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THOSE MYSTERIOUS MOUNDS ARE FOR THE BIRDS

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"Tumuli" or "mounds" in New Caledonian prehistory have for some decades posed a problem in interpretation for archaeologists. Theories suggested over the years have been numerous and include the following:

1. a stellar/solar cult - Avias (1949),
2. cultural origin - undated - Golson (1963),
3. "earlier - perhaps much earlier - inhabitants ...who built tumuli of concrete and coral lime" - Brookfield with Hart (1971:78),
4. natural formation - Frimigacci (1977:27),
5. "by 10,000 years ago, a non-Austronesian, aceramic, pre-Neolithic, tumuli-building people were in Island Melanesia, on New Caledonia and Île des Pins" - Shutler (1978:222),
6. burial mounds - Frimigacci and Maitre (1978), Frimigacci (1979:21-24); see also Golson (1963),
7. construction by now extinct megapodes - Green and Mitchell (1983:24).

In 1983 the situation regarding these mounds was thoroughly reviewed by Green and Mitchell (1983:22-31). At the time they (1983:25) concluded

"that the range of sites lumped under the tumulus or mound category is very broad indeed and may represent neither a single functional type nor a single time period. Some, in fact, are probably natural in origin, others burial mounds, and yet others of unknown function and uncertain origin".

One problem they identified was that "it seems necessary to continue attributing at least some of these tumuli with their cylinders and other features to human activities, as they provide a range of evidence not easily explained by any set of natural events" (Green and Mitchell 1983:30). Recently, however, the "natural events" explanation has become a much more plausible proposition. I refer here to what seems to have been a sub-rosa "oral tradition" of some years standing among a number of anthropologists from the University of Auckland including those responsible for the excavation of some mounds on the Île des Pins. The view was that many of the mounds may have been constructed by a now extinct megapode, though at the time no such bird had been identified from either the Grande Terre or Île des Pins of New Caledonia.

Over the years I have found it difficult to track down an origin for this particular interpretation of the mounds. Recent publications sent by François Poplin to Ralph (Prof. R.N.H.) Bulmer (and passed on by him to me for information along with a note), however, have suggested a solution to the puzzle. The 1959-60 archaeological survey of the mounds in the interior of the Île des Pins and the excavation of three examples by Jack Golson (1963) and a group of people from the Department of Anthropology of the University of Auckland (including Wal Ambrose) promoted much discussion of their possible interpretation. Certainly, in my experience, Jack Golson, having identified postholes in association with "concrete" central cylinders in the excavated mounds has always tended to favour a cultural origin for them. Yet, in 1960, Ralph Bulmer apparently on the basis of his knowledge of megapode behaviour half-jestingly suggested to Golson and Ambrose that the mounds might have been made by birds (personal note: 11 April 1988). This discussion appears to have been remembered and taken increasingly seriously by Ambrose, for it was from him in the 1970's that I learned of this as one possible interpretation of the mounds. Moreover, by then another archaeologist had mistakenly attempted excavation of a megapode mound in Papua New Guinea thinking it might have been a site of cultural origin. So taken was I with Ambrose's arguments, that I began to use them in lectures on this topic in the Oceanic prehistory course at Stage III at the University during that period. Students always seemed intrigued by the debate over the possibility of a now extinct megapode making the mounds versus the preferred one of cultural origin for them. Moreover the possible megapode origin of the mounds was taken up with interest and further developed at that time by Richard Cassels who one year sat in on the class. Our thinking was bolstered by the known distribution of the megapode today in the Pacific which permitted one to suggest it could have been present in New Caledonia in the past, particularly as bones from this bird had begun to turn up in islands where it was previously unknown, such as the Reefs, Tikopia, and Fiji (Green 1976:256, Kirch and Yen 1982:125, Best 1984:531). Also "giant" megapodes of *Progora* sp. had begun to turn up in Australia and in a Lapita site in Fiji (Van Tets 1974, ms). But there were still difficulties, such as explaining the mysterious central "concrete" cores, the archaeological "postholes", and of course, solid evidence rather than supposition that megapodes once inhabited New Calidonia. Hence this interpretation, while mentioned in our 1983 paper (written some years earlier), did not feature in the formal presentation made there. Referees would probably have rejected such a discussion as being "for the birds". And they would have been right, for a bird was required.

However, it transpires that in the period between 1976 and 1979 bones of an unknown bird were being recovered in the

breccia of the coral reefs of the île des Pins. The bones were initially assigned to an entirely new species of bird, at first formally identified as a ratite, Sylviornis neocaledoniae (Poplin 1980). In form it was compared to the rhea, cassowary, and emu, (especially the latter two) and was said to have been exterminated by inhabitants of the island who now preserved only a mythological memory of it under the name of the Du. By 1983 sufficient other bones had been found to show that some exhibited the characteristic features of the Megapodiidae family in the order Galliformes (Poplin and others 1983). Moreover, a radiocarbon determination of 3470 ± 210 B.P. on the collagen fraction from some of these bones further confirmed the presumed recent age of the bird and supported a view that it had probably been exterminated by the early inhabitants of New Caledonia. A full scientific description of the bird's taxonomic status by Poplin and Mourer-Chauviré appeared in 1985. It was in this latter publication that the hypothesis was first formally advanced that many of the tumuli of New Caledonia were constructed by this giant form of extinct megapode (Poplin and Mourer-Chauviré 1985:95, see also Mourer-Chauviré and Poplin 1985). As they say, it is a hypothesis for explaining the mounds which seems rather more probable than that of human construction.

Within this hypothesis they offer a new explanation for the central blocks of "tuff", "cement" or "concrete". Previously these were described as consisting of samples of calcite cementing haematite ironstone that had formed in situ, which had suggested to earlier researchers that the components were a lime mortar or concrete with ironstone and coral as aggregate (Green and Mitchell 1983:24). In a similar vein Poplin and Mourer-Chauviré describe a sample from a tumulus on the Grande Terre as consisting of altered volcanic rock, debris and calcite globules cemented together by calcite. But they claim the globules are little spheres of calcite which are formed in the soils by the action of microorganisms in rich calcareous solutions. Thus "tuff" blocks are in their view natural productions, not mortar or cement produced by people, because real mortar doesn't have such a structure or constitution (Poplin and Mourer-Chauviré 1985:95). They then put forward the view that the formation of these cores has to do with micro-organic activities from materials brought in by the Du, and that the bird, Sylviornis, constructed the mounds, as do modern megapodes, to incubate its eggs. The basic idea is that living megapodes build sizeable earthen mounds into which they introduce vegetable debris which ferments through microbacterial action thus releasing heat for the incubation of the egg. In their view, the Sylviornis neocaledoniae too must have built tumuli into which they put vegetation and other debris which released heat necessary for the incubation of the egg. On analogy with Australian megapodes they argue that it is the male bird who often builds the tumuli and cares for the

egg over a number of months, at times having to dig cavities to ventilate the vegetative incubator and adjust the internal temperature. On this basis one is able to explain the central "tuff" cylinders and especially those of "bowl" shape. As modern megapode mounds are often reused, Golson's (1963:19-21) finding of successive, but offset, "bowl" constructions in tumuli could also be accommodated within their explanation. They don't mention an explanation for the Placostylus snails that often adhere to these formations, but presumably they could be seen as either adhering to the imported vegetation or perhaps even transported there as food items by the male bird.

Poplin and Mourer-Chauviré (1985:95) do not think it possible at present to put forward a hypothesis on the date of arrival of the ancestral form of Sylviornis in New Caledonia, but they consider the ancestral form was likely to have been capable of normal flight. They also believe that its evolution towards giant size and its loss of the ability to fly took place rapidly, as is known to occur among some (often extinct) birds in Hawaii. Given this thesis it is unnecessary to invoke either very long isolation or a land bridge between New Caledonia and other islands or continents in this part of the world. On the evidence of C14 dates for those tumuli reviewed by Green and Mitchell (1983:25-30), anything within the range 8000 to 3000 B.P. is likely, with an earlier outside figure at 13,000 B.P. With these dates for the mound cores or snails adhering to them, and the date on the bones in the 3000+ year age range, it seems probable that the bird had been in New Caledonia for four or five thousand years, where it had developed its giant size and flightless state. It then disappeared shortly after the time human inhabitants first entered New Caledonia.

Are we about to find the equivalent of the New Zealand "moa-hunters" in the "giant megapode hunters" of New Caledonia? So far such megapode bones have yet to be found, or at least reported, from Lapita or Podtanéan middens. But few archaeological sites have yet been dug there in which a range of birds known to have gone extinct in New Caledonia (Cassels 1984, ms) have been reported, though as Diamond (1985:761) notes there is now evidence on the Pacific Islands of Henderson, Hawaii, New Zealand, Fiji, New Caledonia, and the Marquesas that "the first arrival of humans, Polynesians or their ancestors, was followed by a wave of extinctions similar to the ones that Europeans caused when they first reached islands of the Atlantic and Indian Oceans, and that followed the Indonesian occupation of Madagascar". (See also Kirch and Yen 1982:349 for Tikopia.) Somehow there is a kind of appeal in the notion that ancestors of those Polynesians who arrived in New Zealand to take up moa-hunting, may previously have been involved in giant megapode hunting in Fiji and New Caledonia.

More importantly, this explanation removes from strong consideration the view of those who have maintained that human occupation of New Caledonia may have taken place prior to the Lapita and Podtanéan style horizons beginning some 3500 years ago.

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