

2. The archaeological background to Timor

The next three chapters present the archaeological, archaeobotanical and ethnobotanical background information relevant to the present study (a list with all the plants referred to in this study is given in appendix 1). This chapter includes a description and reassessment of previous archaeological work in East Timor, from Alfred Bühler's pioneering work in the 1930s, to investigations currently taking place. It has three parts, corresponding to the three periods identified as main temporal entities: from the 1930s to the early 1960s; from the 1960s to Glover's work; and from 1999 onwards.

The island of Timor, the largest within the Lesser Sunda chain, has for a long time attracted the attention of researchers in different areas, from anthropology, ethnography, geology, botany and archaeology. Its western half, part of the Dutch East Indies until 1949 and of Indonesian East Nusa Tenggara from then on, saw much of that research activity carried out by Dutch scholars. Some of the most relevant archaeological finds there are the result of joint Indonesian-Dutch collaborations, and took place in the 1950s.

The eastern part of Timor, on which we shall be focusing, was mostly investigated by the Portuguese whose colonial rule lasted until 1975. Former "Portuguese Timor", as it was then known, had been a colony since the mid-sixteenth century. However, only during the last hundred years of Portuguese presence, and especially during the *Estado Novo*¹, did the Portuguese administration reinforce its presence and invested systematic resources in what was its most distant colony. Despite being less than in some African colonies such as Angola and Mozambique, research production in Timor increased considerably during this period in key areas such as geology (Gageonnet and Lemoine 1958), agricultural development (Gonçalves *et al.* 1974), forestry (Cinatti 1950), and botany (see Cinatti 1950b, for a list of works), just to name a few. However, as we shall see with some of the archaeological and anthropological work undertaken, researchers were often "out of touch" with the most modern practices elsewhere in the world, and many (like António de Almeida), engaged in a pro-regime rhetoric, which liked to nominate itself as "proudly alone" in the world context.

¹ *Estado Novo* (literally "New State") was the name by which the 20th century authoritarian regime in Portugal was known. It lasted from 1933 to 1974, and was led by António de Oliveira Salazar (1933-68) and Marcello Caetano (1968-74).

2.1 Dating Timor's Prehistory with "no dates"

The first period of archaeological investigation in Timor was marked by low standards, was mostly carried out by non-archaeologists, and was poorly published. The field research took place before modern radiometric dating procedures were in use in the region, which as we shall see, led to some misreading of the nature and age of deposits unearthed. With the possible exception of Alfred Bühler, whose work in the 1930s extended to both the Dutch and Portuguese colonies, none of the early researchers were completely familiar with "modern" practices used in archaeology at the time (Trigger 2006:382).

2.1.1 The pioneer work of Alfred Bühler

Alfred Bühler, who worked at the *Museum für Volkerkunde* in Basel, spent time in Timor and the nearby island of Roti between June and July 1935 (Sarasin 1936). He was accompanied by Fritz Sarasin, director of the Basel Museum, and W. Meyer, a doctor with an interest in the physical anthropology of the native inhabitants. From a total of eight excavations conducted in Timor, seven took place in the former western Dutch province, and only one in what today is East Timor. Unfortunately, the report on those excavations, published by Sarasin while Bühler was still in the field, lacks detailed information, including stratigraphic resolution for all but two of the sites excavated (Sarasin 1936). Glover, who visited the Basel Museum in 1966, later attempted a reassessment of Bühler's work. In 1968 Glover also had all of Bühler's archaeological materials sent to the ANU, where he was conducting his own doctoral investigation into the prehistory of East Timor (Glover 1972b:120).

The only sites excavated by Bühler for which we are provided with detailed information, including notes on the depth of deposits and finds, are Nikiniki 1 (one of three excavated rockshelters in central West Timor, 22 kilometres inland) and Soe (two poorly described rockshelters also located in central West Timor, 33 kilometres from the southern coast). The third site, a small unnamed rockshelter in Baguia, is the only published site that Bühler investigated in the former Portuguese Timor. The importance of the Nikiniki finds rests on very characteristic stone tools, described by Glover as "tanged points" (Glover 1972b:124), later found by Verhoeven elsewhere in Timor (Verhoeven 1959) and similar to the ones Glover himself excavated at Uai Bobo 1. This site lies in the central region of West Timor, along the central road that crosses that part of the island, and was excavated to a depth of

approximately 135 centimetres. Stone tools and pottery (including some decorated sherds) were found in the oldest excavated layers, together with remains of *Aleurites moluccana*. Regarding the later, no information on how many fragments and whether these were charred or uncharred (in which latter case they could be a modern intrusion) is given (Sarasin 1936:9).

Little information is also given on the two rockshelters excavated at Soe. It appears that few materials were recovered there, despite the fact that at one of them a trench of 15 x 1 metres was excavated to a depth of about 75 centimetres (Sarasin 1936:4). Glover reanalysed the stone tools from the Soe sites and interpreted the absence of pottery at both sites as indicative of them having been occupied before 4500-5000 years ago (Glover 1972b:122).

In Baguia, Bühler excavated a small rockshelter located near the former Portuguese administrative post. A trench of 2 x 2.5 metres was dug to a depth of approximately 200 centimetres, when it reached bed rock. Undecorated pottery was present in the lowest excavated layer with evidence of human occupation, at about 190 centimetres deep. According to Sarasin, with the exception of the tanged points (which are absent from the Baguia site), the stone tools are similar to the ones found at Nikiniki. In fact, both sites were considered very similar in age and ascribed to the Neolithic. Sarasin suggested that the much lower depth to which stone tools were found in Baguia was probably related to post-depositional reasons, and the fact that the site had recently been used by local villagers (Sarasin 1936:15).

Apart from the low stratigraphic resolution, no information is given on the methods of excavation and sorting employed. However, as Glover noticed, very few pottery sherds and flakes were recovered. The pottery sherds were mostly large-sized and comprised higher proportions of rim to body parts, and the stone artefacts had high proportions of retouched flakes to waste flakes. According to Glover, this suggested that no screening had taken place and that materials had probably been selectively recovered in the field (Glover 1972b:120). Later attempts made during the 2004 field season to relocate the Baguia rockshelter proved unsuccessful (Oliveira 2006).

In 1939 W. J. Willems, working for the Oudheidkundig Dienst Nederlandsch-Indie, carried out fieldwork in West Timor, excavating at Ulman Cave, in northwestern Timor, as well as in Fatu Turi and Fatu Meang, near Atambua. The stone assemblage from the Ulnam site was described as similar to the ones excavated by Bühler. Unfortunately, the original publication by Willems is lacking in detailed information and no more can be added regarding his works (Oudheidkundig Verslag 1940:12-13). According to Glover (pers. comm.), when he visited the

Jakarta museum with Professor John Mulvaney in 1969, some materials from Ulnam Cave were deposited there.

Theodor Verhoeven, a Dutch priest from Flores and an amateur archaeologist, visited West Timor for the first time in 1954 and excavated two sites: Liang Djenilu, on the north coast near Atapupu, and Liang Leluat 2, on the southern plain, near Kateri (Verhoeven 1959). Another 13 sites had previously been found by St. Woga, a member of his team, but no additional information is given on these (Verhoeven 1959:970). Despite the fact that large areas of the caves were excavated (20 square metres at Liang Leluat 2, and 15 square metres at Liang Djenilu), the publication is again sparse in stratigraphic details. Verhoeven went back to Timor in August 1964, and in the company of J. Verschuuren, unearthed fossil remains of *Stegodon* sp., a small extinct genus of the Elephantidae family. The sites investigated are located in Lalian and Atambua, near the border with former Portuguese Timor (Verhoeven 1964; Hooijer 1969; Sartono 1969, 1973). In the course of Verhoeven's work, remains of a giant land tortoise and vertebrae of a large varanid were also found (Hooijer 1971, 1972). According to Glover, who gave some of these remains to Hooijer, they were deposited in the Leiden Museum (Glover pers. comm.).

Although stone tools were identified at some of these sites, no indication is given suggesting that they were in stratigraphic association with the fossilized fauna. Verschuuren later returned to the Atambua region and between October 1964 and January 1965 collected stone tools from another forty sites. These materials were never published but were briefly described by Bednarik, who visited and reassessed the sites from which they were collected. Bednarik described them as "surface finds from hill sides, washed out in small gullies, flood plains and in river gravel beds" (Bednarik 2000:17). Glover and Glover observed some of these materials in a small museum in Lalian, in West Timor, and attributed them a possible Pleistocene age (Glover and Glover 1970; but see Bednarik 2000 for a discussion on the context and a general reassessment of those finds).

2.1.2 The (East) Timor Anthropological Mission

There was a significant hiatus of nearly two decades between Bühler's excavations in Baguia and the establishment of the Timor Anthropological Mission (*Missão Antropológica de Timor*, MAT), in the 1950s. During this period, there are no accounts of any other archaeological activity carried out in the eastern part of the island, in what today is East Timor.

In the 1950s, Portugal was a rather isolated country ruled by an authoritarian regime, scientifically out of pace with much of the rest of Europe and the world, and struggling to justify, in a growing democratic post-war environment, the existence of its colonies. The *Estado Novo* had very little interest in anthropology or archaeology, except in cases where they could be used for its own glorification (Fabião 1996). The fact that during these years so much effort was put into research in all the colonies can also be seen as a way to justify the ethnical diversity of the country's extended "overseas territories" (as the Portuguese colonies were later renamed), in a period when Portugal's national identity was at stake (Schouten 2001). In the case of East Timor, for example, despite Portugal's neutrality in World War II the disembarkation of Dutch and Australian troops there led to the invasion by the Japanese army. Japan's large-scale occupation of Timor lasted from February 1942 until 1945, resulting in considerable destruction and death, in what was probably the second most disruptive period of East Timorese history in the last century (Gunn 1999). As World War II came to an end and Portugal regained control of its colony, it was time for rebuilding, both of the infrastructure and some pride lost in the process.

Led by António de Almeida, who had previously carried out similar work in Angola, Mozambique and Portuguese Guinea, MAT's principle objectives were to investigate Timor's physical anthropology and prehistory. The first field season took place in 1953, and the main site investigated that year was the Laga Lagoon site (also referred to as Gassi Issi, or Gassi Liu), which Almeida, Mendes Corrêa and Ruy Cinatti found in September and test pitted two months later (Almeida 1960:128; Almeida and Zbyszewski 1967). In between, preliminary results of surface finds were presented at the IV Congress of Prehistory of the Far East, in Manila, where the site was described as a mix of alluvial and maritime deposits of Palaeolithic age, in which all of the stone industry presented "Mousterian and Levalloisian features" (Almeida 1954:351). In a later paper, Mendes Corrêa *et al.* suggested that some of the materials from Laga, although with typological resemblances to its European counterparts, could actually be the result of a local tradition and thus of a much younger age (Mendes Corrêa *et al.* 1964:29).

Other researchers, such as the famous French prehistorian Henri Breuil and Georges Zbyszewski, later reinforced this idea of a great time depth for the Laga materials. In 1957 Breuil (1959:175) initiated a detailed report on these materials based on Old World stone tool typologies, which was never finished. That report was to be completed by Zbyszewski and Almeida, and published more than 25 years later (Zbyszewski 1984). By this time, a chronological sequence of East Timor's prehistory based on a series of radiocarbon dates was

already available and had been published (Glover 1969). Glover himself, in the company of John Mulvaney, visited the site during one of his field trips to Timor. Having found Almeida's trench still open, he collected more stone tools (Glover 1972:44-50). Based on the new materials he found, Glover suggested that the Laga lagoon scatter indeed contained prehistoric stone tools, although not too different from the ones already known from cave sites excavated elsewhere in Timor. Although not ruling out the possibility that some of the materials could be of an older age, Glover suggested, based on the observed geomorphology of the lake and its surroundings, that the whole site should only be a few thousand years old (Glover 1972:50). Von Koenigswald, who also had access to Almeida's materials in 1981, made a similar suggestion and ascribed them to the Neolithic (Zbyszewski *et al.* 1985-86:24). Despite all this new information, the original typological analysis was maintained and reinforced once again in 1985 (Zbyszewski *et al.* 1985). Finally, members of the East Timor Archaeological Project (ETAP) visited the site in 2001 and their assessment, as well as the result of a radiocarbon determination, is referred to below. (O'Connor 2002).

During that same year of 1953, materials were also recovered from several other locations around East Timor. With the exception of the ones from Laga, today deposited at the *Centro de Pré-história e Arqueologia, Instituto de Investigação Científica e Tropical* (Centre for Prehistory and Archaeology of the Tropical and Scientific Research Institute – CPA, IICT), in Lisbon, all remaining materials were left in Timor and were never fully described (Mendes Corrêa *et al.* 1956:296).

Almeida returned to East Timor in 1957, where he collected new surface finds from around the Laga Lagoon site and from Lautem (Mendes Corrêa *et al.* 1956). A few polished stone tools were also photographed in Baguia, used as sacred objects by local villagers. Among them, there were three adzes, one possible bark cloth beater and one possible spear point. Almeida (1960:128-129) suggested that two of the adzes, made in a volcanic rock, might have been imported from Indonesia.

In 1962 Cinatti, who was not formally part of Almeida's Mission, but who was working in East Timor for the *Junta de Investigações do Ultramar*² (Stilwell 1995:299), reported the finding of three sites with rock paintings in the area of Tutuala (Cinatti 1963). The sites comprised two rock cliffs, the Tutuala and the Ili Kerekere escarpments, and a cave site, Lene Hara Cave. Cinatti was an agronomist by profession and a poet, and had returned to work in East Timor a

² The JIU ("Overseas' Research Body") was a national institution created by the *Estado Novo* authoritarian regime, which aimed at conducting research in the former Portuguese colonies.

second time in 1961, after enrolling at Oxford for a Masters in Anthropology (see Stilwell 1995 for a detailed biographical account on Cinatti). His works in East Timor range from botanical and forestry descriptions (Cinatti 1950, 1950b, 1950c), which will be referred to in detail below, to archaeological and ethnographic accounts, in particular a major descriptive report on Timorese traditional houses (Cinatti *et al.* 1987). Regarding the rock paintings, Cinatti (1963:58) was familiar with the work carried out by van Heekeren in Sulawesi (1957), and suggested that they might be related to the Toalean culture of that island and dated to between 6500 and 2000 BC. However, he was also aware that this interpretation needed to be established, and that archaeological excavations and direct radiocarbon dating should be pursued (Cinatti 1963:59).

Almeida returned to East Timor for the last time in September 1963, where he visited the rock art sites previously described by Cinatti and found another one, the Sunu Taraleu escarpment, also located in the Tutuala region (Almeida 1967). At the Lene Hara cave, Almeida conducted archaeological excavations, and two trenches of 2 x 1 metres were laid out and excavated to a depth of approximately 80 centimetres, in 4 x 20 centimetre spits. No pottery was recorded and the stone tools found were described, based on their typology, as pre-Neolithic and probably Mesolithic (Almeida and Zbyszewski 1967:64). All in all, between 1953 and 1964, António de Almeida, Mendes Corrêa and Camarate França, with the occasional collaboration of Ruy Cinatti, undertook four archaeological fieldwork seasons in East Timor (Almeida & Zbyszewski 1967). As mentioned above, most archaeological and ethnographic materials recovered by MAT are today deposited at IICT in Lisbon, and a summary of Almeida's works was recently published (Lucas *et al.* 1992).

The several published accounts of fieldwork undertaken by MAT often lack detailed information on the excavation methods employed, as well as detailed stratigraphic descriptions. That is easily explained by the fact that none of the excavators was, strictly speaking, an archaeologist or was familiar with the modern (at the time) practices used in archaeology (Trigger 2006). This certainly had an impact on some of their interpretations and sadly often resulted in very poor recording procedures, making any reassessment of those early interventions extremely difficult³. As to radiometric dating methods, although they had been used for the first time before Almeida's excavations in East Timor (Arnold and Libby

³ Several attempts were made to recover Almeida's field notes, which he took home after retiring from his position as Head of MAT. I have been told that they are kept by his daughter, Maria Emília Castro e Almeida, who later replaced him as Head of the CPA, but were never returned to that institution.

1951), he seems to have had no awareness that they could be useful to clarify chronologies based on stone tool technologies. Almeida was essentially an anthropologist, with a major interest in taxonomy and physical anthropology of indigenous populations. His works were in general accordance with the orientations within which MAT had been created in the 1950s, which were typical of continental European anthropology from the second half of the nineteenth century, and were mostly descriptive (Schouten 2001:160).

Almeida's work in Timor, most of it republished in a single volume (Almeida 1994), is the singular expression of a paradox, in the sense that his accurate recording of cultural materials and practices did not convey his belief that these would soon be replaced by more advanced (Portuguese) ones (Schouten 2001:166). In reality, Almeida's views are in close agreement with the way the *Estado Novo* saw its colonial role, to whom "the introduction of Portuguese civilisation, considered superior, was a sacred mission, used at the same time as a justification for the Portuguese presence" (Schouten 2001:165).

2.2 The advent of modern archaeology: Glover's first comprehensive synthesis

The early 1960s were a period of marked changes in archaeology in the Australasian region and around the world, with the advent of the New/processual Archaeology (Trigger 2006:392-418) and an increasing reliance on radiocarbon dating (Long 2000; Trigger 2006:382). Australian archaeology was becoming established, and the history of early human settlement of the Australian continent became the focus of research there (Mulvaney 1969 for the first synthesis; Mulvaney and Kamminga 1999, Smith and Burke 2007, chapters 1 and 2, and Hiscock 2008 for more recent syntheses). In such a context, the island of Timor was soon perceived as a possible stepping-stone in the migration route(s) that led modern humans to populate this part of the globe for the first time (Birdsell 1977:122). O'Connor *et al.* (2002) and O'Connor (2007) readdressed this issue recently, based on early dates from archaeological contexts in East Timor (see also O'Connor and Chappell 2003, on similar date ranges for northern Australia and New Guinea). These were also times of worldwide political change, with the emergence of the communist spectre in Southeast Asia, the Cold War, and decolonisation by European powers both in Africa and in Asia. Nearly thirty years after the devastation caused by World War II and the Japanese occupation, East Timor would soon

become a political pawn in the games of world politics and diplomacy, and a victim of greater regional interests (Fernandes 2007).

As previously mentioned, Ian Glover was the last archaeologist to work in East Timor prior to the Indonesian invasion, which took place in December 1975. During the course of his doctoral research at the ANU, Glover conducted three fieldwork seasons in East Timor and spent ten months, between 1966 and 1967, locating and excavating archaeological sites (Glover 1972:1). Until recently, Glover's seminal work was the only comprehensive and detailed account of East Timor's prehistory, based on a series of detailed stratigraphic sequences of excavated sites, systematic identification of finds, and radiocarbon determinations. The main results of his research were initially published in several journal articles (Glover 1969, 1971, 1973, 1977, 1979), and later in a single monograph (Glover 1986). The following description of Glover's sites follows the 1986 monograph and other individual published papers. For unpublished information, reference is made to Glover's original PhD dissertation (Glover 1972).

Amongst Glover's main research questions, two were related to a more general and wider inquiry: first, the initial settlement of the Australian continent by modern humans, and the possible use of the island of Timor in that process as a stepping-stone; and secondly, the role played by sea barriers in Island Southeast Asia in the later dispersal of agriculture, thought to have originated in Mainland Southeast Asia (Glover 1972:1).

Although Glover's historical synthesis is mainly drawn from the research he undertook on the Baucau Plateau, he did conduct survey and trial excavations in other areas of East Timor. In July 1966, in the company of Professor John Mulvaney, Glover surveyed two cave sites in the Tutuala region, including conducting an inspection of Almeida's open trench at Lene Hara cave, and visited the Ile Kerekere rock art site reported by Cinatti (1963). Little information is given on these small-scale investigations, except to confirm Almeida's initial assessment at Lene Hara that no pottery was found below the surface (Glover 1972:41). During this first reconnaissance, Glover also visited some caves in Beaco, on the southern coast, but they were all found to be "archaeologically sterile" (Glover 1972:43). On the other hand, the Venilale area, which he drove through to cross the central mountain chain from Baucau, was described as promising, although Glover had no time to look for caves there.

Glover returned to East Timor later the same year (1966) and decided to focus his research in the Baucau area, where he had spent a couple of days in July and visited several rockshelters (Glover 1972:42). He initially visited the Laga lagoon site investigated earlier by Almeida, and also conducted a small 2 x 1 metre excavation at one of several small rockshelters identified in

the vicinity of the lake. This was described as a shallow deposit, containing fishbones, shellfish and pottery, but no stone tools. No further work was carried out at this site (Glover 1972: 50). Eight additional rockshelters and caves were visited around Baucau (including Lie Kere, a rock art site), and a few of them were test pitted. The results, referred to as disappointing compared to those from other sites excavated during his final trip to Timor later in 1967, are only mentioned briefly, including those from Uai Ha Le cave site (Glover 1972:51-53).

During the second visit to East Timor, in 1966, three other sites were reported. The first is referred to as “a shallow gully between two low hills” (Glover 1972:54), located near the Sagadat village, on the road from Laga to Baguia. Only a few stone tools were collected at this location. The second is a solution cave named Mada Lea, 5 kilometres south of Baguia, on the road to Uato Carbau, where the results of a small test pit were described as archaeologically poor (Glover 1972:57). This cave was visited and test pitted in 2004, during the course of my own investigations in the Baguia region (Oliveira 2006) and is described further below. The last site visited by Glover in Baguia was Sana Lila Cave, referred to as possibly the cave that Bühler had excavated in 1935. Glover mentions a “hole quickly dug” (Glover 1972:57) at this site, but with no cultural sequence found. Several caves and rockshelters were visited during the fieldwork I undertook in Baguia in 2004 (Oliveira 2006), but none seemed to correspond to the one excavated by Bühler and Glover.

The main sites comprising the bulk of Glover’s proposed cultural sequence for East Timor’s prehistory were excavated during his final field season, which took place between June and September 1967. Among several rockshelters and caves visited along the uplifted terraces lying on the western side of the Baucau plateau, two (Lie Siri and Bui Ceri Uato) were comprehensively excavated and are described individually (Glover 1972, 1986). The excavation at Uai Ha Le was also finished but, as mentioned above, the results were disappointing and Glover did not publish them in detail. After excavations in Baucau were completed, Glover visited the southern coast a second time. As no suitable sites were found, he returned to the area between Ossu and Venilale, on the northern slopes of the central mountain chain. There he again visited several rockshelters and caves and test pitted the Hu Cai Rubi and Bui Lale caves, which are only described briefly (Glover 1972:59, 60). Eventually, the Uai Bobo 1 and 2 sites were found and excavated in a more comprehensive way, forming together with Lie Siri and Bui Ceri Uato the bulk of Glover’s doctoral thesis (Glover 1972).

Glover’s analysis of these four main sites, all located on the Baucau limestone Plateau (figure 2.1) provided the first comprehensive cultural and chronological sequence of East Timor’s

prehistory. As Glover’s research is too extensive to be described in much detail and is fully published, only general results and the proposed chronology for each site are summarised below, together with any information considered of relevance to the present study. Of the sites directly dated by radiocarbon, only Uai Bobo 2 returned a Pleistocene determination, and problems with this date are discussed. The recovery and identification of archaeological plant remains from his sites are presented in chapter 3 and discussed in chapter 9.

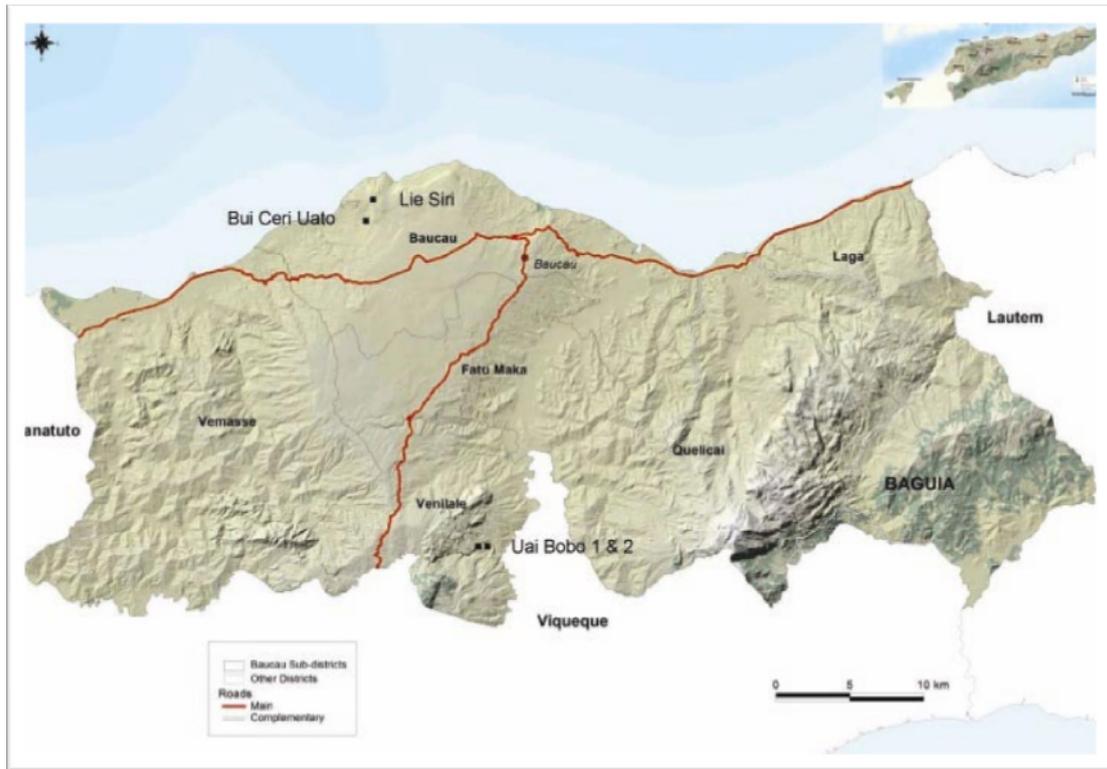


Figure 2.1: Map of the Baucau District with the four main sites excavated by Glover: Lie Siri, Bui Ceri Uato, Uai Bobo 1 and Uai Bobo 2 (© GERTiL).

Bui Ceri Uato⁴ was one of two near-coastal sites on the Baucau Plateau where Glover conducted extensive excavations. Despite the fact that no stratigraphic disturbance was recognised during excavations, the two charcoal samples retrieved for dating returned modern determinations (table 2.1, appendix 2). Glover suggests that they represent some level of contamination resulting from intrusion of more recent material from the upper deposits (Glover 1986:96). Nonetheless, based on the dates obtained from other sites and comparisons

⁴ Glover’s excavation took place in Bui Ceri Uato. Local villagers refer to it as *Fetu* (meaning “female” in Tetun), the slightly smaller cave located approximately 100 metres from Bui Ceri Uato Mane (*Mane* meaning the “male” cave). This sexual dualism applied to landscape features is recurrent in East Timor.

between their cultural sequences, Glover suggested a relative chronology beginning around 8500 BP, with pottery introduced in Horizon V, corresponding to an age of about 4500 BP (Glover 1986:97). In total, 10 square metres were excavated at this site, to a maximum depth of over 1 metre. With the exception of one single bone of *Capra/ovis* spp. below pottery layers (which Glover suggests may be due to unrecognised stratigraphic disturbances), evidence for animal domesticates include dog and bovid (around 3500 BP), pig (around 2500 BP) and goat/sheep (at about 1500 BP).

Bui Ceri Uato also produced the largest assemblage of stone tools in all sites excavated by Glover, prompting later suggestions that this rockshelter may have been associated in the past with an open air village site (Spriggs *et al.* 2003:55). This suggestion was taken up during the 2005 fieldwork season, and results of the test pits excavated outside BCUM are described in the following chapter. It should also be noted that Glover's site has recently been re-dated by Selimiotis during her Masters dissertation (Selimiotis 2007). Reference to those results is made below in section 2.3.1 and further discussed in chapter 9.

The other three sites all returned radiocarbon dates ranging from the early- and mid-Holocene to modern times. At Lie Siri, located in the same near-coastal area of the Baucau Plateau, 34 square metres were excavated to a maximum depth of about 2 metres. The chronological sequence obtained there was based on six radiocarbon determinations, extending the occupation of this cave to approximately 8393 – 7789 cal BP (table 2.2, appendix 2). With the exception of some sherds that seem to have been vertically displaced, most pottery lies within layers dated to the last 3500 to 4000 years of occupation. Although analysis of domesticated faunal remains from this site was said “not to be relied on at present” (Glover 1986:78), a preliminary assessment suggested the presence of goat/sheep, pig and dog from Horizon VIb, dated to about 4153 – 3554 cal BP.⁵

Two other cave sites were investigated in the upper part of the Baucau Plateau, near Venilale. At Uai Bobo 1, an area of 13 square metres was excavated to a depth of around 1.4 metres. Four radiocarbon determinations were obtained from the top half of the sequence (table 2.2, appendix 2), and although the earliest dates to about 3991 – 3463 cal BP, Glover's proposed chronology, correlated with the other excavated sites, suggests the site had been occupied since the Early Holocene (Glover 1986:132). Glover believed that ANU332 had been “contaminated by modern charcoal derived from the surface” (Glover 1986:131). The first

⁵ According to Glover, the faunal assemblage from Lie Siri was sent to Charles Higham, at Otago University in New Zealand, but got lost and full analysis was never completed (Glover pers. comm.).

pottery, as well as evidence for domesticated pig, was associated with the earliest radiocarbon date in Horizon III (ANU414). In Horizon V there was also evidence for dog, goat/sheep, bovid and deer (*Cervus timorensis*). Deer is only present in layers immediately below the surface at some of the other excavated sites, and is thought to have been introduced in the last few hundred years (Glover 1986:157). Interestingly, Glover tentatively dated this Horizon to about 1800 BP, despite the existing radiocarbon date of 506 – 302 cal BP. From Horizon IIIc and in close association with ANU237 (2344 – 2000 cal BP), a copper ornament was recovered. This ornament, interpreted as an earring, was the only prehistoric metal object found in all sites excavated by Glover, who does not believe that a single object can be used to support a date for the introduction of metals into Island Southeast Asia (Glover 1986:153, although see Spriggs 1989 and 1998:59 for a different view).

Uai Bobo 2 was the second cave excavated in the Venilale region, described as “a small fissure in the cliff face” (Glover 1986:161). Due to its small size, only ca. six square metres were excavated to a maximum depth of about 4.9 metres. Four radiocarbon determinations were obtained and are presented in table 2.4 (appendix 2). The near-basal ANU238, dated to about 17,385 – 14,206 cal BP, is the only Pleistocene date obtained from all of Glover’s excavated sites. It came from a mixed sample of charcoal, seed cases and bone (Glover 1986:167). Besides possible contamination due to the use of a mixed sample, the Horizon that it dates also shows very little evidence of human occupation (only one stone tool), and is beneath another Horizon that is culturally sterile.

Pottery first appears at this site in Horizon VIII, between ANU239 (4359 – 3879 cal BP) and ANU187 (6414 – 6206 cal BP), and Glover suggests a mid-point date of about 4500 uncal BP for its introduction (Glover 1986:181). As to animal domesticates, none was identified below Horizon VII. A single pig tooth and another of goat/sheep were tentatively identified in this Horizon. Pig is more common from Horizon VIII, and its introduction is dated to between 5000 and 4000 uncal BP (Glover 1986:192). One possible dog bone was found below ANU239, the same Horizon in which the first certain evidence of goat/sheep is present.

Glover also suggested that the presence of civet cat (*Paradoxurus* sp.), macaque (*Macaca* sp.) and cuscus (*Phalanger orientalis*), appearing at the same time as the first evidence of pottery and domesticated pig at both Uai Bobo 1 and 2, represents human translocations (Glover 1986:192). Evidence for the presence of cuscus (the only one of these to have possibly originated in Sahul) in East Timor, now dates back to about 10,000 to 8000 BP (O’Connor 2006:83).

With the exception of the introduction of pottery and animal domesticates at approximately 3800 – 3600 cal BP, the cultural sequences at all these sites are described by Glover as showing continuity through time. Glover points out that although the economic system practiced by the populations that inhabited these caves changed from hunter-gathering to farming and herding, there is little archaeological evidence for this change to be seen in the cave sequences (Glover 1986:206). Glover also suggests that cereal agriculture could have been introduced together with the first pottery and animal domesticates. However, no firm evidence in the form of macro plant remains was found at any of the sites he excavated to confirm this hypothesis (Glover 1986:202-212; and 229-230). We shall return to this issue in chapter 10, as well as to the argument suggesting that caves are not ideal sites in which to detect major economic or cultural changes as they are arguably used for the most part as temporary shelters during hunting or gathering activities (Glover 1986:206; but see Veth *et al.* 2005 and Pannell and O'Connor 2005).

2.2.1 The years of occupation in East Timor and elsewhere

Glover's research was not only the most comprehensive effort into investigating East Timor's prehistory until the 1970s; it was also to represent probably the last archaeological work in the country during the twentieth century. In September 1975, and after Portugal's withdraw from its former colony, Indonesia invaded and occupied East Timor for nearly a quarter of a century. No archaeological research was undertaken during the years of Indonesian occupation, or at least none that resulted in any known publications⁶.

The same can almost be said about the western part of the Timor Island. Although this period saw prolific archaeological work carried out elsewhere in Island Southeast Asia, accounts of archaeological activity in West Timor are scarce from the 1970s until the present. Soejono (1982) reported on a short stopover at Kupang in 1978 (after excavations at Liang Bua in Flores), where he conducted survey and found a few prehistoric sites. Among them, Noebaki, located approximately 10 kilometres northeast of Kupang, is the only one referred to individually. At this site, stone tools typologically described as "Clactonian" and "pseudo-

⁶ It is possible that some archaeological work may have taken place and resulted in publications in Bahasa Indonesia. However, I could find no record of it while in East Timor, and Mr. Virgilio Smith, current Secretary of State for Culture of East Timor, who has worked at the Dili Museum since 1978, also has no knowledge of any archaeological work taking place there during that period.

Levallois" were recovered from the riverbed and the banks of the nearby stream (Soejono 1982:40). In 1993, Rhys Jones, Alan Thorne, and Soejono visited the Atambua region of West Timor, where Verhoeven (1964) had reported the *Stegodon* finds. Jones used Verhoeven's field notes and with the help of local people, who had worked with Verhoeven was able to locate the original sites. He confirmed that there was no direct association between the stone artefacts and the *Stegodon* remains, although his report of this field survey was never published (O'Connor 2002:46). Bednarik, who reports finding six new sites in Atambua, carried out additional work in this region. According to Bednarik, three of these sites contained *Stegodon* remains and another had an *in situ* stone tool in middle Pleistocene conglomerate layers (Bednarik 2000:19). Unfortunately, no further information on these sites is known to have been published.

The Indonesian occupation of East Timor lasted from December 1975 to August 1999. During this period, East Timor was not just socially and politically isolated from the rest of the world, it was also unattractive for research purposes. Although Indonesia's annexation of East Timor was never officially recognised by the governments of some countries (including Portugal and other Portuguese speaking countries) or by the United Nations, it was by Australia. Australia was, and still is, the leading research country in the region. For many years, the Indonesian government closed the eastern part of Timor to any foreign researchers and the scientific community moved elsewhere. East Timor then became known as "former Portuguese" Timor (Glover 1977:43; Metzner 1977:xxiii), or simply as part of Indonesia.

On the other hand, the transition to democracy in Portugal after 1974 witnessed a growing sense of anti-colonialism. In research terms, this meant that institutions operating within the former regime's framework were suddenly devoid of much of their scientific purpose. All major research projects, such as the MAT and others in East Timor (and elsewhere in other former colonies), simply ceased to exist. As a result of these changes and although the institutional frameworks and staff remained in place, little money was allocated for research. Only a couple of archaeological papers were published by Portuguese scholars on Timor during this period. As no access to the country was possible and money was scarce, they essentially detail previous works and repeat information from original publications (Lucas *et al.* 1992), or describe materials that were recovered but had not been previously published (Ramos and Rodrigues 1980).

The research environment in East Timor would change dramatically after the 1999 vote for Independence and the subsequent UN transition period. This period saw fundamental political

change and allowed for wider research interest from Australia, Portugal and elsewhere. The new archaeological projects initiated after 1999 are described below.

2.3 New times, new projects: the East Timor Archaeological Project (ETAP)

After the 1999 referendum, which ultimately led to Independence in May 2002, East Timor was governed by the United Nations Transitional Administration in East Timor (UNTAET), in cooperation with East Timorese leaders. Besides gradual political stability, the withdrawal of the Indonesian army and the arrival of the United Nations peace force had the consequence of attracting several international aid agencies and individuals. This also meant that the country, although still politically unstable, could see research activity in several key areas resumed.

The ETAP, a joint project between the Australian National University (ANU) and James Cook University (JCU), was created by the same researchers who had since 1995 been involved in archaeological work in the Aru Islands, in eastern Indonesia (O'Connor *et al.* 2006). This joint Australian-Indonesian project in Aru was planned to continue after 2000. However, an outbreak of ethnic and religious violence in Maluku Province rendered it impossible (Veth *et al.* 2004:210). Many of the research questions which formed the framework of the Aru Islands project were then transferred to East Timor, and fieldwork there commenced in 2000 (Veth *et al.* 2004:211). Amongst the questions defined by ETAP, two are of seminal importance for the current study and will be discussed in detail in chapter 10. They concern possible early interactions between populations belonging to the two main ethnolinguistic groups in the region – Austronesian and Papuan (or Non-Austronesians) and the characterization of the Austronesian cultural “package” in Timor including the much-debated issue of agricultural origins⁷. Other research questions tackled by the ETAP – the date of initial human settlement in Timor and the history of early international trade within the last few thousand years – will only be briefly discussed where they touch on the present project.

The ETAP members carried out four field seasons, between 2000 and 2002, and their work resulted in the discovery of a diverse range of archaeological sites, from aceramic shell middens to caves and rockshelters, some of them with evidence of rock paintings. The first

⁷ The original research question looked at characterising the Austronesian cultural “package”, as this may have played a role in the later settlement of the Pacific (Veth *et al.* 2004:211).

comprehensive account of ETAP's work was published in 2003, where information on some of the sites is detailed (Spriggs *et al.* 2003). A series of pre-ceramic shell middens was located along the northern coast of East Timor, from west of Dili to the eastern tip of the island. Aside from the Kusu shell midden and a few sites which contained ceramics, most of these shell middens represent eroded remnants of open air temporary camp sites, in use through the mid- to late-Holocene (Spriggs *et al.* 2003:51-53). The authors suggest they represent the "coastal component of a mobile [hunter-gatherer] economy" (Spriggs *et al.* 2003:54), which was rendered unsustainable with the arrival of the first Neolithic farmers, around 4000 to 3600 BP. This seems to be in accordance with changes in material culture observed in some of the caves excavated, where from around 3800 – 3600 cal BP pottery and animal domesticates appear (Spriggs *et al.* 2003:58). The charcoal assemblages from some of these cave sites were analysed within this research project and results are presented in chapter 8.

During these first field seasons, the sites in the Baucau Plateau that had previously been investigated by Glover in the 1960s were relocated and some new caves and rockshelters found (O'Connor pers. comm.). However, no excavations were subsequently carried out in the Baucau area. The first cave site excavated by the ETAP was Lene Hara, near Tutuala. Following Almeida's original excavation (Almeida and Zbyszewski 1967) and Glover's reassessment of the lithic industry unearthed by the Portuguese anthropologists, the ETAP targeted this site and conducted new excavations there. The reported uniqueness of the stone tool assemblage at Lene Hara (Almeida and Zbyszewski 1967:57; Glover 1986:7) was not confirmed by O'Connor *et al.* (2002:47-48), who also later had access to Almeida's materials deposited at the IICT, in Lisbon (O'Connor pers. comm.).

In 2001 a 1 x 1 metre test pit (test pit A), positioned adjacent to Almeida's original trench, confirmed a deposit of around 80 centimetres depth, with a cultural assemblage comprised mostly of stone tools and marine shell fish, and with a very small quantity of pottery in the upper part of the sequence. Most radiocarbon dates obtained from this first testing span between 40,000 and 35,000 cal BP, during which the site was interpreted as a transit camp used by hunter-gatherers, with a single late Holocene date from the top part of the deposit (O'Connor *et al.* 2002:48). Later, two shell beads recovered from Pleistocene layers in this square were directly dated to about 3500 and 4500 BP, suggesting some level of disturbance and confirming a more widespread use of the cave during the mid-Holocene (O'Connor *et al.* 2002b; table 2.5 in appendix 3, for a complete set of dates).

The initial interpretation, based on the lack of dates around the Last Glacial Maximum (LGM) and until the climate amelioration brought by the end of the Pleistocene, suggested that the site might have become less attractive for human occupation due to sea level changes and its possible more difficult access to the coast (O'Connor *et al.* 2002:48). The excavation of test pit B in 2002, dating to between 25,000 to 20,000 before present, led to the revision of the view that the site was unoccupied during the LGM. Further excavations in 2002, aimed at sampling different areas of Lene Hara, also revealed a more detailed Holocene sequence (especially in square F), with a range of dates spanning the last 10,000 years (O'Connor and Veth 2005:253). The dates obtained for the remaining squares excavated at Lene Hara are given in tables 2.6, 2.7 and 2.8 in appendix 3.

During 2001, excavations at two more inland sites on the Lospalos Plateau near Lake Iralaloro (Macha Kuru 1 and 2) resulted in a further set of mid-Holocene and Pleistocene dates (Spriggs *et al.* 2003). These are presented in tables 2.9, 2.10 and 2.11 in appendix 4. Radiocarbon results obtained from Macha Kuru 1 fall mostly within the mid-Holocene, with a great part of the deposit being built up between 4000 and 6000 cal BP (Spriggs *et al.* 2003:55). In square AA this is followed by the only clear Pleistocene determination (ANU11616, 13,690 ± 130), and by a more recent date (OZF784, 9940 ± 60 BP), possibly indicating some degree of mixing due to a process of occupation-abandonment-reoccupation of the site. Radiocarbon dates from Macha Kuru 2 extend back to approximately 35,000 to 37,000 cal BP. A dog burial, directly AMS dated to 2967±50 uncal BP (Wk10051), was excavated at this site. The authors also suggest that Macha Kuru 2 seems to have been occasionally used as a garden shelter within the last 3000 years (Spriggs *et al.* 2003:56). The excavation of a stone-lined oven dating to about 10,000 to 8000 BP and the evidence for the presence of cuscus at about the same time, are other features of significance at Macha Kuru 2 (Spriggs *et al.* 2003:56; O'Connor 2006:81-83). Both these finds and their relevance to the present study will be discussed in more detail in chapter 9.

Another cave excavated that year was Telupunu, in the area of Com near the eastern end of East Timor. Although publication of this site is still in progress (Spriggs *pers. comm.*) and only two short notices are available (Veth *et al.* 2004:223; Veth *et al.* 2005:186,187), it was interpreted as used only occasionally, based on the low density of cultural material found. Human occupation at Telupunu extends back to the terminal Pleistocene, with a near-basal date of 13,695 ± 50 uncal BP. The preservation of hearth features and charcoal throughout Telupunu's stratigraphic sequence is notable. After BCUM, Telupunu contained the most comprehensive macrobotanical assemblage excavated in East Timor. In the course of the

current investigation, two new AMS dates were obtained for this site, directly obtained on identified macrobotanical remains. These dates and suggested identifications are discussed in chapters 8 and 9. A list of all dates from Telupunu is given in table 2.12 in appendix 5.

Although the ETAP ceased in 2003, one of its members (O'Connor) continued research in East Timor, and several other sites have since been located and excavated. One of those sites is Jerimalai, a cave situated on the northeastern end of East Timor. Samples from the two squares excavated at Jerimalai have recently been radiocarbon dated, extending the initial occupation of East Timor back to more than 43,500 to 42,000 cal BP (O'Connor 2007; table 2.13 and 2.14 in appendix 6 for the complete list of dates from Jerimalai test pits). These near-basal dates from both square A and square B (Wk 17831 and Wk17833) are the oldest known to date in the Wallacea region (O'Connor 2007:523). They also bring the evidence for the earliest human occupation of Timor within the range of dates accepted for the first colonisation of Australia and New Guinea (Roberts et al. 1994; Thorne et al. 1999; O'Connor & Chappell 2003; Hiscock 2008), strengthening the argument that suggests Timor may have been a stepping stone in that colonisation process (Birdsell 1977; Butlin 1993:33-34; O'Connor *et al.* 2002; O'Connor 2007).

The ETAP also recorded several rock art sites, most of them located along the north eastern coast of the island and around Baucau. Some previously known sites were described in more detail, but others have been recorded for the first time (O'Connor 2003). The study of rock art in Timor is ongoing (O'Connor, per. comm.), and a new site with paintings, found during fieldwork in Bagaia in 2004 (Oliveira 2006), has recently been published (O'Connor & Oliveira 2007). O'Connor (2003) suggested that East Timorese rock art shares many affinities with the larger group of sites from the Western Pacific, first described by Ballard (1992). Ballard characterised these sites as being part of an "Austronesian Painting Tradition" (APT), associating them with the arrival of Austronesian speakers in Island Southeast Asia and the Pacific (Ballard 1992).

2.3.1 Other current projects

As previously mentioned, despite the end of the ETAP in 2003, archaeological research in East Timor has continued until today. In the last few years, O'Connor has been documenting rock art sites and test excavating caves and rockshelters, especially in the north eastern part of the island. The study of rock art aims at understanding its context and developing new dating

approaches. Although dating of rock art is still problematic and relies mostly on stylistic analysis, new methods based on direct Uranium-series dating of calcite depositions covering pigment are being tested (Aubert *et al.* 2007). This new line of research suggests that some of the East Timorese rock art may in fact be much older than initially predicted. Although the more recent paintings are younger than 6300 cal BP and are supposedly of Austronesian origin, some red pigment observed is possibly the remnants of much older paintings, bracketed between 29,300 and 24,000 year-old dates (Aubert *et al.* 2007:995).

Peter Lape, from the University of Washington, has also been conducting extensive field survey in East Timor since 2003. Before working in East Timor, Lape (2000) had investigated the archaeology of colonial contact elsewhere in Island Southeast Asia. He has now located several open-air sites in the Tutuala region and test pitted some of them. According to Lape, most of these sites are fortified settlements that were built in the last thousand years or so before European contact, and many were still in use during the Portuguese occupation and until the mid-twentieth century (Lape 2006:293; Lape & Chin-Yung 2008). Table 2.15 in appendix 7 lists all radiocarbon dates obtained by Lape for these sites in East Timor.

Some of Lape's post-graduate students at UW have also been conducting archaeological work in East Timor in the last few years, and some results of that research are in press (Lape, pers. comm.). Ching-yung, for example, looking at processes of social change and cultural evolution, migration, and exchange in Southeast Asia, has conducted field survey and excavations in the Manatuto area. Ching-yung has identified carbonised remains of *Oryza sativa* from an open site in that area, AMS dated to the 15th – 17th century AD. Also of interest is an open-air site with evidence of pottery, shellfish and charcoal remains, with a sequence dating back to approximately 3000 BP. This site, visible on a roadside profile, was not excavated as it was buried beneath 5 metres of sediment (Ching-yung pers. comm.).

In 2006, Hubert Forestier, an archaeologist from the *Institut de Recherche pour le Développement* (IRD) based in Jakarta, also spent a few days in East Timor. Forestier visited some archaeological sites excavated both before and after 1999, and further research in inland areas such as Venilale (where Glover conducted his doctoral work) is planned (Forestier, pers. comm.).

Archaeological research in East Timor is thus ongoing and recently published (or in press) work reflects a wide range of perspectives and interests. Among the more recent ones are the possible relations between rock art and early maritime technology (Lape *et al.* 2007), fortifications as a human response to climatic change (Lape & Ching-yung 2008), and tracking

obsidian sources by chemical analysis on prehistoric artefacts (Ambrose et al. in press). Selimiotis (2006) also undertook a survey for chert sources as part of her research and conducted a major reassessment of the lithic industry excavated by Glover in 1967 at Bui Ceri Uato (Glover 1986), providing a new radiocarbon sequence for the site. These new radiocarbon determinations on marine shell, extending the site's occupation back to the terminal Pleistocene, are presented in table 2.16 in appendix 8. The new dates for BCU will again be referred to in chapter 9, as they help shed light on the few macrobotanical remains recovered from that site.

The Indonesian occupation of East Timor meant that it was not possible to conduct fieldwork there during that 25 year period. As a consequence, many of the research questions defined after 1999 resulted from those that remained unanswered after Glover's work in the 1960s (Glover 1986). That set of questions has since been extended, and despite the unequivocal value of Glover's results new lines of research are emerging. Questions such as the relation between the earliest Pleistocene dates in Timor and in Australia, which give support to the model suggesting Timor as stepping-stone in the early colonisation of Sahul, have now been more satisfactorily answered. Others to do with the development of food production, the introduction of crops and their possible impact on the environment over the past few thousand years, still rely mostly on indirect lines of evidence. As the current study aims at providing direct archaeobotanical evidence to investigate some of these issues, the history of this discipline in Wallacea and the wider region is detailed in the following chapter.

