THE ARCHAEOLOGY OF BELIEF:
STRUCTURALISM IN STRATIGRAPHICAL CONTEXT

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I sent a draft of this paper to Ralph Bulmer for comment early in 1988, after it had been read in what turned out to be a controversial departmental seminar.1 His reply began,

"Doug,

You know how ignorant I am in matters Maori & Polynesian. But . . ."

There followed a lucid critique of what Ralph very generously termed "The one dimension the paper doesn’t touch . . .". Although Ralph was ill even when he received the manuscript he signed off, "Thank you indeed for sending it to me . . .". I offer this paper as my tribute to Ralph Bulmer who was by any measure a very fine anthropologist, and an extraordinarily knowledgeable man.

INTRODUCTION
The theory of prehistoric archaeology currently practised in New Zealand is firmly in the grip of environmentalism and assumptions of the primacy of "practical reason", in the sense in which Sahlins (1976) uses that term. This has a number of detrimental consequences. These include an absence of systematic research into sociocultural change and a strong tendency for explanations of almost anything prehistoric to be based on "density dependent processes" (Kirch 1984:13-15, 114ff; examples include Anderson 1982; Davidson 1984; Irwin 1985; Leach 1981; and Sutton 1986). A major epistemological shift towards recognition of the primacy of culture is overdue.

I begin from the notion that "the world of the adult [is] mediated by meaning and motivated by values" (Longeran 1980:31). Therefore, if one wants to understand that world as it exists or existed in a particular society the delineation of meanings and values is the objective of investigation. Within a particular culture, and in the study of particular culture, "one can rise to full stature only through full knowledge of the world . . ." (Longeran 1980:34). As Collingwood (1939) pointed out over forty years ago this commits the archaeologists to the study of the meanings of past cultural events (see also Hodder 1986 and for a spirited review Binford 1988).

TOWARDS A METHODOLOGY
In searching for a methodology I turn to Ricoeur’s (1977) view that the hermeneutical circle consists of two parts. The first of these is a movement of investigation from the whole to the part, termed the “descending analytic” or the “archaeological moment”. If one is to construct the whole and its values from the delineated parts this downward movement of analysis must be complemented by the second element which is upward movement of interpretation (Olson 1980:101).

This suggests a research design for the archaeological interpretation of cultural structures:
1. selection of an appropriate body of evidence.
2. deconstruction of that evidence to identify its elementary parts. When that is done, downward movement of analysis, in Ricoeur’s (1977) terms, is complete.

3. The upward “movement of interpretation” involves identification of order in the elementary symbolic parts. Order here is multifaceted. It has two separable meanings which exist as an hierarchy of operations. First, order refers to systematic arrangement, as in a grammar, code or tonal structure; that is, an overbridging organisation which allows cultural sense to be made of the parts. Second, order here refers to a set of beliefs which this comprehensible structure represented or evoked. This set of beliefs can be expected to have mediated and, to a degree, ordered social action. Therefore order, as used here, refers to the instrumental and reproductive dimensions of the symbolic structure.

This paper reports an application of that approach. It is based on data reported elsewhere (Sutton 1990, Sutton (ed.) 1990, n.d.a,b). My primary objective is to construct a dated template of cultural structures present in late precontact and early historic northern Maori society. This is done by documenting the phylogeny of the Maori whare whakairo, or ‘meeting house’, which is often carved and always central to the modern marae complex, over 500 years; pre-1400 to 1900. Emphasis is placed on clarification of form, symbolic content, context and scale.

Selection of the evidence

The evidence is drawn from the mapping and areal excavation of late precontact undefended household settlements (kainga) and fortifications (pa) at Pouerua in Central Northland, New Zealand (Sutton 1985), Figure 1. Kainga and pa are known to have important symbolic aspects (Best 1916, 1927; Phillipps 1955; Prickett 1982). However, archaeological study of symbolic aspects of Maori settlement pattern evidence has been limited to date (Prickett 1982; Marshall 1987a; Sutton n.d.a,b).

Field research at Pouerua 1982-1985 (Sutton 1985) was designed to redress this imbalance. Interpretations of the patterns defined during the excavation of kainga and other sites at Pouerua were made, where appropriate, on the basis of the fundamental dichotomies which occur in Maori cosmology. The Maori mythical realm is very much concerned with tension between and separation of the sacred (tapu) and the uncontrolled or dangerous (noa) (Salmond 1978). Behavioural and material entities which could be associated with one or other of these poles were identified from the historical literature and evidence of them was sought in the excavated sites. They were found to have been treated separately, as categories subject to what are termed by the author ‘first order separations’. Physical separations between locations and activities associated with each of these categories were deliberately made in three dimensions; two in plan and one in elevation.

THE EVIDENCE

Dwellings within kainga and pa at Pouerua vary in size, composition, contents and form. However, the apparent variation can be reduced to a total of four clearly indicated dwellings types. Definitions of these types are fully documented in Sutton (ed.) 1990)). The Type 1 dwelling was the only one with consistent form and relationships.

Dwellings types 1-4 have ‘special relations’ which include the following: (1) Type 1 houses are always the most elevated houses in the multidwelling kainga and every kainga has at least one; (2) These most elevated houses are consistently oriented with respect to magnetic north, whereas lower houses point in all directions, apparently as physical context required. They diverge from the alignment of the most elevated house. This may have been a deliberate feature; (3) Lower houses include all the types 2-4. They tend to be irregular in their proportions, and quite roughly built; (4) Cooking areas and food storage structures, whether on the kainga or nearby, always occur to the rear and right of the most elevated house and nowhere else. By contrast, the spatial relations between lower houses and evidence of food preparation and storage are very inconsistent indeed; and, (5) Whether in complex or single dwelling kainga Type 1 dwellings are always on a made terrace which includes a clean and carefully curated flat open space built in front of the house. It is diametrically opposite the food preparation area in terms of its location, contents and form. Lower dwellings lack such an open space in front.

The Identification of Elementary Parts

The variables which define the house types discussed above are: length and breadth in ground plan and the ratio of these two measurements; presence/absence, form and location of the hearth; length:breadth ratio of the hearth; presence/absence of a porch; depth of the porch expressed as a proportion of the length of the dwelling; position of the door; alignment of the side walls (parallel, diverging to the front or to the rear); the rank order of posthole sizes; orientation with respect to magnetic north; dwelling elevation and height of the gable. The last is calculated using a method described in Sutton (ed.) 1990: Appendix 3). Each of the house types defined is a semi-discrete subset of these variables.
Figure 1. Location of Pouerua, from Brassey (1985: Figure 1)
However, we are dealing here with something much more meaningful than the post hoc construction of types on the basis of Boolean subsets of traits or characteristics, considered arithmetically. Type 1 dwellings warrant ‘iconic analysis’, following the methodology developed by Watt (1966, 1967) and first applied to Oceanic material culture by Mead (1968). Features within those dwellings coexist within a system of rules, although exceptions do occur. Once these rules are discovered they can be used to infer “cultural relationships and ... the reconstruction of protoforms” (Mead 1968:39). For Mead (1968, 1972:726) iconic analysis of decorative forms was closely akin to linguistic research in that “proto-vocabularies” of design could be generated on the basis of “cognate forms and their distributions”. Iconic analysis is applied in a modified form within the present study.

The initial task is to identify “minimal and oft-recurring elements which make up a decoration” (Mead 1968:39). The Type 1 dwelling is a design field (Mead 1968, 1972; Mead et alia 1973), in which design elements were arranged purposefully within and because of a context of symbolic meaning created by the order of their juxtaposition. Five of these elements can be identified. Each of them is a composite artefact, being made of two or more parts.

First, the form of the house is defined in plan view outline by its side walls. These set the perimeters of the design field. Therefore, the fact that the side walls tend to diverge to the front (Sutton (ed.) 1990) is significant.

Second, the most systematic other feature of the perimeters of these dwellings is the doorway. Doorways in the Type 1 houses are defined by four characteristics: (1) number of doorways present: there was only one; (2) position: it was always in the mid-line of the body of the dwelling and at the front; (3) height: historical sources suggest that doorways were typically set low in relation to the height of the midline (Prickett 1982); and (4) width: doorways were always narrow.

Third, the consistency with which the front central post is the thickest post present in each Type 1 dwelling and the tallest of all the front central posts present in a kainga suggests that this was a deliberate feature, which ought to be considered as a design element for the purposes of interpretation.

Fourth, dwelling length is typically greater in Type 1 dwellings than in those with which they are surrounded. I suggest that this is another potent design element.

Fifth, the hearth is a composite design element. The disaggregation of its parts from the whole may be as follows: (1) number: there is only one location for fire in the Type 1 dwellings;4 (2) location: fireplaces in the Type 1 dwellings were always located in, or very near to, the centre line of the structure and typically nearer to the rear wall than the front wall; (3) form: fireplaces were four-sided stone-lined hearths made of carefully selected naturally rectilinear basalt slabs;5 (4) the length:breadth proportions of the hearths replicate those of the houses within which they occur (Sutton (ed.) 1990: Table 7.1).

These features occur in dwellings types 2-4, as well as in Type 1 houses (Sutton (ed.) 1990: Tables 7.1, 7.2 and 7.3). However, in types 2-4 they are either not all present or disordered. This suggests that the Type 1 dwelling was the most potent symbolically of all dwellings present, that it was associated with individuals of status or rank. By implication, it was the prototype of the modern whare whakairo. Therefore, the phylogeny of the whare whakairo can be traced over at least 500 years; that is from the date of the earliest Type 1 dwellings at Pouerua to the present day.

The Upward Movement of Interpretation: Interpretation of Cultural Structures

Definitive interpretation of this archaeological evidence is not possible without the meanings of the language, known to the native speakers of that time and place. However, it is evident that certain structures encountered stratigraphically are congruent with structures in Maori myth.

First, the frame of the house restated the myth of Rangi and Papa, the essence of Maori origin and the establishment of order. The front central post may represent the māuri, or life force, defined by Sahlins (1985:62) as “a physical emblem . . . , representing the prestige and stability of the tribal group”.

This representation was common to both kainga and pa. “The pole at the right-hand side of the entrance to a Maori fortification might house the māuri of the place; called the pou reinga, it apparently connected the fort to Hawaiki . . . ” (Sahlins 1985:65, footnote 35).

The front central post represented a tuahu. These were often especially built structures erected on sacred places; that is, the presence of a tuahu sanctified the place and vice versa. In this form the poles of the tuahu had resonances of their own.

The fence or corner uprights of the tuahu are the toko, a term used in the Tane myth to designate the poles propping up the skyfather and meaning as a verb ‘to support’, ‘to push to a distance’ and ‘to divorce’ (Sahlins 1985:64).
This post was at once the practical support for the front end of the gable pole of the house and a symbolic representation of the earth/floor–sky/roof separation. As such it recapitulated the myth of Maori origin. This followed from the sexual union of the male Heaven (Rangi), and the female Earth (Papa). Tane, who was the mythic parent and body of trees (and hence embodied in posts) stood up between the coupled bodies, forcing them apart. His work was completed by the erection of four posts which reinforced the separation, making it permanent. In the interval created by the separation the human offspring of Tane and Tu, the warrior, were able to occupy and own the Earth.

Thus the mana of the dwelling and its occupants is embodied in the front central post and its associations with other design elements. The post is shown forcing and restating the original life-allowing separation. In this context it represents the personalisation and domestication of a generally known and endorsed myth and it expresses permanency of occupation and ownership.\(^6\)

It follows that the establishment of a tuahu or tapu house of the god amounts to the separation of Heaven and Earth on the terrestrial plane itself - leaving the better part of that plane free (noa) for human occupation (Sahlins 1985:65).

The length of the Type 1 houses may reflect their relationship to death and passage after death. The fact that Type 1 houses are typically the longest of the settlement in which they occur may be explained as follows. The dwelling is a body in form. The roof beams, at least, may represent the ribs of the body, while the gable pole represents the spine, often decorated in the form of a serpent. The length of that spine expresses the stature of the body form, and hence of the dwelling. It evokes the sense of stature and strength and may have affected the ability of the deceased associated with that dwelling to reach Reinga, which is the first essential destination on their voyage to Hawaiiki, where they will rest. The consistent directional orientation of the excavated Type 1 houses at Pouerua may well also reflect this aspect of the mythic function of those dwellings.

In the terms of the analysis offered here the doorway was the vaginal entranceway to the body of the dwelling and typically set between diverging side walls. Carved lintels (pare) placed over the doorway and "thresholds or doorsills" (paepae) (after Williams 1975:245) often featured fearsomely carved vulvae (see some Taranaki examples in Figure 2; also Day 1983: Figure 27, and Endnote).\(^7\) One vulva was commonly positioned in each carving just as the doorway was positioned in the dwelling; low, central and between diverging thighs. These diverging thighs appear in the ground plan of the Type 1 dwellings as divergent side walls.

In the action of entering the house the association of vaginal entranceway with the body of the dwelling caused the actor to reiterate the myth of Maui who, in a vain attempt to win immortality for mankind, on return to the womb was crushed to death in the vagina of the ancestress-guardian of the underworld (Best 1925:763-7;944-8). Those entering the dwelling re-ran that primeval risk and, if saved from the mythical fate, were so delivered from it by the tangata whenua, the people of that place (see Jackson's (1978:52-3; 55-60) consideration of the place of origin myths in the configuration of carved pare).

The symbolism of the dwelling emphatically separated inside from outside, and the stranger from the intimate. The transition from outside to inside could only be achieved with the help of the tangata whenua. Therefore, the form and symbolism of the dwelling constituted a boundary the negotiation of which depended on the goodwill of the residents.

The interpretation of the hearth is as follows: fire in the dwelling represents visceral heat (violence, passion, et cetera) in the human body. Therefore, the fireplace was positioned in the central line of the dwelling, rather than off to one side. Visceral heat is vital to life, on the one hand, and dangerous because of its potential for destruction, on the other. Consequently, it was placed at some distance from the entranceway which is the female genital feature of the house. This reflects the Maori belief that the sex act and the female genitalia are dangerous to man (Best 1924). Because of the dangers of unrestrained visceral heat a circumference and boundary was constructed around the hearth. The particular need to make the expression of heat compatible with the forms of domestic and social life was met when the boundary form of the hearth recapitulated the form of the dwelling in plan.

Finally, the front of the Type 1 dwelling recapitulates and amplifies the anthropomorphic form. This appears to be an elaboration of the stick figure form which is widespread in the Pacific. It has been found in a composite Lapita motif from Mussua (Kirch pers. comm. 1988) and in Lapita contexts elsewhere (Best 1984: Figure 3.39, 3.40; Green 1978: Figure 3). It is found on a range of artefact types in New Caledonia, including rock art (Frimigacci and Monnin 1980). It is found in most areas of eastern Polynesia, including the Marquesas (Handy 1938), Hawaii (Cox 1970) and Pitcairn (Riddell 1972: Plate VII and VIII). It is also represented in the rock art of southern New Zealand, where examples of an "Early Style" have been dated to...

In Type 1 dwellings the form is made up of:
1. the head (apex of the front central post, often carved in historic examples (Prickett 1982)),
2. the vertebral column (the trunk of that post),
3. the genitalia (formed in the simplest case by the doorway, which was placed in or near the centre line of the dwelling to form this design feature, and sometimes “re-presented” (Oliver 1980:79) by the carved vulvae of pare (Jackson 1972) and paepae, also placed in the centre line of the form),
4. the arms (formed by the facing boards or maihi), which are often carved in historic and contemporary examples (Prickett 1982).

The front of the uncarved Type 1 dwelling is amongst the oldest identified anthropomorphic forms in Maori material culture, given the antiquity of that dwelling. Allomorphic forms can be seen on pendants from the mid-late prehistoric period (Skinner 1932, 1966) including the hei tiki, and in innumerable carvings, including those of the modern period (Neich 1983).

In carved examples of the Type 1 dwelling the anthropomorphic form of the front of the house is represented by the centrally placed miniature figure, carved on the lintel and, sometimes, on the pataka threshold (see Figure 2) and on the external surface of a pataka door (Figure 3).

The anthropomorphic form was dramatically amplified in carved Type 1 dwellings by manipulations of scale and perspective. The lower limbs of the form were represented by divergent thighs, in either realistic, replicated or stylised forms, in the carved lintel or threshold. If realistic representation of body proportions is maintained, as it commonly is in late prehistoric Maori carving, then the upper body and limbs were those of a huge and fearsome, mythic creature.

It appears to be true that the Type 1 dwelling was a human body in form from each of several perspectives, that this form stated a boundary, and that the action of entering the dwelling evoked a mythical narrative, which restated Maori ontology while the construction of the dwelling expressed Maori ontogenesis.

Even at their simplest and least decorated, Type 1 dwellings contained a symbolic grammar or code which allows cultural sense to be made of the parts. The elementary parts of this code connote a set of beliefs which this comprehensible structure evoked. Foremost amongst these was gender separation, which was fundamental to both ontology and ontogenesis.

MEANINGS IN PROCESS: THE ORIGINS OF PA AND THE MODERN MARAE

In what follows I define changes which occurred over time in northern Maori settlement patterns. These consisted of increases in size and density of settlement and of “decoration”, combined with manipulations of scale and perspective. However, there is a remarkable structural continuity throughout the entire process. This explains the forms and, although less clearly, the functions of elements of the settlement pattern.

Kainga were probably first constructed at Pouerua about 1300 A.D. A few of the kainga were extended and fortified after about 1450-1500, forming small pa. These included N15/44 and N15/261. By 1600 the central pa was fortified (see Sutton (ed.)1990, n.d.a,b). Pa at Pouerua contain the same proxemic and
symbolic structure as the kainga. Of course pa are far larger than kainga but the most salient differences between pa and kainga concern the ways in which boundaries around and within these site types are made. In pa the first order separations between opposed areas and features are made very dramatically, by the use of earthworks and several forms of enclosure or boundary construction which occur around and within those sites. In kainga these separations were made on smaller areal and topographical scales.

Four shared elements establish the equivalency of pa and kainga. First, the highest and most elevated areas of the pa (tihi) are the structural equivalent of the most elevated Type 1 house. Lower houses on the pa were built less strongly, had irregular orientations, et cetera. However, the tihi are rectilinear in plan and they are the only areas within the archaeological landscape which share the proportions and orientations of the Type 1 house terraces. Second, tihi of some northern pa (including New Zealand Archaeological Site Numbers N15/5, 44, and 261) have diverging side walls. These were made scarps topped with palisades. Third, these tihi tended to have one and only one especially demarcated entranceway which was positioned, just like the doorway into the Type 1 dwelling, low, central and to the front, which is typically on the north and east of the site perimeter. Fourth, in Type 1 houses there was a rectilinear subarea positioned on the longitudinal centreline at a distance from the front and front entranceway. This was the stonelined hearth. The same form occurs on the tihi. There it is the paramount terrace within the tihi; highest and most "defended" or tightly bounded terrace.

Figure 3. Sketch of Pataka Door Figure, from Day (1983: Figure 8)
Crucial differences between Type 1 houses and the *pa* include elevation, the number and size of the posts, and the scale of *pa* architecture. In *pa*, as in the Type 1 house, these attributes express: "the prestige and stability of the tribal group"; "the *mauri* of the place"; "the strength of its connection to Hawaiki"; "the degree of permanence and ownership", and the size of the area made "free for human occupation" by the forced separation of earth and sky, as symbolised by the great *pou* of the fort.11

This interpretation of the form of *pa* may explain their functions. These were to express the prestige, stability, and permanence of the tribal groups which claimed them and to express *mauri, mana* and permanence of ownership. *Pa* made the areas they overlooked free for occupation, by members of specific tribal groups. This suggests that they were first built as and because the need for stability of place and position increased. This need apparently arose with the formation of larger and more bounded social groups than had existed before. Sissons, Wi Hongi and Hohepa (1987) have shown that a process of consolidation of *hapu* occurred with the Inland Bay of Islands from the 18th century. The archaeological data reviewed here indicate that that process began earlier and that it led to the construction of *pa*, as central symbols. *Pa* were built at Pouerua after approximately 1500 A.D. (Sutton n.d.a,b).

Precontact Northern Maori settlement patterns consisted of a "recursive replication of the same modular structures" (Turner pers. comm. 1987). The most salient characteristics of the settlement pattern are the continuity over time of structural forms and the fact that these forms are expressed at and shared by all levels of the hierarchy. This is a reflection of the origins and operation of precontact northern Maori society, as discussed elsewhere (Sutton n.d.b).

In early historic times the marae complex was separated from *pa*, expanded again and transformed to become the modern meeting house complex. As such it retained the proxemic organisation of the ancient *kainga*. In its last form as the modern marae that structure was again built in an undefended situation.

As the loss of land proceeded the *whare whakairo* took on the loaded symbolic content that it now bears. This occurred as symbols formerly located in the landscape were miniaturized, or "condensed" to use Jackson’s term (1972), and placed within the houses.12 It is important to note also that changes in the size and shape in three dimensions of the meeting house which occurred in large part after European contact made the meeting house much more similar to the form of the *pa* than it ever was before.

Here I suggest that the modern meeting house is a replication in form and several basic symbolic aspects of the precontact *pa*. The proxemic structure common to both the modern marae and the *pa* is also found in the *kainga*, which is the ancestor form of both marae and *pa*.

Barlow (n.d.) has written that,

In modern times, the concept of the Whare Whakairo has been extended to include tribal territories. For example in defining the boundaries of Ngapuhi-Nui-Tonu, the ridge pole of the territory extends from the Poumu at Tamaki to the Pouuaronga at Te-Rerenga-Wairua in the far north. The ribs of the house extend into the boundaries of Te Aupouri, Te Rawara, Ngati Kahu, Nga Puhu and Ngati Whatua. The Poupou which extend to the heavens above are the famous mountains like Maunga Piko, Te Ramaoroa, Maunga Taniwha, Te Rakaumangamanga and Titirangi which are contained within the territory. The Papararo or floor of the house is called Te-Hiku-o-te-Ika-a-Maui. When one enters into these territorial boundaries one is said to enter into the sacred house of Ngapuhi-nui-tonu, and therefore, they come under the influence of the gods and customs belonging to this tribal group.

In this context the *whare whakairo* is a map of tribal territory, as defined by boundary landmarks.

The physical size of the house within the marae complex increased dramatically within a rather poorly defined period which included approximately the last two hundred years of the prehistoric period and the interval between European arrival in 1769 and at least the first half of the nineteenth century.

Large houses, commonly and in many cases inaccurately named "chief's houses" (Prickett 1982), increased in number and size as part of the individualisation of Maori property and of the *mana* of the chiefs which occurred in historic times, as outlined in part by Parsonson (1980).

It is clear from the Sissons, Wi Hongi and Hohepa (1987) reconstruction of Nga Puhu political history that major conflict within the inland Bay of Islands, dated approximately to the close of the eighteenth century, resulted in a reduction in the number of distinct subtribal groups which were present in that region. The population of each of the *hapu* present within the region very probably rose through this process of *hapu* consolidation and combination, especially if it occurred prior to the arrival of the new acute contagious diseases (Sutton 1986).

Therefore, the number of meeting houses in use is expected to have declined steeply and the new houses were much larger than those in either of the prototypical forms for which there is evidence from Pouerua. In addition the dimensions of the new houses differed significantly from the old ones. Five differences are identified here: (1) their ground plan proportions changed from nearly square towards a 2:1 length:breadth ratio;13 (2) meeting house gables became much higher in absolute terms by as much as three fold;14 (3)
meeting house gables doubled in height as a function of the width of the structure;\textsuperscript{15} (4) historic meeting houses increased in length by a factor of at least 3-4 times over the prehistoric examples found in the complex \textit{kainga} at Pouerua (compare Sutton (ed.) 1990: Table 7.1 with data in Firth 1959); and, (5) the social organisation of space within the dwelling became more formalised, as the transition from multi-purpose domestic prototype to the functionally and symbolically specialised meeting house form proceeded.

The form of the meeting house which has emerged from this complex of changes into the clear light of late nineteenth century photography and ethnography is now being termed "the traditional \textit{whare whakairo}".

**CONCLUSION**

Archaeological evidence shows that there are major continuities in the referential symbolism contained within Maori settlement patterns. These can be interpreted because they are congruent with structures in Maori myth. A diachronic view of change in cultural structures, which is available only through the consideration of archaeological evidence, may be essential to the understanding of what went on and why. The contention of this paper is that recognition by archaeologists of the primacy of culture is necessary to the success of our enterprise. The myopic notion that density dependent processes provide a sufficient explanation of sociocultural change is simply not good enough.

**NOTES**

1. This paper was begun during my stay in the Anthropology Department of the University of Chicago, August 1987-February 1988. My thanks are due to Marshall Sahlins, Terry Turner and others there for their generosity. An initial version was read to the Senior Seminar Series at the University of Auckland. Ralph Bulmer, Tony Hooper, Judith Huntsman, Julie Park, Maureen Molloy, Nigel Prickett and Roger Neich provided many useful critical comments.

2. This list of variables differs significantly from those used by Prickett (1982) in his definition of the \textit{wharepuni} Maori house form.

3. Data on post diameters and reconstructed post heights are given in Sutton (ed.) 1990, n.d.a,b).

4. When those dwellings were rebuilt, as on N15/255 (Area I), N15/261 (Area I), N15/5 (Area I) (Sutton (ed.) 1990, n.d.a,b), former hearth locations were flattened, their stones removed and the ash lenses covered over so that only one fireplace would appear in the floor.

5. The author and others tried to find stones of this form on the lava fields at Pouerua, which is the source location as defined by Brassey (1985). They proved very difficult to find.

6. This meaning of \textit{pou} (posts) continues to the present day in the construction of Maori eel weirs (see Marshall 1987b:62).

7. Museum accession numbers, given below each piece shown in Figures 2 and 3, are from Day (1983).

8. It is of interest to note that the anthropomorphic forms in the type 1 frontal house form, carving on dwellings and \textit{he i tiki} all taper to the apex. Groube (1969:457) has argued that "The common \textit{he i-tiki} form is an economical adaptation of one form of wealth (a greenstone adze) into another form of wealth (a greenstone ornament)" and that this adaptation was "accelerated" by European interest in barter for greenstone (Groube 1967:456; see also Groube 1969). However, the present analysis finds the triangular form of the \textit{tiki} to be deeply embedded in Maori material culture and therefore very old. The frontal view of the type 1 house is identified as an ancestral form. It is not present in West Polynesia, where house forms of this kind do not occur, nor are the descendant forms identified here present in the west - whereas all of them are present in the east of Polynesia.

9. Metric sites numbers are given elsewhere for all sites mentioned in this paper (Sutton n.d.a: Figure 1.2).

10. Aspects of the relationship of \textit{kainga} to peripheral \textit{pa} are discussed in some detail elsewhere (Sutton n.d.a.: Chapter 6).

11. In order to make the equivalence of \textit{kainga} and \textit{pa} clear the quotes given in this paragraph are from the discussion of \textit{kainga} offered earlier in this paper.


13. This assertion is based on a comparison of Prickett's (1982: Figure 4 and Table 2) data with the dimensions of houses excavated at Pouerua.

14. This increase can be expressed as the difference between 1.8 metres, which is the highest inferred gable height for the Pouerua Type 1 houses (Sutton n.d.a), to 16-18 feet or 4.8-5.4 metres, as described by Firth (1959:97) for an historic meeting house.

15. Precontact height:width ratios average 1:0.98 (Sutton n.d.a) while those described by Firth for the historic period cluster in the range 1:2-1:2.25 (Firth 1959:97).

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GARDEN BOUNDARIES AS INDICATORS OF PAST LAND-USE STRATEGIES: TWO CASE STUDIES FROM COASTAL MELANESIA

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INTRODUCTION

Although Melanesian villagers still practise a predominantly subsistence economy, there have been many changes as a result of the introduction of new crops and economic pursuits in the last 150 years. These changes, however, have not occurred simultaneously throughout Melanesia. For instance, the sweet potato was introduced into the Highlands of Papua New Guinea some 300-400 years ago, but was only introduced after mission contact in the southeast Solomons. Likewise some communities are today more dependent on