Prehistoric Burials from New Caledonia (Southern Melanesia): A Review

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ABSTRACT

The diversity of the burial places and the variety of the body and bones treatments are the main qualities of burials related to the nearly 3000 years of prehistory of New Caledonia, from the Lapita cultural complex to the traditional Kanak cultural complex. The oldest burials known at present are interments dated from the very end of first phase of settlement of New Caledonia archipelago and discovered in the site of Lapita at Foué (Koné). The inhumation is also a funerary treatment used during the following two millennia, besides other practices such as the deposit of the deceased on the soil surface or in canoe in caves. The inhumation was definitive or temporary, as indicated by secondary deposits or by remains of exhumation identified from the beginning of the second millennium A.D., date of the emergence of the Kanak cultural complex. The body was not systematically eliminated. Its integrity was sometimes preserved through artificial mummification processes. The paper reviews the existing archaeological documentation following a chronological framework and draws on cultural and social significances and changes over time of the treatment of the deceased.

Key Words: New Caledonia, archaeology, burial practices, human remains, Pacific

Located east of Australia between 20° and 22° south, the New Caledonia archipelago forms the southernmost part of the Melanesian crescent. It comprises distinct parts characterised by differing geological origins and conditions. 400 km long by 50 km across, the mainland of Grande Terre is a long, narrow landmass composed of complex geological formations of Gondwana origin. It has a mountainous ridge running down its centre, separating leeward and windward coasts. Numbers of small islands lie off its tips, notably the Isle of Pines 50 km to the southeast and the Belep group to the northwest. The Loyalty group includes three main islands, from north to south Ouvéa, Lifou, Maré, and various small

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islands, comprising remote Walpole, the southernmost outpost of the Loyalty chain. Formed on a volcanic substratum, the Loyalties consist of uplifted coral platforms with karstic relief of various elevations.

The human history of the archipelago begins about 3000 years ago and burials have been placed around settled areas since that time. However, while household features, habitation structures, village organisation and economic systems have been studied in some detail (e.g. Davidson et al., 2002; Guillaud and Forestier, 1998; Sand, 1995a, 1996a, 1997a, 1999, 2002a), burial practices have been seldom investigated until now. Although often mentioned in archaeological publications (e.g. Avias, 1950; Frimigacci and Siorat, 1988; Galipaud, 1988, 1996, 1997; Gifford and Shutler, 1956; Leenhardt, 1947; Sand, 1995a and b), funerary treatments have not been yet the focus of sustained bioarchaeological study.

To illuminate New Caledonia prehistoric mortuary practices, the present paper reviews the existing archaeological documentation. Table 1 summarises the findings that are firstly presented here following a chronological order. The New Caledonian prehistoric chronology comprises three main parts: the Lapita period corresponding to the first centuries of settlement and starting around 1100–1000 B.C. with the "Lapita cultural complex"; an intermediate period showing clear distinctions between the north and the south of Grande Terre, and a period of development of a "traditional Kanak cultural complex" over the last 1000 years before European contact at the end of the 18th century A.D. (Galipaud, 1988; Sand, 1995a, 1996b, 1997b, 2000, 2001a and b, Sand et al. 2000). Following this chronological pattern, the burials reviewed here have been divided in three groups: the oldest burials of the Lapita and post-Lapita periods, first millennium A.D. burials and second millennium A.D. burials of the "traditional Kanak cultural complex". In a second part, the paper draws on cultural and social significances and changes over time in the treatment of the dead in past New Caledonian communities.

THE ARCHAEOLOGICAL RECORD

a. The oldest New Caledonian burials (1st millennium BC)

The oldest burials currently known in New Caledonia are interments related to the first millennium BC but after the fabrication of Lapita pottery had ended. They have been discovered in different localities near the seashore at the site of Lapita, on the Foué Peninsula on the northwest coast of Grande Terre (fig. 1).

TWO BURIALS FROM THE SITE OF LAPITA

Two skeletons related to the first millennium B.C. have been described in a series of reports (Dédane and Kazarérhou, 1988; Galipaud, 1997; Pietrusewsky et al., 1998; Shutler, 1967). Shutler (1967) recovered the first at locality WKO013C in 1967. The sepulchral pit contained an individual in a sitting position with a complete ceramic pot covering the skull

Table 1: Summary of the main New Caledonian prehistoric burials sites known through archaeological researches.

Site name	chronological attribution	Burial description	Geographical location	References
Lapita (WKO013C)	first millenium BC	open-air site, primary, definitive inhumations, seated, pot covering the skull	North-west Grande Terre	Shutler 1967, Valentin Sand 2000
Lapita (WKO013B)	first millenium BC	open-air site, primary, definitive inhumations, decubitus lateral	North-west Grande Terre	Dédane Kasarhérou 1988, Pietrusewsky et al. 1998
Tüü	first millenium AD	open-air site, mound, several primary definitive inhumation, various positions	Isle of Pines	Frimigacci 1979
Tiouandé	first millenium AD	rock-shelter, several primary in-ground inhumations	North-east Grande Terre	Sand 2001, Valentin 2001
Balabio	?	open-air site, primary inhumations, crouched	North Grande Terre	Galipaud 1988
Hnenigec	first millenium AD	rockshelter, several above-ground inhumations	Maré, Loyalty	Sand 1995a
La Roche	first millenium AD	open-air site, several primary inhumations, hyperflexed, cemetery	Maré, Loyalty	Maitre 1977, Valentin Sand 2000
Lapita (WKO013A)	second millenium AD	open-air site, primary inhumations, seated, revisited for bone removal (exhumation)	North-west Grande Terre	Valentin Sand 2000, Valentin Sand 2001
Ihusie	second millenium AD	open-air site, primary inhumations, flexed	South-west Grande Terre	Sand Ouetcho 1992
Anse Vata	second millenium AD	open-air site, primary inhumations, flexed	South-west Grande Terre	Gifford Shutler 1956
Naïa	second millenium AD	open-air site, primary inhumations, flexed, decubitus lateral	South-west Grande Terre	Smart nd
Ilot Vert	second millenium AD	open-air site, stone mound, inhumations	South-west Grande Terre	Frimigacci Siorat 1988
Qanono	second millenium AD	open-air site, primary inhumations, hyperflexed	Lifou, Loyalty	Sand 1995a, 1995b
Pheu	second millenium AD	rockshelter, primary and secondary in-ground inhumations, extended	Maré, Loyalty	Hartweg 1950
Walpole	second millenium AD	rockshelters, several above-ground inhumations	Walpole	Dunn 1967, Sand 2004
Nonimé	second millenium AD	rockshelter, several above-ground inhumations, some associated with woodens items (pole, canoe)	Lifou, Loyalty	Valentin Bolé 2001
Hnajoisisi	second millenium AD	rockshelter and ledge, several above-ground inhumations, some associated with woodens items (pole, canoe)	Lifou, Loyalty	Valentin Bolé 2001
Faténaoué	second millenium AD	rockshelter, several mummies associated with vegetable basket, seated	North-west Grande Terre	Leenhardt 1930, 1947, Valentin et al. 2001

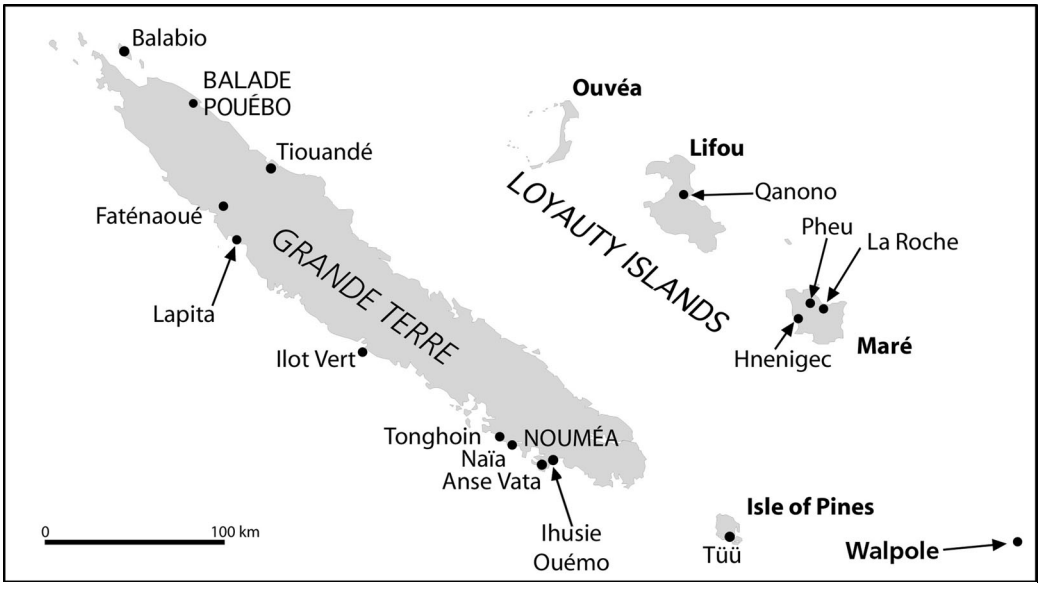

Fig. 1: Map of the New Caledonian archipelago and burial sites locations.

(Shutler, 1967[1]). The pot is a large bowl exhibiting paddle-impressed decorations of Podtanéan style, which suggests that the interment occurred at the end of the Lapita period. Sex and age at death of the skeleton were not specified at the time of excavation and Shutler was not allowed to export the remains for further study. The skeleton of a male about 30–40 years old, that is believed to come from this grave, is held by the New Caledonian Museum. It is dated to about 850 B.C. (bone sample: 2700+/–80 BP, Beta 125136, calibrated to 1015 (830) 780 B.C., Valentin and Sand, 2000).

The second burial was exposed during a hurricane in 1988 at locality WKO013B. No sepulchral pit was identified and no grave goods or personal ornaments were associated with the skeleton, which is attributed to a female of approximately 35- to 45-year-old (Pietrusewsky et al., 1998). Two bone samples have been radiocarbon dated and have returned two very different results. Although this is problematical, the authors place the burial around the middle of the first millennium B.C. on the basis of archaeological and stratigraphic considerations (Pietrusewsky et al., 1998). Renewed work on locality WKO013B has allowed to finally associate the burial with an occupation layer dated to 380 cal BC (Beta 179503) (Sand, 2007). From Dédane and Kazarérhou's field notes (1988) it can be determined that the body was placed on its right side in a tightly flexed position, facing

(1) At Lapita site 13, "L'avancement du travail ⋯ a permis de mettre au jour une sépulture mise en terre apparemment après l'occupation du site par les gens de culture "Lapita". Cette sépulture était composée d'un squelette en position assise.(⋯) le crâne coiffé d'une poterie entière. ⋯.?" (Shutler 1967).

the sea in a west-east orientation, with its head to the west. The arms were along the side of the corpse, the forearms folded on the abdomen, with the left hand on the right forearm. The lower limbs were hyperflexed with the feet in contact with the pelvis (Valentin, 2003).

b. First millennium AD burials

The first millennium AD was a phase of major transformations and diversification of the cultural traditions. Aside from some mortuary use of pots as containers for bones (Avias 1950; Galipaud, 1988; Sand, 1995b, 1996b; Sand and Ouetcho, 1993), burial locations were diversified in multiple ways, ranking from artificial mounds to rock-shelters and open-air sites.

THE TÜÜ BURIAL MOUND, ISLE OF PINES

During this phase, numerous burial mounds were built on the Isle of Pines, to the south of Grande Terre (fig. 1). Located near the seashore, the Tüü tumulus had been partially destroyed by quarrying by the time it was studied but it is supposed to have once been 30 m in diameter and over 2 m high (Frimigacci, 1979). The study revealed two stratigraphic levels containing interments (Frimigacci, 1979, pers. comm. 2000). The lower level, above a basal level dated to 1930+/–70 BP (UW 655, calibrated A.D. 50 (80) 245), contained at least one complete adult skeleton, dated to 1440 +/– 35 BP (UW 766, calibrated A.D. 560 (635) 660). The body was on its right side, apparently in a hyperflexed position, knees against the chest (Frimigacci, 1979:22, figure15). The second level contained a complete skeleton of a male about 40 years old (Charpin, 1983). It was on its back in extension. The surface level included many disarticulated and scattered human bones that Frimigacci (1979) regards as representing incomplete skeletons. A bone sample returned the early date of 1845 +/– 65 BP (UW 765, calibrated A.D. 30 (160) 370). Disturbance by quarrying can explain the condition of the surface level. According to Frimigacci (1979: 21), "*ce tertre funéraire est une sépulture collective, il a été édifié au fur et à mesure des inhumations*" [the funeral mound is a collective grave which was built up by successive inhumations].

The available data suggest that the skeletons were not subject to intentional postdepositional handling. The inhumations were apparently primary and definitive, displaying variations in positional modes and an expansion of the tumulus by addition of sedimentary levels. This description does not strictly match the conventional definition of "collective" burial (Duday et al., 1990; Masset, 1997). The lack of handling and the primary situation of interment are rarely observed in true "collective" burials in which successive single primary interments are disposed, causing disturbances amongst the previously decomposed bodies. True "collective" burials are rather characterized by post-depositional handlings and in situ re-arrangements of selected bones. Additionally, the succession of stratigraphic levels is another aspect that does not match the conventional definition of "collective" burials, which supposes a single pit, or cave, for several bodies. One possibility which might better explain the Tüü site in terms of funerary practices is to suppose a succession of single interments in a durable cemetery area, but further observations are needed to ascertain this hypothesis.

INTERMENTS IN ROCKSHELTERS IN THE TIOUANDÉ REGION

Archaeological researches in the Tiouandé karstic region on the northeast coast of Grande Terre (fig. 1) discovered burials in stratigraphic context in a group of rockshelters located in a coral cliff about 1.5 km from the sea (Sand, 2001c). It comprises a sizeable main shelter of some 9 m by 4 m in plan by 6 m high, which displays painted hands on one of its walls, and a second shelter of about 10 m^2 and 3 m high. Both shelters contain burials in levels dated to the first millennium A.D., as well as entire, fragmented and burnt scattered human bones.

Excavation in the second rockshelter identified a sepulchral pit that was only partially investigated because it was present only in a corner of the test-unit. It was covered by a set of flat stones and contained disarticulated post-cranial bones of a single subadult of about 15–20 years old, and a skull the mandible in articulation showing its underside. No grave goods or ornaments were encountered. The bones that were collected correspond to two neighbouring anatomical segments, the thorax and the left shoulder, which are represented by nearly all their bones, even the un-fused humerus and radius proximal epiphysis (Valentin, 2001). This set of bones may come from a secondary deposit, as ribs and vertebrae can be removed and transferred with other bones such as the long bones and/or the skull. However, if such practices existed in New Caledonia, they do not have any local ethnohistorical parallels although other kinds of secondary deposits, like skulls deposits (fig. 2), are documented (Bourgarel, 1865; Leenhardt, 1930; Vieillard and Deplanche, 2001 [1863]; Sarasin, 1917). It is more plausible that the remains represent a primary burial subsequently disarticulated by either funerary activity or taphonomic processes. It is suggested by the fact that the small secondary ossification points were found near the main ossification points. In this context, the disarticulation of the thorax and the unexpected skull position may result from the presence of a container which has decayed slower than the cadaver and/or from the seated position of the corpse.

The sepulchral pit in the main rockshelter contained, at its base, adult remains but no grave goods or ornaments. It has been partially studied because the skeleton was discovered in a profile of the test-unit. The individual was on the back in a flexed position with the skull at the abdomen level. Even if anatomical relationships were maintained in articulation in some regions, like the thorax and the pelvis, others were clearly disjointed, like the right shoulder. Available data are insufficient to interpret bone misplacements but suggest primary interment because of the presence of nearly complete feet and hands in the basal fill of the sepulchral pit. In addition, the inventory of bones recovered from the base of the pit and investigation of pair-matching and articulation (Duday, 1987a) show the presence of the two well-represented feet of a second adult at the same level. Additionally, the upper level of this test-unit revealed evidence interpreted as the remains of others disturbed burials (Valentin, 2001). Three observations indicate these may be primary interments. First, the bones collection includes many hand and foot bones that are rarely involved in secondary burial deposits (Duday et al., 1990; Masset, 1997). Second, there are several bone associa-

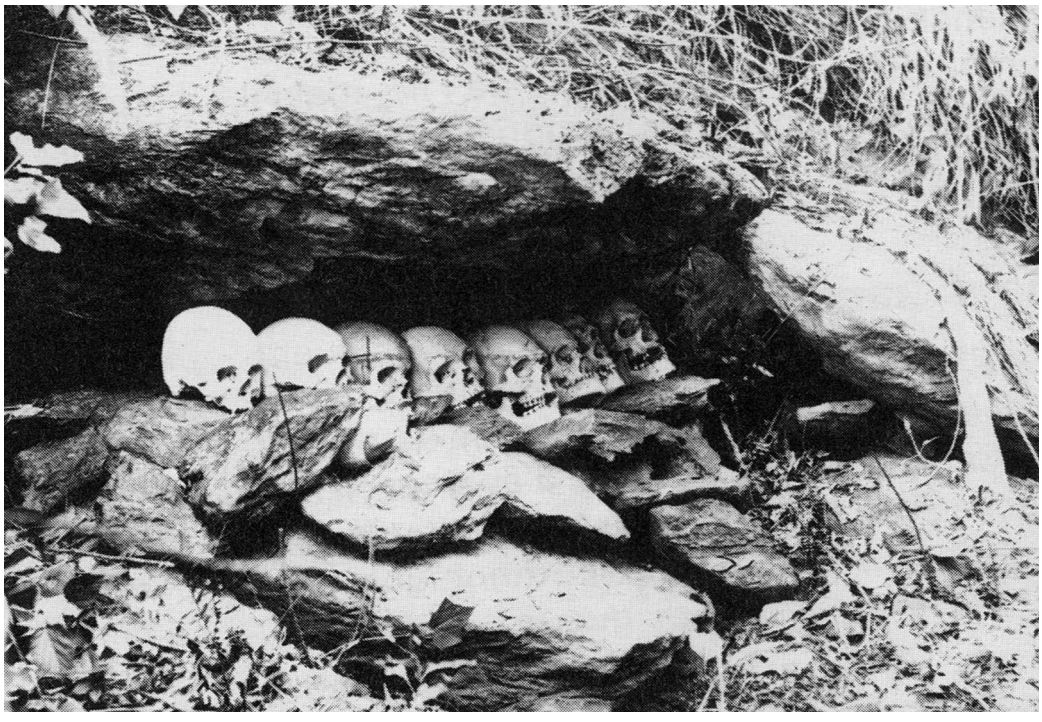

Fig. 2: "Alignment of chief's heads in a Kanak family shrine, as observed at the beginning of the XXth century" (New Caledonian Museum Archives)**.**

tions (articulation and pair) which are admissible evidence for single skeleton re-attribution according to recent experiments (Villena I Mota, 1997; Villena I Mota et al., 1996). Last, there are no defleshing marks (Binford, 1981; Lyman, 1994; White, 1992) or other traces on the bones. In both rockshelters, additional adult and subadult entire bones and some fragmented and burnt human bones were found in the sepulchral pit and in the test-units fills. They are interpreted as resulting from pre-existing disturbed primary or secondary deposits because they do not display traces that may be connected with other practices like cannibalism.

The Tiouandé burials are reminiscent of another interment tentatively dated to the same period. Excavated in an open-air site on Balabio Island, off the northern tip of Grande Terre, an articulated skeleton was in a crouched position, the skull turned towards the north end of the island, in a small pit covered with two flat stones. A level dated to 1830+/–160 BP (ANU–4926) covered the burial (Galipaud, 1988, 1997).

INHUMATIONS IN ROCKSHELTERS: THE CASE OF HNENIGEC (MARÉ, LOYALTY ISLANDS)

The Hnenigec site illustrates another kind of funerary situation in rockshelters (fig. 1). Located on Maré in the Loyalties, the Hnenigec rockshelter is situated on an uplifted coral platform about 1.5 km inland. Of unknown dimensions because nearly fully destroyed by quarrying, the site contained a buried sepulchral level of about 15 cm thick at the base of the stratigraphy. Three radiocarbon analyses date it to the first half of the first millennium A.D. (Sand, 1998[2]). Partial excavation of the sepulchral level revealed about 130 human remains and an associated fragment of cone-shell bracelet. In all cases, bones were isolated and lack evidence for anatomical relationships (Sand, 1995a). Representing at least 7 individuals, the remains comprise complete and fragmented bones and teeth of at least 4 subadults of various age at death, including a foetus/newborn, children about three and five years old and one adolescent, as well as at least 3 adults of both sexes.

The bone inventory shows that all anatomical regions of the human skeleton are represented, even small hand and foot bones and isolated teeth. More relevant than frequency analysis (Duday, 1987b), comparative analysis of bone weight by anatomical region evidences an apparent under-representation in cranial bones but no statistically-significant difference between reference values (Lowrance and Latimer, 1957) and the observed distribution (Valentin and Sand, 2000). A search for bones from the same individual revealed several associations between fragmented, symmetrical and joint-related bones. These observations, along with the small size of the burial place, suggest that the assemblage comprises complete bodies which decomposed in situ and thus primary burials rather than secondary deposits.

Most of the bones are brown-reddish in colour, with superficial grey calcite formation and very few traces of damage by roots. No evidence for pig, dog or rodent activities were found. These observations suggest a short period of exposure of the bones to weathering (Berensmeyer, 1978; Binford, 1981; Fisher, 1995; Lyman, 1994; Tappen, 1969, 1971), during which interval the skeletons were disarticulated and bones scattered and possibly broken, as 70% of them were fragments. Following Villa and Mahieu's (1991) criteria, breakage pattern indicates that most long bones were dry when broken. Evidence for heating occurs on 11% of bones, as revealed by colour modifications (from brown to grey-white colour) and, in some cases, by irregular lengthwise splitting and warping. Heating damage and associated breakages probably occurred during occupation which followed the burial period, as there are large quantities of charcoal and ash in the level above. This set of data suggests

(2) At Hnenigec (Maré island), a charcoal from the base of the disturbed stratigraphy was dated to 1210+/–110 BP (Beta 89087) calibrated 655 (885) 1040 AD, the above layer was dated to 510+/–110 BP (Beta 82664) calibrated 1295 (1435) 1655 AD. A bone sample has returned a date of 1775+/–60 BP (Lyon-521 (OxA)), calibrated 125 (250) 400 AD (Sand 1998).

inhumations above the ground, and that cremation and bone breaking were not part of Hnenigec funerary rituals. But it does not enable us to determine whether the burials were simultaneous or successive, neither to assess the question of bone removal.

BURIAL GROUND AT LA ROCHE (MARÉ, LOYALTY ISLANDS)

Excavations at the site of La Roche on Maré in the Loyalties revealed a cemetery dated to about 1000 A.D. (fig. 1). Maître (1977, 1978) excavated and described four of the burials. In three of them, the bones were recovered about 30 cm under the surface, directly on the natural coral substratum. The fourth was in earth, 15 cm under the surface. Excavation found no structures but there was a gravel layer just under the topsoil. No grave goods or ornaments were associated with the skeletons, which have been studied in some detail (Charpin, n.d., 1983; Evin, 1981; Sand, 1995b; Valentin and Sand, 2000). Fragments of the bones have been dated to 1040 +/–110 AD (Ly 2310, calibrated AD 775 (1010) 1230).

The remains represent at least six individuals, of which five are represented by several bones. They are adolescents and adults of various ages at death and of both sexes. Body positions are reported in Maitre (1977: 4; 1978: 4[3]). Written accounts and photographs lead to the following description. The bodies were hyperflexed, placed in one case on the back and in three on the left or right sides. In one burial (fig. 3), the lower limbs were tightly flexed with the knee at the chest level, the right patella was misplaced and the left knee was disarticulated; the articulated feet touched the pelvis; the middle part of the spine displayed a disjunction; the thorax volume was partly maintained, and the upper limbs were flexed against the chest. This skeleton displays a series of misplacements of bones that unfortunately cannot be interpreted relaying only on the available documentation. Maître (1977, 1978) tentatively suggests the possible use of bonds to tie the bodies. This hypothesis needs to be tested by more accurate bioarchaeological analyses, like the hypothesis of mats wrapping which is mentioned in ethnohistorical records on Maré (Dubois, 1968).

c. Second millennium A.D. burial traditions of the "traditional Kanak cultural complex"

The end of the first millennium A.D. in New Caledonia exhibits perceptible indications of a cultural dynamic emphasizing the emergence of the "traditional Kanak cultural complex", with the intensification of landscape use and new developments in exchanges between Grande Terre and the Loyalties (Sand, 1998, 2001b; Sand et al., 2000). A series of

(3) At La Roche (Maré island), «trois des squelettes étaient couchés sur le coté, mais suivant des orientations différentes, dans une position si contractée qu'elle suppose l'emploi de liens: les cuisses et les jambes étaient ramenées contre la poitrine, les bras étaient également ramenés contre la poitrine, et les mains recouvraient l'une sur la face, l'autre sur la nuque. Le quatrième présentait les mêmes caractéristiques mais était couché sur le dos…. La position de la tête, dans deux cas au moins, se trouvait dans un plan tout à fait anormal par rapport au reste du corps» (Maître 1977: 4; 1978: 4)

Fig. 3: Example of a hyperflexed body position in the cemetery of La Roche (Maré island) (Photo J.P. Maître)**.**

burials related to this traditional period have been excavated, that can be compared to the Kanak oral traditions and the European descriptions of indigenous funerary behaviours observed in the 19th century.

PREHISTORIC EXHUMATION AT THE LAPITA SITE, KONÉ, NORTHWEST GRANDE TERRE

A burial dated to the turn of the second millennium A.D. was excavated at the site of Lapita, on the Foué peninsula near Koné (fig. 1). The small pit, located about 100 meters from the present-day seashore, was about 45 cm long and 30 cm wide, containing the skeletal remains of a subadult 13 to 15 years old associated with a *Trochus* bracelet. A human bone sample was radiocarbon dated to 1100 +/– 40 BP (Beta 125135, calibrated 880 (975) 1015 A.D.; Sand, 1996c; Valentin and Sand, 2000). The discovery of this burial during stratigraphic excavations has facilitated taphonomic analyses related to the timing of body decomposition (Duday, 1995, 1997; Duday and Sellier, 1990; Duday et al., 1990; Duday and Guillon 2006; Ubelaker, 1989). Most of the time, analyses of this kind are not possible in New Caledonia owing to the fortuitous nature of most finds during non-archaeological activities.

A part of the skeleton including the shoulder girdle and the upper limbs, the thorax, the pelvis and the feet was still in articulation in the northwest corner of the pit, while a group of disarticulated bones representing the lower limbs, the forearms and the hands lay to the southeast (fig. 4). The right femoral diaphysis was placed in reverse position with the femoral head touching the proximal extremities of the tibias. Macroscopic examination of the quite well-preserved skeletal material did not reveal any cut marks, intentional fractures, or signs of exposure to heat. The bone inventory evidences the lack of the skull, including the mandible, and of the left femoral diaphysis. Both of these skeletal components were nevertheless present at the moment of interment, as attested by the discovery of three teeth and of the un-fused left femoral epiphysis in the sepulchral pit fill. Detailed analysis of bone locations and relationships has enabled reconstitution of the initial inhumation position of the body and some of the succeeding events associated with other funerary activities. The cadaver was initially placed in the pit in a sitting position facing southeast, with the knees against the shoulders and the upper and lower limbs tightly flexed. This is evidenced by the presence of the proximal right tibia and distal right radius un-fused epiphyses against the proximal end of the humerus. In a later phase, following the body decomposition, the skull and the femora were removed and the remaining bones were handled in situ. This burial of an adolescent represents a primary inhumation which was subsequently revisited and partly exhumed (Valentin and Sand, 2001; Valentin, 2003).

Fig. 4: Adolescent burial from the site of Lapita (WKO013A, Koné, northwest Grande Terre)**.**

INTERMENTS IN SOUTHWEST GRANDE TERRE

Inhumation was also used at the beginning of second millennium in the south of Grande Terre (fig. 1). It is illustrated by the recovery of a small round pit dug in the sand of a beach ridge and of two associated skeletons found eroding in Ihusie Bay near Nouméa. The sepulchral structure, being 55–60 cm deep and 45 cm wide, contained the skeletal remains of a approximately 40-year-old male and an elderly female (Valentin and Sand, 2000). The burial was dated on bone samples to about 1200 A.D. (Sand, 1995b[4]). The presence of a single pit and of two skeletons has suggested the hypothesis of a double inhumation (Sand and Ouetcho, 1992). The lack of bones, especially of the skull and the right lower limb, observed in both individuals may result from ancient ritual removal but also from erosion of the site or more recent clandestine removal, as the site discovery was accidental (Valentin and Sand, 2001).

Several interments with similar characteristics have been mentioned in the southwest of Grande Terre (fig. 1). Unfortunately they were recovered during quarrying and have been subject to very limited observations. Their chronological context is unknown. For example, Avias (1950:132) reports that about 20 identical burials, containing each a complete skeleton in a crouched position, were found in 1943 at Ouémo (Nouméa). Burials have also been frequently exposed by natural erosion (Charpin 1983; Galipaud, 1996, 1997; Gifford and Shutler 1956; Sand 1994). At Anse Vata site (Nouméa), a body "*was flexed, oriented south, with the skull missing. Vertebrae, pelvis, some ribs, leg and foot bones lay undisturbed. The vertebrae and pelvis lay under the femora indicating that the burial had been placed on its back. The rest of the bones found were scattered in soil under the burial. The skull may have eroded out or may not have been placed with the burial*" (Gifford and Shutler, 1956: 5). At the Naïa site (north of Nouméa,) (Smart, n.d.: 4) "*Very few of the burials examined were in condition permitting determination of the original manner of disposal. The two or three that were, however, were quite uniform in their placement and stratigraphic position. As far as could be determined these few had been flexed and placed on their side in a small rounded hole of just sufficient size to contain them. No offerings were placed with them. In so far as undisturbed bones always appeared to lie in a position of articulation it is assumed that the burials were primary*" (fig. 5).

All these interments can be regarded as single primary deposits in which bodies were placed in a flexed position, sitting or lying on their sides. In at least two sites, available data evidence the completeness of several skeletons at the time of their discovery, and therefore at their interment. Avias (1950: 132) highlights the completeness of the Ouémo skeletons, which is, according to him, an unusual feature of the recent New Caledonian funerary practices. Drawing by Smart (n.d.: fig. 5) leads to the same assumption for the Naïa interment.

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(4) The Ihusie bone samples have been dated to 850+/–70 BP (Beta 56288), calibrated 1025 (1220) 1290 AD and 860 +/–70 BP (Beta 112994), calibrated 1020 (1205) 1285 AD (Sand, 1995b).

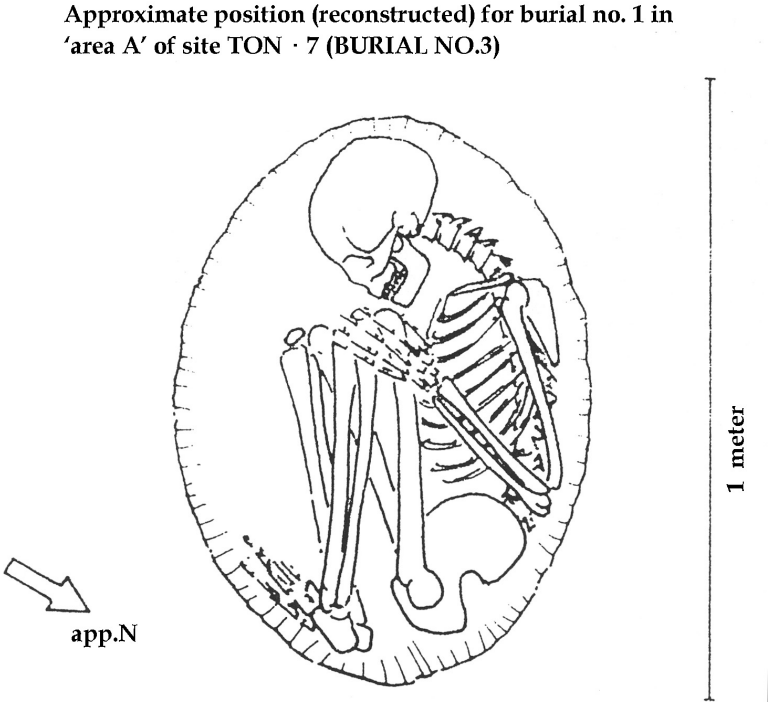

Fig. 5: Example of Naïa burial, drawing by C. Smart.

In addition, some burials from the southwest region of Grande Terre remain more enigmatic. This is the case with a burial contemporaneous with Nera-tradition pottery that has been examined on Ilot Vert (Green Islet), off Nessadiou (Frimigacci and Siorat, 1988). Excavation of one of the stone mounds there exposed a very incomplete skeleton represented by three teeth and the lower limbs in the central part of the structure.

SECOND MILLENNIUM A.D. LOYALTIES BURIALS

The mid-second millennium A.D. funerary practices are also illustrated by examples from the Loyalty Islands and Walpole, the southernmost outpost of the Loyalties chain, 135km southeast of Maré (fig. 1). Indeed during this period, deceased children between 6 and 18 months old at death and young and old adults were placed in Walpole rockshelters (Valentin and Sand, 2000; Valentin, 2002). The radiocarbon dating of one bone that has been collected in 1967 by Chevalier indicates a death in the mid-15th century (Ly 8308, 455 +/– 40 BP, calibrated 1415 (1440) 1605 A.D.). The collection, held at the New Caledonian Museum, was gathered from several caves. The bone inventory shows that all segments of the skeleton are represented, including small hand and foot bones and isolated teeth. The last are frequently missing in secondary deposits sites because they get left in the primary place of decomposition of the body (Duday et al., 1990; Masset, 1997). Articulation and pair-match-

ing investigations indicate the presence of associations revealing that several bones belong to the same individual (Valentin, 2002). These characteristics of the assemblage suggest that the bones were collected in above-ground primary burials. In addition, adult skulls, restricted to only some teeth and a mandible, are under-represented in the Walpole skeletal collection. On the other hand, sub-adult skulls, although more fragile and more susceptible to taphonomic damage, are well represented. As suggested by Dunn (1967), this feature may be included in a complex funerary procedure comprising the handling and transferring of skulls, like those practiced on Grande Terre, but it may also just result from investigators sampling bias.

Dune quarrying at Qanono on Lifou led to the recovery of several human burials. One of them was dated to 340+/–60 BP (calibrated 1440 (1570) 1950 A.D.; Sand, 1995a and b). Salvage excavation of the partially-preserved adult skeleton indicates that the body was interred lying on its back in a hyperflexed position with its knees against its chest (Sand and Ouetcho, 1993: 83–85). Another variant of inhumation has been observed in the Pheu sepulchral cave on Maré, dated 1680 +/– 120 A.D. (Lv 483, 270 +/– 120 B. P., Dubois n.d.: 21). Hartweg (1950) provides a map and description of the funerary site, a small cave with two entrances containing the remains of several adults and subadults. Of particular interest is a burial pit located at the back of the shelter, perpendicular to its axis and main entrance, oriented east-west, and protected by a low wall. The excavation exposed the complete skeleton of a male adult in a fully extended supine position. To the west, the skull was under a pile of stones and turned towards the south and the second entrance intentionally closed up with stones. Near the knees of the adult was the skull of a four-year-old child.

Other undated but prehistoric funerary structures have been observed on the Walpole central plateau (Anonym in Sand, 2002b, 2004). They consist of mounds-like graves formed with various kinds of coral blocks. One particularly large (4m long) one is surrounded by a large, walled enclosure. Such elaborate funerary architecture was unknown in other New Caledonian regions (Sand, 2004), though various cairns or funerary stone-mounds have been described, for example, on Ilot Vert (Frimigacci and Siorat, 1988).

EUROPEAN CONTACTS ROCKSHELTER BURIALS

Rockshelters, caves and crevices in karstic areas of the Loyalty Islands and Grande Terre were frequently used for mortuary purposes at the European contacts period (fig. 6). For example, they constitute about 25% of the cultural sites recorded in the Wetr district on Lifou (Sand et al., 1999). The deceased were placed on ledges or in cavities in cliffs along the coast. In the most recent of them, it can still be observed that bodies have been wrapped in mats and extended on pieces of canoe, raft or wood platforms, while large, decorative door-frames may have been used at Ouvéa (Sand, 1995a and b; Sand et al., 1994; Valentin and Bolé, 2001). Wooden poles used for body transportation were left in situ. A possible connection between the minimum number of individuals, estimated at seven, and the number of poles, 14, have been detected in a Lifou case (Valentin and Bolé, 2001). Are these poles an indication of shaft use? According to Dubois (1968), such a practice was common on Maré

Fig. 6: View of a funerary rockshelter in a cliff (Lifou)**.**

during the 19th century. If so, it is noteworthy that this mode of transportation of the corpse is different from that illustrated on an engraved bamboo held at the Geneva ethnographic museum (Dellenbach and Lobsiger, 1939: 338, Pl I), which shows the use of only one pole.

Several rockshelters contain the remains of several bodies which were deposited in the same place over time, at least on Lifou, forming "collective" burials rather than multiple-individual primary interment (Valentin and Bolé, 2001). At least in some cases this funerary mode seems devoted to sex-selected bodies. A female ossuary is mentioned on Maré (Dubois, 1968) and a Lifou rockshelter contained mainly elderly male remains (Valentin and Bolé, 2001). Single burials are also observed, containing a deceased that may have been selected according to his or her status. This was the case on Maré during the 18th and 19th centuries, when chiefs were buried separately from the rest of the population (Dubois, 1968). In most cases, these places show scattered bones owing to various agents of disturbance, including more recent re-placement of selected bones to increase their visibility and the sacred nature of the place. Similar behaviors of the present day populations exist all over the Pacific Islands (i. e. Anton and Steadman, 2003). Thus, the distinction between primary and secondary burial is rarely firmly established but both situations are known. Secondary burials are attested by skull deposits in various localities of Grande Terre (Bourgarel, 1865; Leenhardt, 1930: Pl XXI; Sarasin, 1917; Vieillard and Deplanche 2001 [1863]) but not in the Loyalties.

Some rockshelters contain articulated skeletons which sometimes present the remains of dry ligaments maintaining some joints. Natural mummification process was observed in the Loyalty Islands, as on Lifou for example (Bonnafont, 1871). After a century in place according to oral information, naturally-mummified bodies from Lifou are still supple and fat, and still have nails and hair (Valentin and Bolé, 2001). But, on the other hand, artificial mummification is known from the north of Grande Terre, as exemplified by the Faténaoué site (Voh region, Leenhardt, 1947). Located on top of a karstic peak, the small shelter containing the mummified remains has two openings for air circulation. The wider, facing south-west, is partly closed by a low wall protecting human remains including two well preserved mummies of adults. Facing south-west, they are in a crouched position with the limbs against the chest, and bound in a basket made from vegetable matter (fig. 7). Constriction of the shoulders suggests that bodies were tightly tied (Valentin et al., 2001). Shelter characteristics and body position may have facilitated corpse preservation. However both bodies show a lack of hair and nail, with very dry, hard soft tissues containing little fat, but no evidence for evisceration or brain removal. This evidence is interpreted as a result of artificial treatment like fire and smoke curing and/or sun exposure. This bioarcheological result accords with the mummification protocols described in oral traditions. Analysis of a bone sample indicates that one of these two adults died between 1888 and 1916 (following a forensic technique). However, the practice may be more ancient than that, as suggested by the variety of the preservation stages of the remains at the site.

Fig. 7: Mummies of Faténaoué (Voh, northwest Grande Terre)**.**

DISCUSSION

The archaeological data presented in this paper provide an overall view of the physical aspect of the burials in New Caledonia before Christian times. This sample reflects an astonishing diversity of behaviors depending of the time period and the geographic location, Although necessarily imperfect and incomplete, it allow nevertheless to underline a series of characteristics of cultural and social significances, and short and long-term transformations of the practices over time.

a. Cultural and social significances

The presented data shows variations in the sepulchral location, in the mode of deposition, and of the body treatment as well as age and sex-related variations. Beyond different categories of bias (recovery bias associated with the site visibility in the landscape; bias of preservation of the burial correlated with the mode of deposition and to the body treatment; modifications of the initial patterns by various taphonomic processes and later human interventions), these variations reflect some of the choices in terms of disposal of the dead (Sprague, 2005) adopted by the New Caledonian past communities.

New Caledonian prehistoric funerary sites were located in various parts of the landscape, from the seashore to the tops of mountains and from sand dunes to karstic relief. Bodies were placed on ledges in cliffs, in crevices and in rock-shelters. The burials consist generally of single-interment, sometimes gathered together in burial-grounds. Multiple-individual primary interment, in which the bodies were deposited simultaneously, have not been identified, but true "collective" burials in which single primary interments are emplaced successively, disturbing previously decomposed bodies (Duday et al., 1990; Masset, 1997), may have been used particularly in the Loyalty islands. Both primary and secondary modes of deposition are known while secondary deposits sites have never been bioarchaeologically studied. Two kinds of body treatment have been identified: inhumation —in-ground and above-ground- and mummification, expressing a purposeful influence on the body decomposition timing. Primary interments display two kinds of body positioning, with a preference for flexed positions. The seated position was frequently used while the extended position appears uncommon. In some 19th century cases, bodies appear wrapped in or bund with vegetal material and sometimes placed in containers like canoes. The use of body wrappers may have existed in earlier periods, however taphonomic observations (as recommended in Duday et al., 1990 and Duday and Guillon, 2006 for example) are insufficient to archaeologically ascertain this practice and to evaluate its extension. These treatments were applied to subadults of various ages at death, including very young children, as well as to male and female adults. If all population components seem concerned by funerary rituals, age and sex-dependant selections appear in some recent burials sites of the traditional Kanak cultural complex while others sites seem devoted to a group in general.

Some suggestions could be evoked in an attempt to illuminate the motivation of these

choices. The selection of the burial place may be motivated by practical reasons: seashore, sand dune and rock-shelter being inappropriate for other human agencies as the development of horticulture and sustainable habitation areas. On the other hand, rock-shelters, ledges in the cliff may have been chosen because they constitute interesting locations for exposure of the dead due to their visibility in the landscape. This particular choice may express the willing to establish a continuing relationship of the living with the dead. Such a motivation may apply for the end of the prehistoric chronology as it is ascertained by oral information and historical reports for the period of European contact, especially in the Loyalty Islands (Dubois, 1968). The choice of inhumation as body treatment dominates the archaeological record. The driving intention may have been to put the physical remains of the deceased definitively out of sight at least in some cases. However in others, the purpose appears more practical, burying being used as a method to deliver clean bones subsequently used in other activities including preservation/curation, and even veneration, of ancestral relics. Such purposes are reported in 19th century accounts (Bourgarel, 1865; Leenhardt, 1930; Sarasin, 1917; Vieillard and Deplanche, 2001 [1863]) and materialized by skulls alignments (fig. 2), sometimes placed on shrines made of piles of stones, protected in a rock-shelter or by a canoe located in sacred places (e.g. Leenhardt, 1930: pl XXI). Exposure of mummies recorded in the last prehistoric period can be regarded as following the same general trend. The mourner's intention appears to be in both cases the creation of a relationship between the ancestors and the living using their symbolic presence as media. Seen in a wider context, this use of the deceased may be part of a complex socio-political system aiming to construct the power and authority of the political actors as known in other forms in other Melanesian regions (i.e. Solomon Sheppard et al. 2000; Walter and Sheppard 2000 Walter et al. 2004). The social rank of the deceased is generally assessed on the basis of the abundance of personal ornaments, of associated graves goods, and of the size and complexity of the architectural features. These potential social status indicators appear to be of low significance in the New Caledonian prehistoric case. The graves present similar and simple architectural features; associated offerings or ornament are rare and limited to shell bracelets. However, as already highlighted, age and sex-dependant selections exist in some recent burials sites of the traditional Kanak cultural complex while others seem devoted to a group in general. This may reflect social differentiation at least at the end of the prehistoric chronology. The hypothesis is supported by some ethnohistorical accounts reporting that chiefs were buried separately from the rest of the population on Maré during the 18th and 19th centuries (Dubois, 1968).

However, and beyond the fact that burials recovered by archaeologists are the physical remains of a stage of a funeral program and associated rituals, to approach the cultural and social meanings of funerary rituals using ethnographic analogies is an attractive but uncertain exercise because different communities view their dead in different ways with a similar archaeological result, and because of the influence of temporal factors within a given society. For instance, a study of the funerary practices among the Tandroy of southern Madagascar has demonstrated how dynamic funerary ritual can be over the last two hundred (Parker-Pearson, 2003). And significantly in the New Caledonian case, the comparison between archaeological and ethnohistorical data draws on a possible change in the social

definition of deceased over 1000 years. Some New Caledonian burial sites consist in secondary deposits of skulls. Ethnographers generally admit that this particular treatment was restricted to elders, chiefs or important persons in traditional societies while reliable bioarchaeological data are non-existent. This particular aspect of the social position of the dead seems to have another expression in the prehistoric Kanaks societies of the beginning of the second millennium A.D. Specific treatment of corpses and bones were applied to adolescents during this period. The complex mortuary procedure including the reopening of the pit, the removal of a long bone and of apply the skull has concerned an adolescent at the site of Lapita in the northwest of Grande Terre. Remains of another young people seem to have been used in particular rituals in a site of the Thonghoin region (southwest Grande Terre) (Galipaud, 1997).

b. Changes over time

In fact, the different archaeological examples presented in this paper show that method of disposal of the dead has changed over time in New Caledonia. Complete descriptions of very first settlement burials related to the Lapita period (1050–750 B.C.) have not been published to date for the archipelago. A mortuary feature recently found at the site of Lapita, appears to indicate a very specific tradition, associating the remains both articulated and disarticulated of several individuals in a pit (Sand et al., 2003; Valentin et al., 2004). This type of behaviour echoes observations made on the Lapita cemetery of Teouma in central Vanuatu (Bedford et al., 2006; Valentin, 2006).

Significantly, rapid changes in burial practices can be identified at the end of this very first settlement phase, when the intricately decorated dentate-stamped complex pottery forms disappeared from the scene and family groups started settling the diverse ecological biotopes of the archipelago. Burials tend to be mostly restricted to individual interments in dugout pits, as exemplified from the two burials dated to the first millennium B.C. excavated at Lapita. Interestingly, seen at a regional level, these two burials display limbs positions and resting attitudes observed in other interments regarded as immediately post-Lapita from Fiji (Best, 1984; Pietrusewsky et al., 1997a and b; Nunn et al., 2003), and New Britain (Specht, 1968; Green et al., 1989; Green and Anson, 2000) but not in the preceding Lapita-age burials from Teouma site in Vanuatu (Bedford et al., 2006; Valentin, 2006). However some earlier practices may have been retained as suggested by the presence of a complete pot covering the head of one of the deceased at Lapita that is reminiscent of the skull enclosed in two potteries discovered at Teouma site (Bedford et al., 2006).

Archaeological studies have shown that major changes in material culture occurred in New Caledonia at the beginning of the first millennium A.D. (Sand, 1995a, 2001b). A distinction between the south and north of Grande Terre was in place, typified by the development of two distinctive ceramic traditions: Plum in the south and Balabio in the north (Sand, 1995a, 2001b). This period was also characterised by a marked decrease in exchange between Grande Terre and the Loyalties, which like the mainland had been settled from Lapita times (Sand, 1998), allowing for major linguistic and phenotypic diversifications to

take place during this intermediate millennium of the chronology. The diversity of funerary behaviours identifiable in the first millennium A.D., exemplified by the four cases presented in this paper, can though be simply explained by the dynamic cultural context experienced during this period. They illustrate the diverse funerary behaviours that communities living in various parts of the archipelago adopted to treat their dead. In Tiouandé (Northeast Grande Terre), the current evidence suggests that in-ground interments were made at several times in rockshelters, making this treatment a funerary practice of the first millennium A.D., at least in this region of the north of Grande Terre. Another example is the burial ground of La Roche (Maré, Loyauté), where several skeletons were excavated, revealing some aspects of the funerary practice of a Loyalty community at the end of the first millennium A.D.. Despite the restricted number of burials, the graves' clustering suggests grouping of the dead in the same area and the use of a cemetery in which people were interred with standardised modes of grave construction and body positioning. At La Roche burial-ground, corpses were apparently not systematically placed in a pit but directly on the coral substratum, then buried under a small earth mound covered with a layer of gravel. Definitive inhumation seems to have been made with codified gestures, including body hyperflexion, that were not sex or age-at-death dependent.

In this intermediate period characterised by a diversification of cultural behaviours, archaeological records have been able to show that, in addition to primary inhumations, there were also human remains in secondary situations. Handled ceramics of the Plum tradition (Sand, 1995a), that were used during the first millennium A.D. in the Loyalties and the south of Grande Terre, are known to have been found in burial sites or to have contained human bones (Avias, 1950; Galipaud, 1988; Sand, 1995b, 1996b; Sand and Ouetcho, 1993). This has two cultural implications. First, the handled pottery used in cooking contexts can also have been used in mortuary contexts. Second, disinterment and handling of human remains were practised in the Loyalties and the south of Grande Terre during this time. This practice may be related to ancient shared traditions that were maintained after interaction and exchange became attenuated during this time period (Sand, 1998). It merely emphasises the conservative nature of some funerary practices and of the bone curation, changing over time slower than other cultural attributes.

The dynamics underway during the first millennium A.D. led at the turn of the second millennium A.D. to the emergence of a specific "traditional Kanak cultural complex", forming the basis of the cultural behaviours observed in the late 18th century by the first European sailors coming ashore on Grande Terre. This period is identified by a set of changes including general intensification of horticulture, the establishment of large permanent villages on Grande Terre, and the appearance of distinctive new items of material culture such as Nera and Oundjo pottery styles in the south and north of Grande Terre respectively, "hache ostensoir" (ceremonial axes) and new forms of Conus and Trochus shell armbands. During this last millennium before European contact, burial practices appear very diverse, encompassing mummification of bodies, display in rock-shelters and inhumation in pits, sometimes with reopening of the grave to remove some bones. These archaeologically-identified corpse treatments are also documented by traditional as well as ethnographic

information. For example, the case of exhumation discovered at Lapita has parallels with ethnohistorical records that described the use of a multistage funerary protocol in 19th century Kanak society (e.g. Lambert, 1901; Leenhardt, 1930, 1947; Godin, 2000). The first stage of the ceremony described in early European accounts (Glaumont, 1888; Lambert, 1901; Vieillard and Deplanche, 2001 [1863]) was illustrated by Verguet (1847: fig. 30) after a visit in the Pouébo-Balade region in the northeast of Grande Terre. To highlight the diversity of practices and the need for more archaeological work on this topic, it is worth noting that the practice of using ceramic pots as containers for human bones, recognized for the first millennium A.D. but not yet recorded for the traditional Kanak period, is known through ethnohistorical records from the north of Grande Terre for the 19th century. Mary Wallis who was in the Pouébo-Balade region in September 1852, describes a ritual associating human remains and cooking vessels (Routledge, 1994: 136).

CONCLUSION

These different data on the treatment of the dead in prehistoric New Caledonia may be summarized by highlighting that a social and cultural dynamic, combined with the progressive settlement of diverse ecological and geographical landscapes, has, over the long term, allowed, in this southern Melanesian archipelago, to develop multiple funerary traditions. Innovations over time are evident, and regional influences might also have been at play in some instances. Although difficult to show though archaeological data, the progressive diversification of burial practices may have been influenced by evolution of the beliefs and cultural ideas about the status of the deceased.

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新喀里多尼亞（美拉尼西亞南部）史前墓葬回顧

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多樣性的墓葬地點與遺體處理方式是新喀里多尼亞距今約 3000 年間墓葬的主要特點，舉凡從 Lapita 文化叢到傳統的 Kanak 文化叢皆屬之。現今發現最早的墓葬年代是在該群島早先一批移民在最後一階段所留，發掘的位置是在 Foué (Koné) 的 Lapita 遺址中。除了像是露天葬或放置於木划的海葬方式外，傳統的土葬仍舊在往後的兩千年間被使用著。傳統的土葬大多是暫時的過程，通常仍會進行二次葬，這種現象即如公元 2000 年初所挖掘的結果，是屬於 Kanak 文化叢早期的文化表徵。發掘出的遺骸並非系統性的遂漸腐壞，有時會經過人為防腐的處理。本文依時序架構回顧現有的考古文獻，並呈現此地先民墓葬習俗與時變遷的文化與社會意義。

關鍵字：新喀里多尼亞、考古學、墓葬方式、人骨遺留、太平洋