal breadth (WNB)	14
Simotic subtense (SIS)	4
Inferior malar length (IML)	36
Maximum malar length (XML)	60
Malar subtense (MLS)	14
Cheek height (WMH, Martin No. 48(4))	35
Supra-orbital subtense (SOS)	4
Glabella subtense (GLS)	2
Frontal chord (FRC, Martin No. 29)	125 (sic!)
Frontal subtense (FRS)	30
Frontal fraction (FRF)	64
Parietal chord (PAC, Martin No. 30)	87 (sic!)
Parietal subtense (PAS)	11,5
Parietal fraction (PAF)	42
Occipital chord (OCC, Martin No. 31)	~ 122 (2 mm error)
Occipital subtense (OCS)	41
Occipital fraction (OCF)	48

Table 1. Measurements available on the Selayar cranium following the systems of Howells (indicated by three-letter acronyms) and Pietrusewsky (indicated by the number in Rudolf Martin's system, where it differs from Howells's measurement). Measurements are reported for both systems separately where a different result was obtained.

Anatomical feature	Observation	Score
Cranial index (breadth:length)	78,8	Mesocranic (2)
Glabella development	Martin 2	Small (1)
Superciliary ridge development	Small	(1)
Zygomatic trigone development	Slight	(1)
Frontal curvature index (subtense:chord)	24,0	Medium (2)
Subnasal prognathism	Absent/small	(1)
Anterior nasal spine development	Broca 1	Small (3)
Maximum supraporbital breadth	110 mm	Large (3)
Palate size (length x breadth)	37	Medium (2)
Naso-frontal articulation width	14,6 mm	Large (3)
Parietal boss development	Slight	(3)
Post-orbital constriction	17 mm	Medium (2)
Phaenozgygy	Trace	(1)
Sagittal keeling	Trace	(1)
Transverse occipital torus development	Trace	(1)
Palatine torus development	Small to medium	Distinct (3)
Rounding of orbital border of the malar	Distinct	(3)
Median frontal ridge development	Distinct	(3)
External occipital protuberance	Absent	(3)
Lower narial margins	Gutter	Non-anthropine (3)
Supra-mastoid crest development	Slight	(3)
Size of marginal process of malar bone	2,8-2,9 mm	Medium (2)

Table 2. Anatomical observations on the Selayar cranium following the system of Larnach and Macintosh (1966), where a score of 0 or 1 indicates a non-Aboriginal morphology, 2 indicates an ambiguous morphology, and 3 reflects the Australian Aboriginal condition.

The face is short and broad, with broad rectangular orbits and distinct rounding of the lateral border of the orbit (Plate 6). The malar-maxillary sutures flare laterally, with the result that mid-facial breadth (across the inferior malar-maxillary sutures) is larger than the upper facial breadth (across the upper orbits). The lower face (across the inferior malar-maxillary sutures) is flat, as is the nasal saddle, whereas the upper face projects forward quite strongly both at nasion and the dacrya. Overall the face is prognathic, as indicated by the greater basion-prosthion length compared to basion-nasion length, even though subnasal prognathism is absent to small.

A number of features resonate strongly with the morphology found amongst Australian Aborigines and, to a lesser extent, Melanesians (see Larnach and Macintosh 1966). These include both

features of robustness, such as the median frontal ridge and the palatine torus (Plate 5), as well as features of gracility, such as the small supramastoid crest and total lack of any external occipital protuberance (Plate 7). The very gracile supra-orbital region would be very unusual by Australian Aboriginal standards, although, as insinuated previously, this might reflect the individual's possibly female status. Other features, such as the barely visible status of the zygomatic arches in superior view (trace phaenozgy) and the minimal development of the transverse occipital torus, distinguish the Selayar cranium from the morphology found on most Australian Aboriginal crania. Other features, notably the small anterior nasal spine and the "non-anthropine" morphology of the lower narial margins, are typical of indigenous populations throughout the region from Indonesia to Melanesia and Australia (Bulbeck 1981). Whether the morphology, overall, more resembles that of recent hunter-gatherer populations of Australia or of Japan (the Ainu), and how it compares with the morphology of early to middle Holocene hunter-gatherer populations from North Sulawesi (Leang Buidane Pre-ceramic [Bulbeck 1981]), Java (Wajak, Sampung) and Malaysia (Gua Cha, Gua Gunung Runtuh), is a question for future research.

4. Conclusion

If, as we expect, AMS dating confirms the Toalean affinity of the Selayar cranium, it will be a very important addition to our understanding of the population relationships of the Toaleans. Although scraps of human remains have been frequently recovered from Toalean sites, it is likely that most of them represent the Palaeometallic ancestors of the peninsula's Bugis and Makasar inhabitants (Bulbeck 1996-97). For instance, the human remains excavated in 1969 by Mulvaney and Soejono (1970) in Trench A at Leang Burung 1 have all been radiocarbon dated to between approximately 2,000 and 1,000 years ago, and the large collection of

teeth and other human remains from Leang Codong in Soppeng are associated with bronze leaf, stone and glass beads, and other Palaeometallic items. The only certified Toalean burial we know of is the remains from Trench B at Leang Burung 1, dated to between 4,000 and 5,000 years both from a direct radiocarbon date on the remains and the age of the layer in which the remains were found. It is also likely that the fossil human remains excavated from Bola Batu in Bone, and studied by Hooijer, also represent a Toalean burial (Bulbeck 1996-97). However, in both cases the human remains are highly fragmentary, and thus fall in comparison to the marvellously preserved Leang Batu Tunpa specimen.

In the near future, Bulbeck will assess the population relationships of the Selayar fossil with reference to databases at his disposal. One such database consists of nearly 1,000 recent crania recorded from the Indo-Malaysian Archipelago, Melanesia and Australia, according to the 22 characters of Larnach and Macintosh (1966). Another database consists of the world-wide sample of populations measured by Howells (1973) and included by Douglas Ousley and Richard Jantz in their commercially available Fordisc 2.0 computer program. Whatever the results, the Selayar cranium can be expected to make an important contribution to our understanding of the late Quaternary population history of South Sulawesi in particular, and Indonesia more generally.

The owner of the fossil, Haji Malkawaru, kindly consented to the extraction of the roots from one of the tooth sockets for radiocarbon (Accelerator Mass Spectrometry, AMS) dating. The sample was sent to the University of Waikato Radiocarbon Dating Laboratory by grantee (sample Wk- 15438). The AMS date is now available and is only 500 ± 33 BP, or 1520-1670 CE at the one-sigma error range. This is solid, reliable date as the organic quality of the tooth root was much better than would have been expected of fossil (Fiona Petchey, personal communication). So in fact the fossil dates to a late stage of the same period that the majority of the looted pre-

Islamic burials in Selayar belong to. While the fossil does not the status of deep ancestry which its condition suggests, it is nonetheless interesting for its evident dissimilarities from the usual human remains found in pre-Islamic burial sites. The far south of Selayar is very interesting as the location of an enclave of Laiyolo speakers, whose language is closely related to Butonese (southeast Sulawesi). It is possible that archaic populations persisted in the far south of Selayar till historical times when it was colonized from Buton. Further investigation is warranted.

Acknowledgments

The trip to Selayar was funded by an Australian Research Council to David Bulbeck and Colin Groves for the project "The Contribution of South Asia to the Peopling of Australasia". Pak Muh. Yusmi organised the travel schedule and facilitated our interactions with the Selayar residents. We thank the people of Selayar for their unstinting hospitality, especially Haji Malkawaru, Haji Arifin, and Pak Samado.

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Captions to Plates

- Plate 1. View across the bay to Leang Batu Tunpa, which lies immediately to the left of the exposed cliff face in the centre of the photograph.
- Plate 2. View of the Leang Batu Tunpa cranium from above. Note the two parallel slashes towards the back of the vault, the heavily fused condition of the ectocranial sutures, the mesocranic vault shape, and the "trace" visibility of the zygomatic arches.
- Plate 3. Close-up view of the Leang Batu Tunpa specimen's palate from in front. Note that the alveolar bone has largely healed over in the region of the central incisors, but in the case of the other tooth sockets there is no sign of any alveolar healing or resorption.

- Plate 4. The posterior cranial base of the Leang Batu Tunpa cranium from behind. Note how the surface of the bone, between the mastoid processes, curves symmetrically upwards towards the mid-line, apparently associated with a transverse muscular ridge. Note also the damage to the region of the foramen magnum.
- Plate 5. View from below of the Leang Batu Tunpa cranium. Note the condition of the alveolar crests, the distinct torus at the rear of the palate, and the damage incurred by the left posterior zygomatic arch and the region of the foramen magnum.
- Plate 6. The Leang Batu Tunpa cranium from in front. Note the weak development of the supraorbital region, the pronounced median frontal ridge, and the broad face with its wide nasal aperture and broad, rectangular orbits.
- Plate 7. View of the Leang Batu Tunpa cranium from behind. Note the height of the cranial vault, the minimal development of a transverse torus across the occipital bun, and the absence of any external occipital protuberance.
- Plate 8. The Leang Batu Tunpa cranium in aslant anterior view. Note the rounded medial contour of the cranial vault including a bulging frontal bone.

**GEOLOGI SITUS-SITUS GUA
(PINDA, PAMINSA, LANSIFORA-2,
LAKUBA)
KABUPATEN MUNA, PROVINSI
SULAWESI TENGGARA**

M. Fadhlan S. Intan

(Kantor Asisten Deputi Urusan Arkeologi Nasional)

1. Latar Belakang

Lingkungan alam, manusia, dan budaya merupakan tiga faktor yang saling terkait dan saling mempengaruhi. Walaupun keterkaitan tersebut belum menjadi pendapat yang sama di antara para ahli, namun kelihatannya keterkaitan ketiga faktor ini dapat kita terima secara lebih luas dalam dimensi ruang dan waktu.