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Evaluating the “Lapita Smoke Screen” Site SGO015 of Goro, an Early Austronesian Settlement on the South-East Coast of New Caledonia’s Grande Terre

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ABSTRACT

Preliminary archaeological data from the east coast of the Grande Terre of New Caledonia have been interpreted for some time as indicating an early prehistoric settlement of the southernmost Melanesian Archipelago by two cultural groups. Absence of Lapita sites on this coast, as well as very early dates published for the appearance of paddle-impressed pottery of the Podtanean tradition, led to the proposal of a pre-Lapita, non-Austronesian, “Melanesian” settlement of southern Melanesia. This paper presents data on the first early Lapita site from Grande Terre’s east coast, and discusses the implications of these new archaeological data for the definition of the characteristics of first human settlement in this region of Remote Oceania.

Key words: NEW CALEDONIA, GRANDE TERRE, COLONISATION, LAPITA, POTTERY, FAUNA.

INTRODUCTION

The last decade of the twentieth century has seen important advances in our understanding of the prehistoric chronology of the Melanesian archipelagos. Boosted by the results of the Lapita Homeland project in the 1980s (Allen and Gosden 1991) and by more favourable political situations in the archipelagos of Vanuatu and New Caledonia (Spriggs 1997a), archaeological research by various teams has led to a profound change in our perception of pre-European cultural change in the region (e.g., Bedford 2000; Kirch 2000; Sand 2000a; Wickler 2001). These results enable us to make a critical evaluation of long-standing proposals about diversified settlement of Melanesia, which have encouraged the idea of a pre-Lapita occupation of the area.

Europeans very early promoted a picture of two distinct histories in the South Pacific. Melanesians were seen as having settled the Western Pacific from New Guinea at a very early date, while the lighter-skinned Polynesians were described as strong and organised seafaring populations who colonised the remote Oceanic Islands more recently (Hale 1846: 178; see Kirch 2000: 12–27 for a general review). An early settlement of Island Melanesia has been favoured for a long time by archaeologists (see, for example, Shutler and Shutler 1967, 1975; Bellwood 1979; Bonnemaïson 1986), and seemed to be supported by very early dates obtained on tumuli on the Ile des Pins and the Grande Terre (see Green 1988 for a review), leading to the hypothesis “that by 10,000 years ago, a non-Austronesian, aceramic,

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pre-Neolithic, tumuli building people were in Island Melanesia" (Shutler 1978: 222). Several research programs were conducted on the tumuli without conclusive results (Golson 1996).

In a paper presented in 1992 at the second Lapita conference in Noumea, Gorecki revived the argument, making a strong case for a pre-Lapita, non-Austronesian "Melanesian" settlement of the south-western Pacific at least as far as New Caledonia (1992, 1996). His proposal was based on early dates for non-Lapita ceramics in New Guinea (Gorecki *et al.* 1991; Swadling *et al.* 1989), pre-Lapita dates for the Mangaasi tradition in central Vanuatu (Garanger 1972) and pre-Lapita dates reported for paddle-impressed Podtanean ceramics in New Caledonia (Galipaud 1992a). Criticising what he called a "Lapita smoke screen" analysis of the chronology of the region by archaeologists, Gorecki identified a series of "prehistoric social fences", explaining, for example, the absence of Lapita sites on mainland New Guinea, the main Solomon Islands and most of Vanuatu by the fact that "people simply didn't want it because they had a pottery of their own". In the same way, the supposed absence of Lapita sites along the East Coast of the Grande Terre of New Caledonia was due to the fact that "those living [there] ... were quite happy with their paddle impressed pottery" (Gorecki 1992: 42).

This long-standing distinction between a "pre-Lapita Melanesian culture" and an "Austronesian Lapita culture" in the region from first human settlement on has been a tempting analytic approach that continued to be promoted during the past decade (see Galipaud 1996a; 1999). Evaluation of the proposal led to a strong critique of the overall concept of "Melanesia" by Green (1991), and to different forms of testing in the field, some along the lines proposed by Gorecki in his paper. Swadling's team retracted claims of early dates for ceramics in the Sepik-Ramu delta (Swadling *et al.* 1991) and Spriggs (1996: 43-44) rejected all the published data on pre-Lapita ceramics in northern New Guinea. On the north-east coast of mainland New Guinea, Terrell identified the start of the local ceramic chronology only around 2000 years ago (Terrell and Welsch 1997). Wickler (2001) demonstrated a 28,000-year-long prehistoric chronology for Buka in the northern Solomons, but failed to show any type of "pre-Lapita" ceramics there. In the central Solomons, Roe (1993) excavated a 6000-year-old rock shelter, but failed to locate early ceramic sites on Guadalcanal. In the New Georgia lagoon, a team coordinated by P. Sheppard and R. Walter established a ceramic chronology starting with Lapita (Felgate 2000). No pre-Lapita occupations or human-induced environmental transformations have been identified in Vanuatu (Galipaud 1998; Spriggs pers. com. 2000). More importantly, new excavations on the site of Mangaasi showed a completely new ceramic chronology, with the previously described, incised and applied "Melanesian" Mangaasi tradition developing only 2000 years ago from a Lapita-related ancestry (Bedford 2000).

New refinements in the prehistoric chronology of New Caledonia have also led to a profound change in our understanding of local cultural evolution in the southern-most Melanesian archipelago. Numerous excavations in rock shelters both on the Grande Terre (Sémah 1998; Sand *et al.* 2001) and in the Loyalty Islands (Sand 1998a) have failed to find any remains of a supposed pre-Lapita settlement. New studies on the archipelago's numerous Lapita sites have shortened the chronology from over 1500 years (Galipaud 1996b; Frimigacci 1999) to less than 300 years (Sand 1997), prompting a new analysis of the cultural significance of the "Lapita phenomenon" and a better definition of the links between Lapita and Podtanean potteries. As a final thrust against the supposed "Lapita smoke screen", a classic Lapita site has recently been discovered and excavated on the south-east coast of

the Grande Terre (Fig. 1), finally putting to rest the idea of a “social fence against Lapita pottery” in some parts of the archipelago.

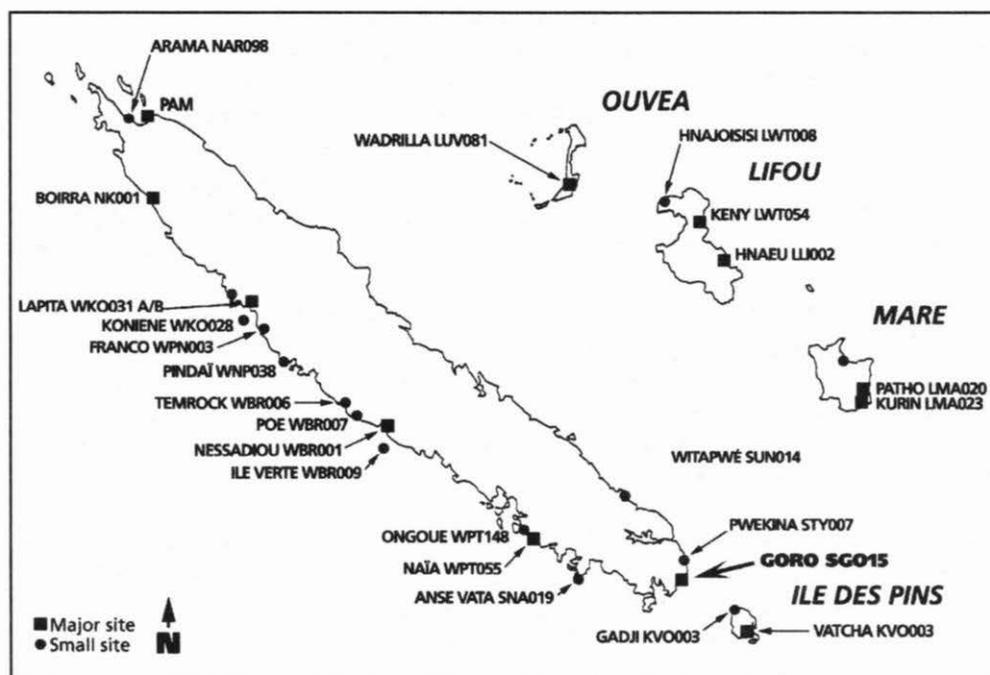


Figure 1: Location of the known Lapita sites of New Caledonia and position of site SGO015 at Goro.

This paper presents the first results of the excavations conducted on this Lapita site, SGO015 of Goro, in the vicinity of rock shelter SGO020 of Tiwi, the study of which had prompted Galipaud (1992a, 1992b) to propose a pre-Lapita age for the Podtanean tradition. We will describe the environmental background, stratigraphy, dating and cultural material recovered and then discuss the implications of this discovery for the definition of the beginning of human settlement in Southern Melanesia.

THE RESEARCH AREA

The south-east coast of New Caledonia's Grande Terre is called Yaté. At the foot of the peridotite formations, the narrow coastal plains — between 100 and 1000 m wide — comprise (from north to south) the tribal lands of Ounia, Waho, Touaourou and Goro. Most of the seashore is formed by a fringing reef, with an uplifted coral platform in some areas. Sheltered lagoons are rare, as fresh water from the major rivers has prevented extensive

coral growth at the river mouths. The only exception to the rule is Taré bay, at the boundary between Touaourou and Goro, where an extensive lagoon with one central pass encompasses several islets. Today, the total area of the lagoon is about 10 km². Archaeological studies conducted in the early 1990s around Taré bay showed significant transformation of the local environment during prehistoric times. Part of the Kubini flats was infilled by terrigenous sediments, which covered a former low tide area colonised by mangroves. Today this is buried under 1 to 3 m of alluvium (Sand 1996a: 64). This partly human-induced transformation of the local shorelines had up till now prevented the discovery of early open settlement sites in the Yaté region, a phenomenon also known in other island environments with narrow coastal plains (e.g., Spriggs 1997b). Excavations on one of the plains of Touaourou allowed the recovery of only late first millennium BC material in stratigraphic context, although earlier ceramic material was found in disturbed contexts (Sand and Ouetcho 1994).

Nevertheless, observation of deeply buried sherds in the talus of recently bulldozed creek beds pointed to the possibility of very early sites in this part of the Grande Terre. The presence of paddle-impressed sherds and simple dentate-stamped sherds in surface collections as well as in stratigraphic contexts in different sites (Sand and Ouetcho 1992, 1993, 1994) and early dates reported for site SGO020 of Tiwi at the southern tip of the Grande Terre (Galipaud 1992a) raised hopes of a yet-to-be-discovered Lapita site in the region. In recent years, information was given to the local kanak community by our Department of Archaeology and in 1999, Jean-Yves Vama of Goro tribe informed us that he had collected dentate-stamped sherds from the bank of a creek after clearing by a bulldozer. Inspection of the site in early 2000 allowed us to collect other decorated sherds as well as turtle bones, to gain a first impression of the extent of the site on the side of the creek bank and to make traditional custom requests for permission to excavate.

The Lapita site of Goro, numbered SGO015, is located on and around the field Kokweimée, about 1 km north of the main area of the Goro tribe. The flat coastal plain where the early archaeological settlement is situated is about 150 m wide before rising rapidly towards the foot of the rocky hill. The present sea-shore is a marshy environment, where mangroves predominate. Regular flooding of the lower flat zone is reported by the local kanaks and a former creek channel now filled by alluvium is still visible at the site. The surface of the plain is covered with low raised cultivation mounds, used mainly for traditional yam plantation. Numerous shell mounds (Géé), containing archaeological remains such as pottery sherds, are visible around these field systems. Modern habitations are located at the back of the plain, towards the hill, where the modern road has been constructed.

Two field studies were conducted on the Goro site, in December 2000 and March 2001. The aims were to gain information about the extent of the deposit, the state of preservation of the oldest layers and the diversity of the material present. Unfortunately, the programme was hindered by periods of heavy rain, leading to regular infilling of the excavation squares by water. Not all the aims of the programme were realised, therefore. Further excavations will have to await a dry season.

EXCAVATIONS

The major objective of the first program conducted on site SGO015 of Goro was to demonstrate the presence *in situ* of an early archaeological layer related to the Lapita period.

The first test pits were therefore placed just at the back of the channel cut by the bulldozer. Five 1 x 1 m test pits (A, B, D, E and F) were excavated on the north-western bank of the creek, two (C and G) on the south-eastern bank, and one (SGO012A) about 300 m south-east of the main site (Fig. 2). Because of water infilling, only four of these pits (A, B, C and F) were excavated to the sterile layers, permitting an initial understanding of the stratigraphy of the site.

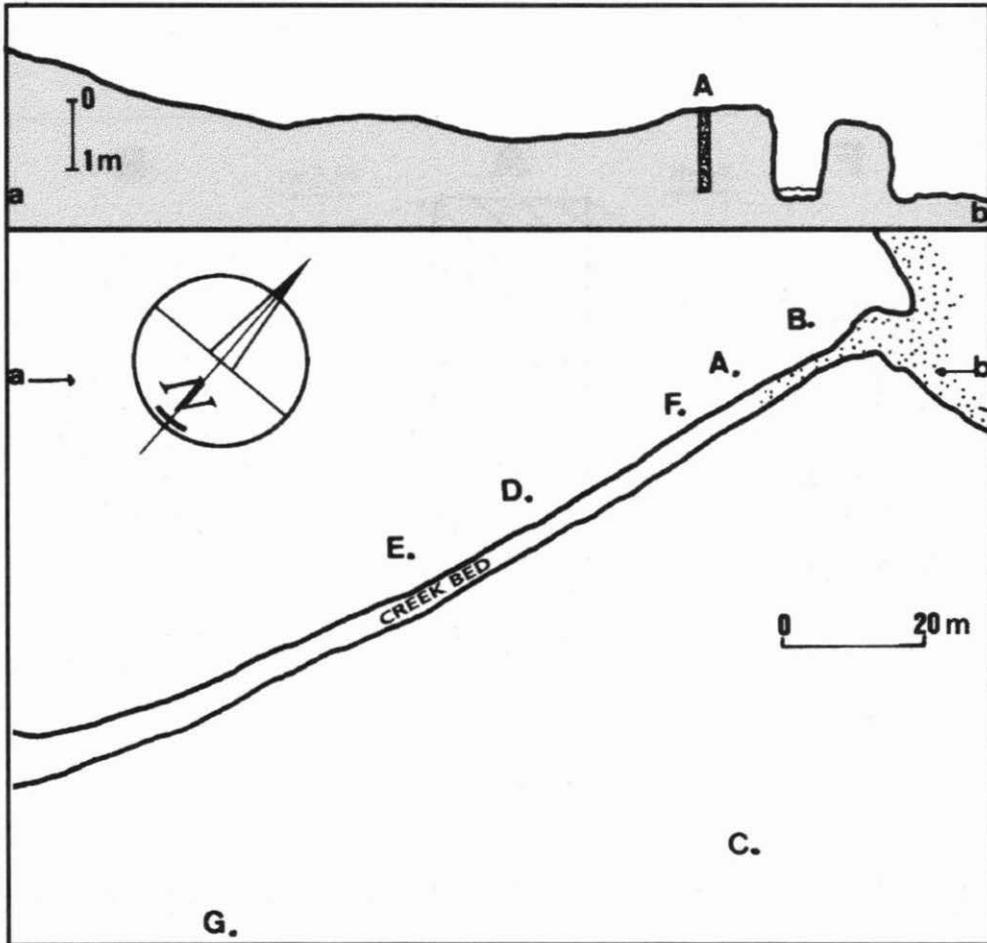


Figure 2: Location of the test pits at site SGO015. Test pit SGO012A is not shown.

The best stratigraphic data come from the north-west bank of the stream (Fig. 3). The lower part (square B), located closest to the sea before the mangrove zone, has four main horizons, resting on concreted sand. The upper horizon (1), from the surface to about 40 cm deep, is

formed by terrigenous black horticultural soil, containing modern and late prehistoric remains. This horizon is still used for cultivation and is regularly reworked. The middle horizon (2), between about 40 cm and 60 cm, is a brown terrigenous soil, containing mostly first millennium AD remains, and is probably a deep horticultural layer. The third horizon (3) consists mostly of white sterile sand. Finally, the lowest horizon (4), between about 70 cm and 100 cm, is formed of white sand deposits, partly concreted, containing dentate-stamped, incised and undecorated Lapita material. It appears to be an old beach. Water infilling is common at this level. No reworking of this lower horizon by later land-use was observed, and Lapita sherds in secondary context are very rare in the two upper horizons.

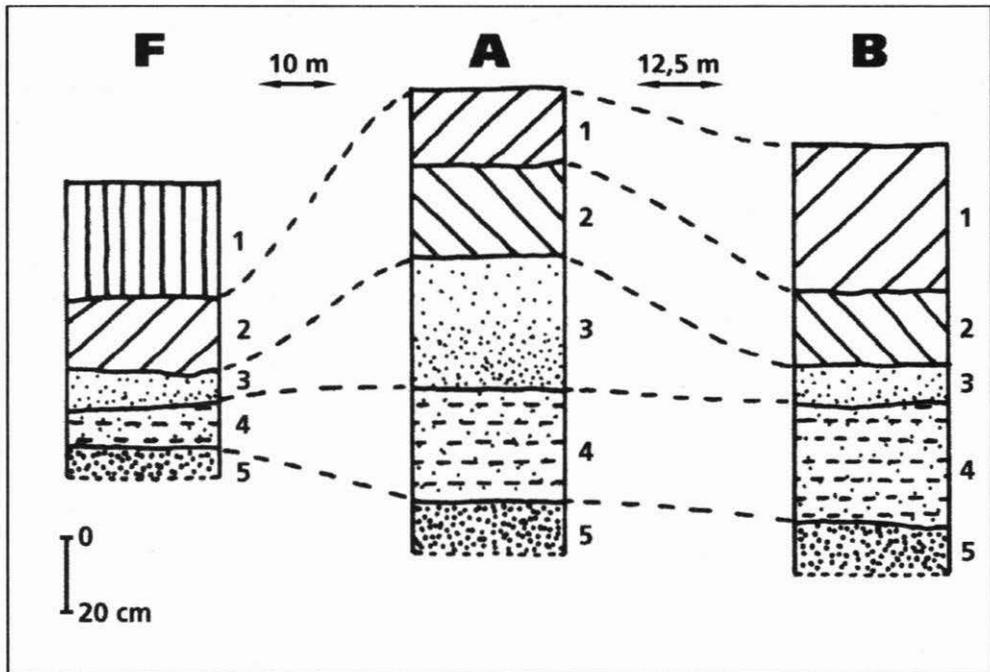


Figure 3: Profiles of the aligned test pits F, A and B on the north-western bank of site SGO015.

Square A, 12.5 m inland of square B, also has four horizons. Two thinner horticultural layers (1–2) end at a depth of about 45 cm, and an almost sterile sand layer (3) extends from 45 cm to 80 cm, above the *in situ* Lapita layer (4), which is between 80 cm and 100–110 cm. This contains dentate-stamped, incised and undecorated sherds along with one paddle-impressed sherd.

Square F was located 10 m further inland from square A. Below a recent 30-cm-thick backfill layer (1), there was only one horticultural horizon (2) about 20 cm thick, which gave way to the sand horizon (3) between 50 cm and 60 cm. Only incised and undecorated

Lapita sherds were found in a thin sand layer (4) between 60 cm and 70 cm deep, resting on sterile white sand with concretions (5).

On the southeast bank of the stream cutting, only square C, located about 65 m south-east of square F, was excavated down to the sandy layer. Here, the two upper horticultural horizons (1–2) are only about 30–40 cm deep, and cover a lower sandy horizon (3) where only some paddle-impressed sherds were discovered in a very wet environment.

Squares D, E and G, opened towards the hill in order to locate possible archaeological structures at the back of the former beach, filled with water before the sand layers were reached, preventing demonstration of the presence of an early horizon *in situ* in this part of the site.

Square SGO012A showed only three horizons. An upper reworked horticultural layer about 30 cm thick, rich in post-Lapita material, covers two sterile sand layers, the lower of which contains sand concretions.

These first excavations indicate the presence of a 3000-year-old beach deposit buried today about 80 m inland of the present mangrove zone, and sloping downwards towards the sea. This beach level, containing archaeological material dumped on the shore during the first occupation, possibly from a household or camp site located somewhere inland, prograded some time after the first occupation, before being covered by terrigenous soils originating uphill. This progradation of the plain also led to the formation of the marshy shore zone with mangroves.

RADIOCARBON DATING

The stratigraphic study of the Goro site demonstrated the presence of a clear *in situ* early horizon at the bottom of the fill layers, containing undisturbed Lapita sherds. Five charcoal samples were sent for radiocarbon dating by AMS, in order to establish the antiquity of the Lapita layer, the general duration of this first occupation phase, and the age of the later horticultural fields and related ceramic material. Unfortunately, no charcoal was found in the layer with paddle-impressed sherds in square C and a sample from a depth of 90–100 cm in square A yielded insufficient carbon for dating (Hadfield, pers. comm. 2001).

The oldest date is from the bottom of the early horizon in square F, at a depth of 70 cm, in association with incised Lapita sherds. This gave a result, after $^{13}\text{C}/^{12}\text{C}$ correction, of 2920 ± 40 BP (Beta-154626. CRA 2920 \pm 40, $\delta^{13}\text{C}$ -27.3), calibrated 1260 (1110) 1000 BC. This result brackets the known beginning of the Lapita period in New Caledonia, but the intercept seems too early. A second sample would be needed to confirm this result, and specifically to see whether it may be due to old wood effect. The other two dates for the Lapita layer come from square A. The first occupation has been dated, by a sample from a depth of 100–110 cm, to 2850 ± 40 BP (Beta-154625. CRA 2850 \pm 40, $\delta^{13}\text{C}$ -24.6), calibrated 1120 (1000) 910 BC. The end of the Lapita occupation has been dated by a sample from a depth of 88 cm, to 2760 ± 40 BP (Beta-154623. CRA 2760 \pm 40, $\delta^{13}\text{C}$ -26.9), calibrated 1000 (900) 820 BC. These results fit perfectly with what is already known about the chronology of the Lapita period in New Caledonia (Sand 1997). Finally, the lower horticultural layer in square B, containing Plum handled pottery, has been dated by a sample from 50 to 60 cm depth to 1510 ± 40 BP (Beta-154627. CRA 1510 \pm 40, $\delta^{13}\text{C}$ -26.1), calibrated AD 440 (560) 640, which is within the known range of the Plum tradition (Sand 1995).

Once calibrated, these results suggest a first occupation of Goro's site SGO015 between about 1000 BC and 900 BC by Lapita settlers who produced dentate-stamped, incised, paddle-impressed and undecorated pots, with a later reuse of the plain, mainly for horticultural purposes after soil infilling, from the first millennium AD until the present.

MATERIAL CULTURE

All the excavated sediments were screened through 3 mm wet sieve. The test pits had two different types of deposit: an horizon *in situ* on a fossil beach deposit, and two horticultural horizons, which had been regularly reworked, leading to mixing of archaeological material from the last two millennia. The presentation of the material recovered takes into account these differences by analysing each category of archaeological remains in two parts: the early *in situ* Lapita horizon and the later mixed material.

LAPITA PERIOD CERAMICS

The very fragile nature of the sherds discovered in the humid Lapita horizon necessitated a long process of desalination and drying before first study. A total of 150 sherds were recovered from the four squares where the early *in situ* layer was reached, and about 80 more sherds were collected in the creek bank and on the surface. The collection consists mostly of sherds tempered with lithic sands of different sizes. The variable amounts of temper result in big differences in the robustness of the material. Sherds tempered only with fine white coral sand are not numerous. Interestingly, the only sherd typical of the early Loyalty ceramics — heavily tempered with coral sand, of a brick colour with visible paddle-impressions — also bears a distinctive zig-zag stamped motif, identified as a characteristic development of Lapita in Maré-Lifou-Ouvéa (Sand *et al.* in press). This points to pot exchanges between the Loyalties and Goro. Also noteworthy is the presence of pots with a yellow paste already described for Vatcha (Frimigacci 1974: 40) and brick-red sherds with what appears to be chromiferous spinel, found in Lapita sites in the northern Grande Terre (Galipaud 1990; Sand 1998b). Incised sherds have pastes often similar to those found at Vatcha (Sand 1999a). Thus in this site we have pots probably originating in Lapita production centres located to the north, south and east of Yaté, and probably some locally made pots as well.

Wiping of the external surface before decoration is visible on some sherds, and the adding of a red slip has been noticed in some cases. Edge observation of numerous sherds shows a reduction process of the interior part of the pot during firing. Sherd thickness varies from 4 mm to more than 10 mm, with a medium thickness of 7 mm. Rim forms are varied, and include simple outcurved rims, rims with a flat lip, some incurved rims and also reversed rims from lids. No composite rims have been identified in the collection. Some rims have deep regular imprints along the lip. Numerous carinations are present, some with strong angles, as well as a few flat bottoms. Form reconstruction indicates the existence of carinated vessels decorated by different means, flat bottomed dishes, incurved pots and lids decorated only by dentate stamps. In some cases, construction by clay plates can be observed. Maximum diameter varies partly according to the thickness of the sherds, with some small pots only 20 cm wide, while the largest pot present had a diameter exceeding 55 cm. One of the best preserved pots found in the site is 23 cm in maximum diameter (Fig. 4). This example highlights the good preservation of the early layer.

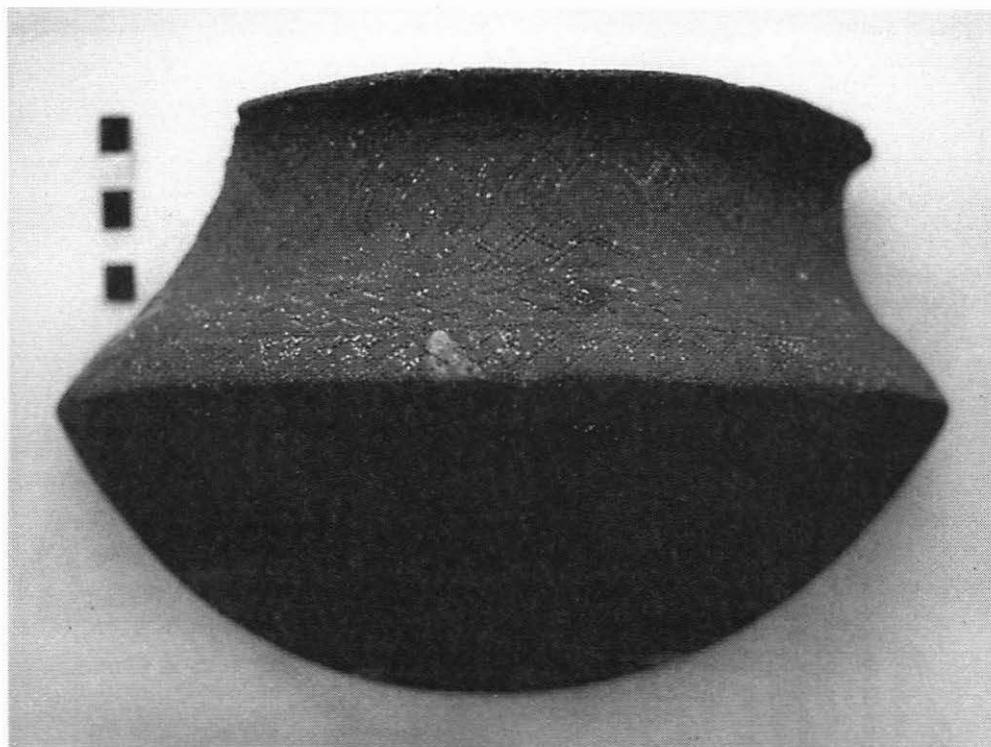


Figure 4: Three-quarter complete Lapita pot, 23 cm in diameter at the carination, with dentate-stamped motifs.

About 27% of the sherds found *in situ* are decorated, but this rises to nearly 40% when the sherd surfaces are taken into consideration, indicating that most of the pots present in the excavated areas were decorated. The decorated sherds show the fabric of dentate-stamped pots, incised pots and some shell-impressed, tool-impressed and paddle-impressed pots. The dentate-stamped sherds amount to around 70% of the decorated material. The dot size of the comb impressions is variable, with very fine prints on some sherds, but most of the motifs have a normal Southern Lapita size (Sand 2000b). Motif inventory (Fig. 5) shows the presence of numerous and diverse designs, ranging from simple zig-zag, wavy, or triangular motifs to complex labyrinthine or triangular-faced motifs. Only one possible example of elongated stylised faces has been identified. The regular use of the round print in this site, in proportions comparable to the nearby Vatcha site, is noteworthy.

As in the other Lapita sites of New Caledonia, incised motifs (Fig. 6) are restricted to a few designs, on a type of standardised carinated pot with an outcurved rim (Sand 1996b: 134–35). The frieze above the carination is formed by simple crossings, alternative triangles or croissant-shaped motifs, and the central motif seems to be represented only by a succession of triangles with rounded ends. No example of an upper frieze has been observed in the

collection. Significantly, one less carinated and smaller pot appears in the late part of the Lapita sequence, showing a slow transformation of the forms and an evolution towards the later Puen tradition (Sand 1999b).

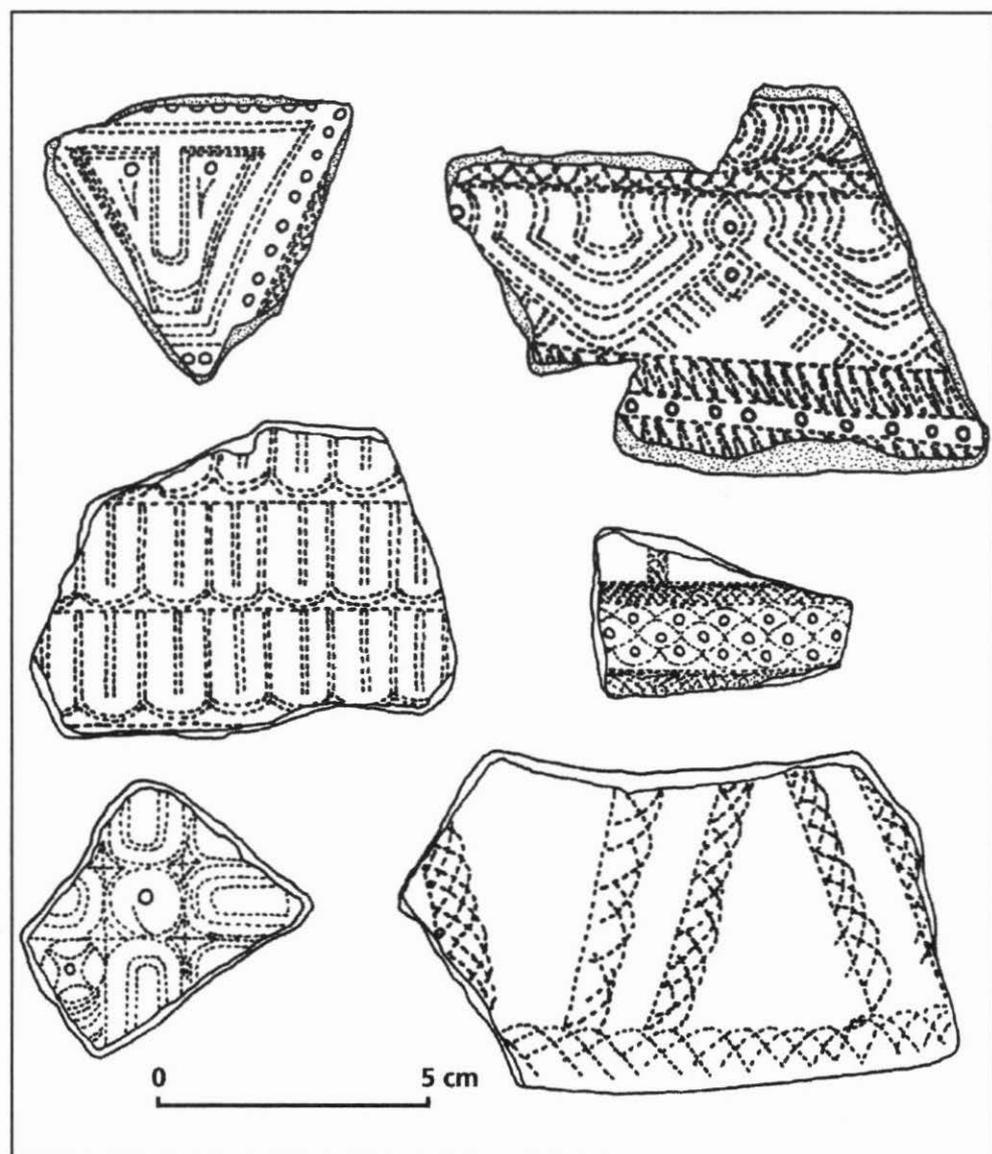


Figure 5: Examples of the diversity of the dentate-stamped decorations from site SGO015.

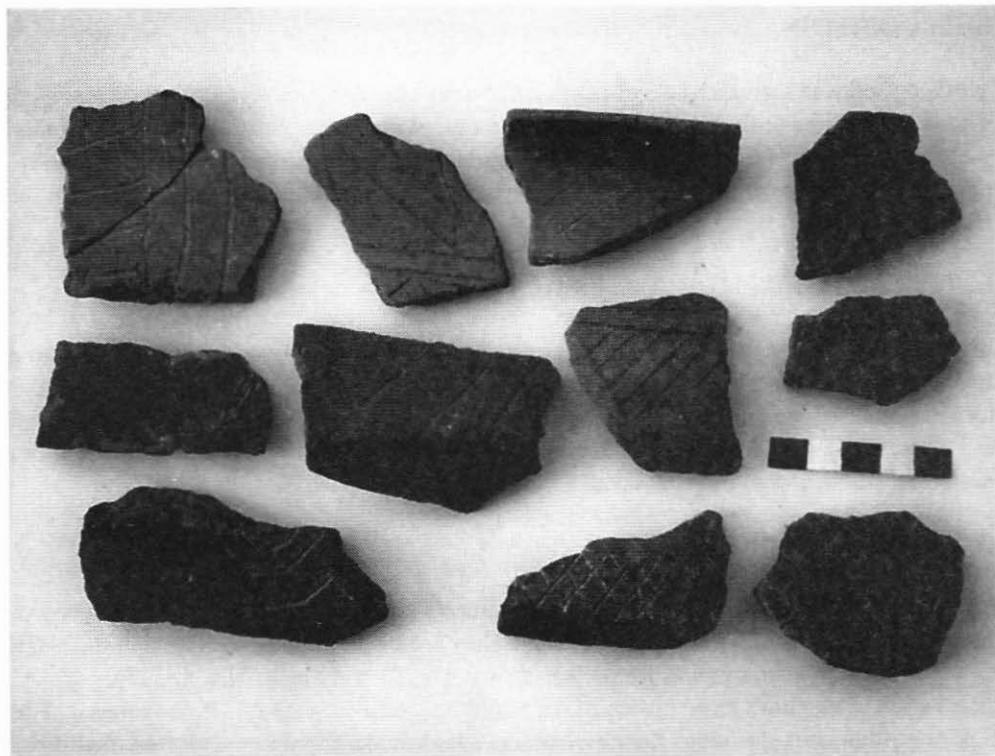


Figure 6: Examples of incised Lapita sherds from the excavations at site SGO015.

The other decoration forms are not numerous. A few shell-impressed sherds found in the banks of the creek may be related to the end of the early occupation, as in other Lapita sites of the Grande Terre. Only a few paddle-impressed sherds and undecorated rims from plain wares have been found in stratigraphic association with the Lapita sherds, suggesting a low presence of domestic pots in the excavated part of the site.

POST-LAPITA CERAMICS

The sherds found in the horticultural horizons are mostly small, but larger pieces can be found on the shell mounds that are present around the surface of the site. Most of the identifiable rims are incurved, thin, and relate to the Néra tradition of the second millennium AD. The decoration is mostly composed of nubbins and incised decorations characteristic of the late prehistoric ceramic tradition of the Yaté region (Sand and Ouetcho 1992: 90–92). Some sherds are thicker, with coarser temper. They are related to the Plum tradition, developed in the southern part of the Grande Terre during the first millennium AD (Sand 1995: 118–27). Rounded rims related to this tradition, some leaf incisions with triangular developments, as well as an oval-sectioned handle were found in the lower horticultural horizon. Very few sherds of the Puen tradition have been identified, although this tradition is present in other sites of Yaté.

SHELL OBJECTS

Worked shell was scarce in the areas excavated. Only two conus shell rings were discovered. The first is related to the Lapita horizon and is thin, with a diameter of 5.5 cm. The second was found in the lower horticultural horizon and is 4 cm wide with a diameter of 8 cm. Two polished and pierced beads from the upper part of small gastropods were also found in the Lapita horizon.

LAPITA-RELATED LITHIC MATERIAL

Significantly, only two flakes were discovered in the Lapita horizon, again pointing to a specific function for the excavated part of the site. The first flake is a large black triangular tool of phtanite type siliceous rock, with small retouching on one of the edges. The second is a waste flake, possibly from an adze. Binocular observation suggests a basaltic rock, but more precise identification is needed.

POST-LAPITA LITHIC MATERIAL

In contrast to the Lapita horizon, the two horticultural horizons have abundant flaked material. Apart from one small rock crystal, all the flakes are of phtanite type. The colour of the flakes is very diverse, ranging from clear brown to grey and black. The size of the flakes also varies, with some large pieces of discoid form but also a lot of waste material. The flaking technique is similar to what Forestier (1996) has identified as the discoid method of pseudo-Levallois nature.

FAUNAL REMAINS

Bones from the Lapita horizon are nearly all from turtles. This suggests that the area excavated was a specialised part of the early occupation site not so far paralleled in other early New Caledonian sites, but known from other Lapita sites throughout the region (see Kirch 1997: 202). Although all the sediment was sieved, only a few small fishbones were collected. Turtle bone was abundant in squares A, B and F, and in some cases complete parts of the carapace were still present. Some of the flipper bones bear black marks resulting from a burning process. The quantity of bones clearly points to massive consumption of turtles in this area of the Goro lagoon, where turtles could have been numerous at first settlement.

Broken and eroded fishbones are often more numerous in the horticultural horizons, where some large vertebrae were present as well as a few unidentifiable birdbone fragments, but the regular mixing of the layers and the probable destruction of most of the small bones precludes any useful analysis of this material.

About two thirds of the shells from the site overall, by weight, were gastropods. It is difficult to identify variations in abundance between horizons, as part of the shell material from the early horizon is clearly of natural origin, and the presence of some large tridacna and trochus shells makes significant distortions in the samples from small test pits. Nevertheless, among the gastropods, *Trochus* sp. and Strombidae, which live on reef flats, are by far the most numerous and represent over 90% of the collection. In the bivalves, *Anadara* sp. and *Gafrarium tumidum* were the major catches. It is worth noting that there

was formerly a tradition of collecting *Tridacna maxima* at this site, in contrast to the present-day catch, which is restricted to *Hippopus hippopus*.

Some shell species, both gastropods and bivalves, show a clear pattern of size reduction over time. In the Lapita horizon, the maximum size of *Anadara* sp. shells is around 9 cm, dropping to 6 cm in the horticultural horizons. A stronger case can be observed for *Trochus* sp., with a reduction of over 50% in mean size between the early (mean 11 cm) and later (mean 5 cm) horizons. It is probable that human over exploitation was not the only reason for these size losses in Goro, but that transformation of the seashore through soil infilling played a role in this process.

DISCUSSION

Preliminary excavations at site SGO015 of Goro, on the south-east coast of the Grande Terre, have shown the presence of a well preserved occupation, covering an area of at least 2000–3000 m². The first stratigraphic data indicate that the excavated part of the site was, at first settlement, a beach near a creek mouth, in front of an open lagoon, facing several islets and a pass in the reef. Infilling of this environment by terrigenous sediments during the succeeding millennia, probably mostly as a consequence of burning and resulting erosion, led to the creation of a larger plain, bounded by mangroves and a marshy environment on the seashore. Cultivation of this new plain with some wet areas resulted in the formation of different horticultural horizons, containing archaeological material from the first and second millennia AD.

The similar dates obtained for samples from the Lapita layers of site SGO015 confirm once again the short chronology proposed for Southern Lapita (Sand 1997), with first occupation of the area between about 1000 BC and 900 BC. Interestingly, the first settlement dates for this site are earlier than those obtained for the Lapita site of Vatcha on the nearby Ile des Pins, where a continuous chronology starts around 950 BC (Sand 1999a). The end of the Lapita occupation in the excavated area of SGO015 is also about 50–100 years earlier than at Vatcha. This probably reflects a different use of the two sites.

The main problem in interpreting the Lapita settlement pattern at Goro results from the technical difficulty of locating the possible camp or household area. In the test pits which could be excavated to the base of the cultural deposits, a fossil beach level without structures was identified. It has not been possible so far to demonstrate the presence of buried house structures somewhere near the former beach, because of the wet soils and permanent water infilling of the excavated squares. This leaves questions on the use of the site open and speculative. The large amount of turtle bones found in the excavated Lapita layer and the extensive remains of large shellfish, in contrast to the few but well preserved material culture remains, point to Goro as a small settlement used mostly as a fishing camp and turtle collection place, in front of probably the richest and most sheltered lagoon environment of the east coast of the Grande Terre. The major Lapita settlement may have been in the more suitable locations on the small islets in the lagoon. The main reason for the human presence on site SGO015 may then have been fresh water, which was found in the immediate vicinity. But 3000 years ago, the site was probably not really suited for any regular kind of horticultural activity, with mostly low wet marshy soils or coastal flats restricted to a few tens of metres between the hills and the beach. It is not impossible that this disadvantage led to the relocation of the founding groups, after a few generations, to more suitable plains

further south and north, where post-Lapita settlements have been identified (Sand and Ouetcho 1994), and the temporary abandonment of site SGO015.

The early occupation date of the Goro site obtained through AMS dating is supported by the study of the diversity and intricacy of the dentate-stamped Lapita motifs. Some of the most complex motifs of the Southern Lapita pattern are present in SGO015, with triangular, wavy and labyrinthine motifs, complex triangular faces of the same form as those known in Vatcha, regular use of the rounded stamp, and finally the presence of complex incised motifs. Carinated pots with rounded bottoms predominate, but incurved pots, flat bottomed dishes and lids are also part of the typology. The sherds have been in a very wet environment for nearly 3000 years, and some of them were very fragile, although a nearly complete pot has been preserved (Fig. 4). Initial observation of coral and lithic sand tempers shows a diversity of origins, with probable imports from the north, the south and even the east of the archipelago, in addition to possible production of pots local to the region. Contrary to expectation, these temper observations seem to show that exchange links were not limited to the Vatcha site around 100 km to the south (Sand 1999a). The differences in temper use may in future also indicate diversified production processes of probable chronological significance.

Although non-ceramic remains are not numerous in the excavated Lapita horizon of the site, the few items found match known Lapita products. Faunal remains show a clear process of human impact on the local environment of the Taré lagoon, with the hunting of turtles and consumption of large shellfish. This exploitation of the natural resources, in conjunction with landscape transformations, led to changes in the ecological equilibrium of the bay. At the same time, cultural processes evolved slowly, as can be observed through changes in ceramics as well as new landscape uses over the 2800 years of post-Lapita occupation.

Site SGO015 has major significance for our understanding of the early settlement phase of New Caledonia's prehistory, as it is the first Lapita site discovered on the windward east coast of the Grande Terre, filling a void in our early Austronesian site distribution in the archipelago. The Goro plain and specially site SGO015 were surveyed in 1991 as part of a more general archaeological program in the Yaté region, representing the first coordinated effort for the whole east coast of the Grande Terre (Sand and Ouetcho 1992). Already at that time, I warned that

to consider that the east coast has no Lapita sites because the makers of Podtanean pottery were already there (Gorecki 1992), is more a hasty interpretation of the present data than a potential reality. The absence of Lapita sites on the East coast reflects above all the absence of archaeological data for this part of the archipelago. (Sand 1994: 273) [translation mine].

During the 1991 survey, the oldest archaeological remains were found in recently cut creek banks, as well as in one of the flat plains of the Touaourou tribe, 15 km north of Goro (Sand and Ouetcho 1994). The presence of some simple dentate-stamped, paddle-impressed and incised sherds in deeply buried layers was an indication of the profound transformation of the narrow east coast flats after first prehistoric human settlement. Any early site in this type of environment was expected to be difficult to find, and without the information given by the local population, the Goro site would still be unidentified.

Now that the existence of an early Lapita settlement in this region is clearly demonstrated, a more balanced analysis of the other sites in the area can be made. This is specially the case for rock shelter SGO020 of Tiwi, located about 6 km south of the early Lapita settlement

of Goro and excavated between 1986 and 1990 by Galipaud (1992a). A deep test pit of 370 cm at the opening of the rock shelter allowed the identification of 17 different layers. The lower part of the deposit was excavated over an area of less than 30 cm² in the middle of collapsed boulders, and layer 14 was dated to 3240±220 BP (Beta 44650), calibrated 2035 (1510) 920 BC. On the basis of this date with a wide range, associated with paddle-impressed sherds, and an equally early date obtained from the Naïa site WPT055 on the southwest coast in the late 1960s, Galipaud (1992a) proposed that the ceramic chronology of New Caledonia began with the Podtanean tradition around 3500 years ago. He concluded that “the size of the two sites and the number of sherds suggest that the dates reflect an already well established population rather than the faint tracks of a founding settlement” (1996b: 302). Putting the study in a wider context, Galipaud recently proposed that “the existence of paddle-impressed sites occupied in New Caledonia before and after Lapita, but not during it, suggests that the discovery of the Grande Terre was accomplished by several groups” (1999: 536) [translation mine], thus reviving the hypothesis of two cultural entities proposed by Green (Green and Mitchell 1983).

The complex interpretative framework proposed by Galipaud with these old or unsatisfactory archaeological data shed confusion on the beginning of New Caledonia’s ceramic chronology on a local (Sand 1995: 67–76) and regional level (Anderson and Clark 1999: 31), keeping in mind that most of the numerous Podtanean sites identified have never been dated or even excavated. At a time when Lapita pottery was supposed to be produced for over 1500 years without any major changes (Galipaud 1992b: 189; Frimigacci 1999), simple relationships between these two ceramic traditions in the same sites could be readily made (Frimigacci 1981). But new data now permit a much more precise picture of ceramic production at first settlement and of typological evolutions during the first millennium BC (Sand 1999b), showing that the building of complicated and two-step chronologies for the southern Melanesian region (Galipaud 1999) is incorrect. As a consequence, as long as no other dates are obtained for the lowest layers of the Tiwi rock shelter and Naïa, the results from these two sites will be irrelevant (Sand 1996b: 116–17). The only useful observation at present (Spriggs 1996: 44) is that the 2 sigma brackets of the two dates fall in the accepted interval for first Austronesian settlement of the New Caledonian archipelago around 1100–1050 BC.

Significantly, new data from well preserved sites show a slow increase of Podtanean ware production after first discovery of the archipelago, reversing the proposal of a pre-Lapita ceramic tradition. In the early Lapita levels dated to around the first century of the archipelago’s discovery, paddle-impressed pottery is usually present but scarce, within a wider undecorated ceramic component (Sand 2000b: 27). This is the case in Maré (Sand *et al.* in press) as well as on the Grande Terre (Sand 1998b). The development of the Podtanean tradition is a cultural dynamic taking place during the 300 year period of the Lapita era in New Caledonia, from an early set of domestic wares, and continuing after the disappearance of the dentate-stamped pots around 800 BC. This is exactly what we have in the stratigraphy of the Goro site: no paddle-impressed sherds in the lowest part of the Lapita horizon of squares A, B and F, but their presence higher up in square A in association with Lapita sherds, and in a location without dentate-stamped or incised sherds (square C). This partial difference in location is also important, as it strengthens the overall idea for Southern Lapita of a different use of the two wares in these Lapita settlements: decorated but fragile dentate-stamped and incised pots with complex typological forms for ceremonial-ritual use in the residential part of the hamlet, and more solid undecorated and paddle-impressed pots

with a few standardised forms for domestic use mostly in the cooking-open area (Galipaud 1990; Sand 1999b). The lowest layers of Tiwi must therefore be dated to the first millennium BC, and not before. For the Naïa site, we have already pointed to the existence of a Lapita occupation in the bay, and the supposed non-Lapita settlement is thus without reliability (Sand and Ouetcho 1993: 126).

In conclusion, a picture of a relatively simple settlement process is now appearing for the first occupation of the New Caledonian archipelago, one where Austronesian seafaring groups followed a chain of islands south of the main Solomons, and managed to discover, at one stage during the last century of the second millennium BC, an archipelago with vast, diverse landscapes and immense natural resources. The possibility remains of multiple episodes of settlement in the Loyalty Islands and the Grande Terre in the decades after this first discovery, specially by families occupying islands further north and attracted by a rich environment without malaria. We are convinced that the rapid multiplication of sites in New Caledonia during the 300 years of the Lapita period (Fig. 1), compared to other archipelagos of Island Melanesia, is partly related to the non-malaria environment, which allowed for more rapid population growth (Sand 2001). But we are still talking of families forming part of one, and only one, cultural group, of Austronesian origin, with a unique and distinctive cultural complex suited for island colonisation, and not of small groups of “gypsies of the sea” (Galipaud 1999: 540) [translation mine] moving rapidly from one fishing camp to the other. It is from a homogeneous, locally evolved Southern Lapita Cultural Complex (Sand 2000b) that these Austronesians diversified their societies during the first millennium BC. These diversifications can be archaeologically traced to the founding settlers (Sand 1999b) without having to put into play a new group of “settlers that will permanently populate these empty islands” (Galipaud 1999: 540) [translation mine].

CONCLUSION

The discovery, excavation and dating of the first Lapita site on the East Coast of the Grande Terre of New Caledonia has given new and important information on the characteristics of first human settlement in this part of the archipelago. Clearly, this preliminary study has to be continued with new excavations to define the precise extent of the early site, as field problems have not yet permitted the discovery, somewhere in the vicinity of the former beach, of buried Lapita household or camp remains.

On a wider scale, the study of site SGO015 allows us to put to rest the concept of a “social fence” stopping the introduction and use of dentate-stamped pots in some areas of Southern Melanesia 3000 years ago, because of supposed pre-Lapita, non-Austronesian, “Melanesian” settlers (Gorecki 1992). Future studies will certainly discover Lapita sites in other locations in this part of the archipelago, although the Goro case has shown what type of environmental problems archaeologists have to face to locate deeply buried first settlement sites on narrow coastal flats. New developments in the regional study of the Lapita phenomenon (Kirch 1997) as well as its local evolution in each archipelago (e.g., Summerhayes 2000; Bedford 2000; Burley 1998: 349–59; Sand 2000b) have enhanced the complexities of this very specific and unique phase in the human colonisation of the south-western Pacific. Lapita is not “a smoke screen to greater things that have happened” (Gorecki 1992: 44) in Remote Oceania, but is the clue to our understanding of the first phase of the history of the Southern Melanesians and West Polynesians around 3000 years ago.

Site SGO015 is located on the field called Kokweiméé, known locally as the former settlement location of the old inhabitants of the Goro region, called the Niwa. Since the excavations, some elder kanaks of the tribe have associated the archaeological discoveries made at the site with these now vanished clans, reshaping our "scientific research" to incorporate it into traditional history, like a Pacific heritage re-appropriated through Lapita sherds.

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