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A Paradigmatic Shift in Polynesian Prehistory: implications for New Zealand

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ABSTRACT

Polynesian prehistory is undergoing fundamental change at present. This paper proposes that New Zealand was probably first settled substantially earlier than A.D. 800 and that it was settled repeatedly, at least until the sixteenth century.

Keywords: PALYNOLOGY, GEOMORPHOLOGY, ARCHAIC, CLASSIC, PARADIGM, ABSOLUTE CHRONOLOGY, ACCELERATOR DATING, PHYLOGENETIC.

INTRODUCTION

Polynesian prehistory has changed dramatically in the last year. The watershed event was the publication of Kirch's *Rethinking Polynesian Prehistory* (1986) which debunked the "orthodox" culture history of Polynesia. This scenario (see Fig. 1) was developed by Sinoto (1966, 1968) and republished with modifications by Jennings in 1979. At the date of first publication and more recently it was the best reconstruction available. It accommodated most of the available archaeological evidence into a simple account of the sequence and chronology of first and subsequent colonisations of the major island groups in Polynesia.

For twenty years (Sinoto 1966 to Kirch 1986), this model encapsulated the accepted body of theory upon which Polynesian archaeology was based. It was our paradigm. Normal science in Polynesian archaeology consisted of extending the knowledge of the facts which this paradigm displayed as particularly revealing and of further articulation of the paradigm itself (after Kuhn 1962).

The paradigm has collapsed. Three causes can be identified. The first is the accumulation of new and contradictory evidence. The second is the re-examination of some established evidence. The third cause is a change of the collective mind about how things worked in the past; specifically, about the degree of interrelationship which existed between islands and archipelagos during Polynesian prehistory.

This paper reviews each of these three causes and considers their implications for current models of New Zealand prehistory. Two radical departures from the currently accepted accounts of the Maori sequence are mooted. First, I suggest that New Zealand was probably first settled between 0 and A.D. 500, not at or just before 1000 years B.P. as is widely believed. [1] Second, I propose that New Zealand was probably colonised repeatedly before *circa* A.D. 1500, rather than being discovered only once by a single group of people.

The first of these propositions is considered against the palynological and geomorphological evidence that has been used to establish or affirm the accepted date of first settlement of New Zealand. The second is considered, although less fully, in relation to current models of New Zealand's early prehistory. The degree of diversity present, particularly in woodcarving, contradicts the assumption of single and late first colonisation. A programme of research is suggested to test whether the landmark pieces form a continuous internal sequence or suggest late introductions of novel stylistic elements. An alternative view of the New Zealand Archaic is advanced which includes rejection of the notion that it has integrity as a phase, in Golson's (1959) sense.

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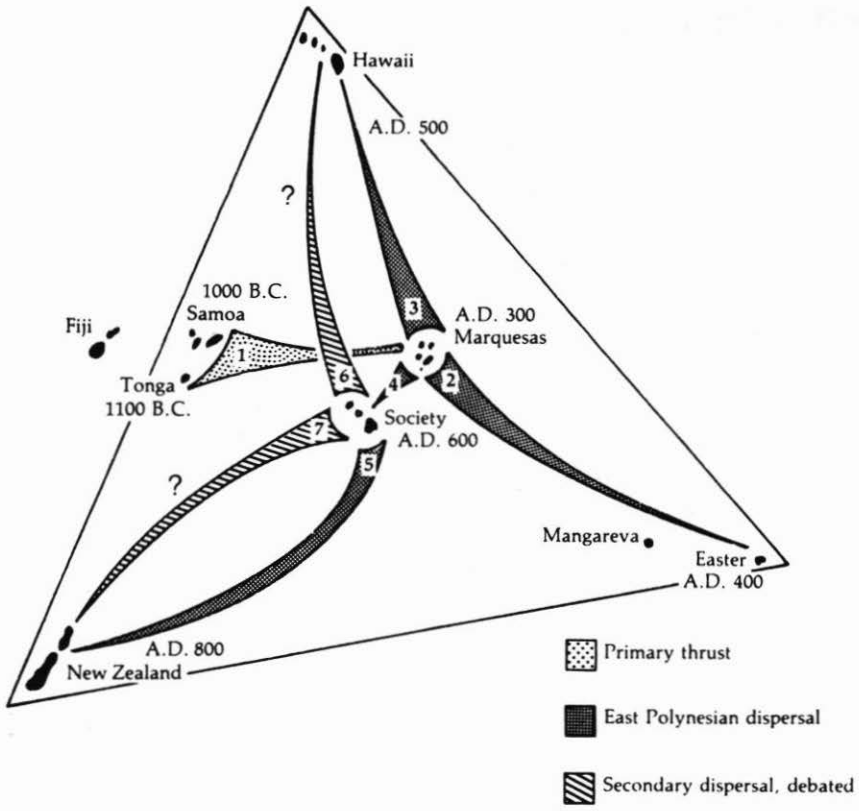

Figure 1: A version of the orthodox scenario of East Polynesian dispersals, after Jennings (1979: Fig. 1.1; reprinted by permission of Harvard University Press and J. D. Jennings).

KIRCH'S REANALYSIS

The critical new evidence cited by Kirch (1986) was:

(i) The chronology of early sites in the Hawaiian archipelago. These are contemporary with and may be earlier than the first settlement of the Marquesas, as defined by Sinoto (1979).

(ii) The artefact assemblages from the earliest known Hawaiian occupation phase (Layer III assemblage from Site 018 on O'ahu and Layer III from Pu'u Ali'i sand dune site (H1) on South Point). These do not contain the diagnostic Archaic East Polynesian artefact types.

Therefore, first settlement of Hawaii was pre-Archaic in so far as Kirch (1986: 31–32) has demonstrated that it occurred from the Marquesas before Archaic East Polynesia developed.

Two pieces of evidence which have turned up since Kirch's paper went to press corroborate his argument against continued use of the "orthodox scenario" (Fig. 1). They are proof that direct canoe voyaging from Samoa to the Southern Cooks is possible (Finney 1986)[2]

and an identification of palynological evidence of first settlement of New Zealand by A.D. 500–600 (Chester 1986).

The established evidence which Kirch (1986) re-examined comprised: the radiocarbon dating of major sites in the Marquesas; linguistic evidence of the proto-Tahitic and Proto-Marquesic languages; and the likelihood that specific long distance voyages required by the "orthodox scenario" actually took place.

Kirch's (1986: 23ff.) reanalysis of the crucial 17 radiocarbon dates from the lower levels of the Hane dune site indicates that

> [Hane] Layers V and VI date to sometime between the late first millennium B.C. and the mid-first millennium A.D. Layer VII, the lowest, remains undated (Kirch 1986: 24).

Furthermore, basal dates for the Ha'atuatua site obtained by Suggs (1961) are corrected by Kirch (1986), after Klein *et al.* (1982) to give ages of 405 B.C.–A.D. 220 and 385 B.C.–A.D. 450 at 95 percent confidence intervals. Recently, Ottino (1985) has reported a radiocarbon date of 150 ± 95 B.C. from a level 3.4 m below the surface in a cave on Ua Pou.

Therefore, Sinoto's (1979) conclusion that the Marquesas were not settled before A.D. 300 is rejected. Reanalysis of the radiocarbon dates permits "the extension of Marquesan settlement back as much as 500 years, to the second century B.C." and, given that the earliest cultural levels have not been dated, "the possibility that the Marquesas were colonized as early as the mid-first millennium B.C. deserves a serious hearing" (Kirch 1986: 25).

Green's (1974) suggestion that there remains an as-yet undiscovered ceramic horizon in the Marquesas is strengthened by these changes.[3]

Further, Kirch's (1986: Table 1) reanalysis of the Hane site indicated that the Archaic assemblage did not arrive there fully formed but that it developed over time with many of the purported diagnostic traits, including harpoon heads, shaped whale-tooth pendants and reels being late within Hane. This will be tested by Rolett's current research in the Southern Marquesas (Kirch pers. comm. 1986).

The linguistic evidence mentioned above followed from work by Biggs (1972) in which he considered the use made of historical linguistics to test or corroborate prehistorians' models of the colonisation of Polynesia. Biggs reacted against the notion that proto-languages of Tahiti and the Marquesas developed *in situ*. He noted that no place of common origin of these two languages could be identified. Furthermore, their *in situ* development would mean that Tahiti and the Marquesas were settled before any other area of Eastern Polynesia. In Bigg's (1972) opinion this is most unlikely. He contends that the central tendency would have been for the islands which were closest to point of origin to be settled first in the "upwind struggle to the east" (Biggs 1972: 148).[4] Polynesian prehistory would involve "multiple intra-Polynesian migration and settlement" (ibid.) and must be understood on that basis.

Therefore, the minimalist model of Polynesian dispersal proposed by Sinoto (1968) does not deal adequately with the actual complexities of the past. For that reason it is rejected. The same criticism applies to Kirch's (1986: 78, Fig. 19), equally minimalist, alternative scenario (shown in Fig. 2).

An alternative paradigm is being articulated which proceeds from rejection of:

(i) The direct west Polynesian-Marquesas primary connection (number 1 in Fig. 1). Notwithstanding Finney's (1985) demonstration that *el niño* wind conditions could

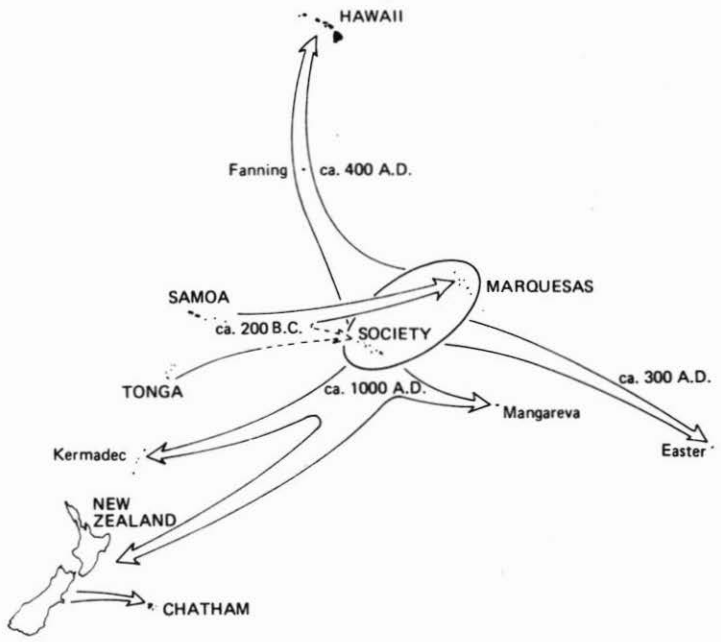

Figure 2: Polynesian dispersal patterns, as indicated by current archaeological and linguistic evidence (from Kirch 1984: Fig. 19; reproduced by permission of Cambridge University Press).

facilitate such voyages, the weight of opinion now sides with Biggs' "nearest first" hypothesis.

(ii) The long time delay between arrival in western Polynesia and movement eastwards. Irwin (1981) has pointed out that this need not have occurred. Green (1981) has argued on linguistic grounds that the delay was at least 1000 years long; 1500–500 B.C.

(iii) The notion that Marquesan prehistory began at A.D. 300. It may have begun at least 500 years earlier, as Suggs (1961) contended, and Kirch (1986) has reaffirmed.

The new paradigm includes recognition of the value of the concept of homeland regions (Green 1981; 1985: 20; Kirch 1986: 36). These included islands spread over a large area of ocean within which shared cultural developments took place which had major effects later and in other regions through processes of cultural interchange and colonisation. This replaces the earlier emphasis on the role of individual islands or groups of islands as centres of innovation and as centres of dispersal.

THE IMPLICATIONS FOR NEW ZEALAND

Two possible implications for New Zealand are raised by this new view of Polynesian prehistory. The first is that it was probably settled much earlier than currently accepted. The second is that it is likely to have been settled repeatedly. The next section of this article examines evidence from palynology and geomorphology which is relevant to the first of these issues and some ethnological evidence pertinent to the second.

DATE OF FIRST SETTLEMENT

The date of first settlement of New Zealand is currently determined on the basis of a truly ragged consensus amongst archaeologists. If asked directly, many would offer the view that evidence of the first people here will not be found by archaeological methods *per se*. After decades of trying, archaeologists have come to the view that palynology offers the best chance of finding this elusive evidence. Meanwhile, Dr Matt McGlone, who is the foremost palynologist working on this problem, has the opposite opinion. He believes (pers. comm. 1986) that the interpretation of the minor perturbations commonly found at the bases of recent pollen spectra is fraught with ambiguities which can only be resolved through the excavation of cultural deposits.

This is the interdisciplinary gap out of which the present ragged consensus has emerged. Specifically, McGlone's (1983: 22) recent publication of the view that

> Clearance of forest can be first recognized at around 1000 yr BP, but it was not until the period from 800 to 600 yr BP that widespread deforestation occurred ...

may have persuaded some that the earlier date defined the length of the New Zealand sequence. It is not so. McGlone (1983: 11) explicitly relies on an archaeologist for definition of the length of the Polynesian era. His late Holocene palynology has been an attempt to document deforestation within the Polynesian era, as defined by Davidson (1981). It has not been an attempt to define the date of first human presence.

McGlone (1983: 16) says that his analysis of Polynesian deforestation is supported by a

> great deal of concordance between the evidence from pollen, wood, and charcoal, and that of erosion and aggregation.

However, because it is inevitably very difficult to date the beginning of anthropogenic disturbance, this assertion ought to be treated with due scepticism. In fact, evidence of earlier vegetation disturbances occurs in each of McGlone's profiles (1983: Fig. 2A–E). Some of these may be human-induced. The situation is as follows.

A. McGlone (1983: Fig. 2A) dates the forest clearance horizon at Porter's Pass, inland Canterbury, to 800 B.P. However, there was a 5 percent reduction in the *Nothofagus* pollen present and a slight increase in the *Gramineae* pollen before that date. Increases in *Gramineae* pollen are accepted as evidence of "sustained burning" by McGlone (1983) if they occur within the Polynesian era. In this case, burning before 800 B.P. is a possibility. It is, however, neither dated nor shown to be natural.

B. Mt Egmont (McGlone 1983: Fig. 2B) is interpreted as "the sole site at which the forest clearance horizon has a late date": 447 ± 40 yr B.P. It may be significant that there is about a 3 percent reduction in *Dacrydium cupressinum* pollen and a long continuous tail on the bracken presence before that date. Volcanic activity on the mountain might account for these changes. However, that is not shown to be the case.

C. For the Longwood Range, Southland, McGlone (1983: Fig. 2C) offers the interpretation that "the forest clearance horizon has an estimated range of 700 yr BP". However, prior to that date there is a halving of the amount of *Podocarpus* present and long and continuous tails on the presence of both *Pteridium* and *Gramineae*. These begin simultaneously at an undated level, evidently well before 909 B.P. The *Podocarpus* decline, which begins below the base of the core, could be intepreted simply as a by-product of climatic change. However, the associated bracken and grasses pollen warrant specific explanation.

D. At Waipehi Bog, Lake Taupo (McGlone 1983: Fig. 2D), the forest clearance horizon began "just prior to 750 ± 70 yr BP". However, a marked increase in *Gramineae* pollen which *may* be relevant begins at an undated level below the base of this core.

E. At Kohika, in the Bay of Plenty (McGlone 1983: Fig. 2E), the record is interpreted as showing "deforestation immediately after the Kaharoa Ash". However, there appear to be two synchronous fluctuations in the pollen record for *Dacrydium cupressinum*, *Pteridium* and *Gramineae* prior to the Kaharoa ash layer. The earliest of these occurs mid-way in the stratigraphy between the Kaharoa ash, dated to 656 yr B.P., and a level dated to 1365 B.P. This is highly suggestive of pre-Kaharoa anthropogenic disturbance.

McGlone's (1983) published account offers no interpretation of these early features in the pollen data as evidence of either human-induced or natural change. However, following a recent palynological study, Chester (1986: 263) reported evidence of human activity beginning at A.D. 550–600 near the coast in the central Bay of Islands.

The gap between this date and McGlone's (1983) 1000 B.P. age of first forest clearance is a result of differences in methodology and assumption. Whereas McGlone's Polynesian era begins 1200–1000 B.P., following Davidson (1981), Chester (1986) uses specific criteria for the recognition of cultural influences, whether or not they date to within Davidson's (1981) time scale. Human presence is indicated where there is a continuous record of microscopic charcoal particles *occurring with corroborative evidence* such as bracken increase, influx of silt, or changes in the frequency of other indicator species (Chester 1986: 264).

When these criteria are applied to McGlone's (1983) data, earlier identification of first forest clearance than he has inferred is indicated. How much earlier this is cannot be specified at present but an interval of the order of 500 years is in contention. If so, this means that the length of McGlone's (1983) Polynesian era could be extended back to 1700 B.P. or A.D. 250.

It is to be noted here that the proposed downwards revision of McGlone's (1983) chronology does not depend on the results of Chester's (1986) analysis. What is happening is that criteria for the recognition of anthropogenic disturbance, which are agreed to by Chester (1986) and McGlone (1983), are being applied without reference to the assumed 1200–1000 B.P. date of first arrival.[5]

While early vegetation change has been recognised previously, there are two diametrically opposed and persistent explanations of Late Holocene vegetation change in New Zealand. It is seen either as naturally effected *or* as the result of cultural influences (for a history of this controversy, see Molloy *et al.* 1963: 76). Authors appear willing to go to considerable lengths in order to argue for one point of view or the other. For instance, McFadgen (1985) divides the late Holocene stratigraphy of New Zealand into three chronostratigraphic units based on their accumulative deposits and respective soils. These are as follows;

- The Tamatean Chronozone (1800–450 B.P.).
- The Ohuan (*circa* 450–150).
- The Hoatan (*circa* 150–present).

Each of these consists of two phases: an unstable phase characterised by high rates of deposition and a stable phase with soil formation and low rates of deposition accompanied by afforestation, which is indicated by landsnail assemblages.

In the absence of clear supporting evidence, McFadgen (1985: 57) states that the chronozones are

> ... climatically controlled. Slips are the most important kind of erosion in New Zealand ... and are caused by occasional very heavy and long-continued rain. Thunderstorms generally appear to be unimportant, because they rarely last long enough, but the effect of tropical and extra-tropical cyclonic storms on erosion, even under forest, is well established .... I have shown above that during the Tamatean stable phase forest vegetation established on formerly unstable sand in the Manawatu and at Flat Point. Favourable climatic conditions for erosion and subsequent deposition would be frequent tropical and extra-tropical storm and drying windy conditions, ... Favourable climatic conditions for soil formation would be fewer tropical and extra-tropical storms ....

The palaeoclimatic evidence produced by McFadgen (1985: 57–60, Fig. 26) in support of this argument actually contradicts it. Evidence of glacial movements does "not correlate with either stable or unstable phases" (McFadgen 1985: 59). The "somewhat better correlation " McFadgen observes between depositional episodes and temperature history inferred from oxygen isotopes in stalagmites and C^{12}–C^{13} ratios in kauri (*Agathis australis*) trees may be better than no correlation at all but it is not adequate support for his statement that "unstable phases appear to correlate with times of high temperatures; stable phases with times of low temperatures" (ibid.).

Furthermore, recent research (Burrows and Greenland 1979) arguing for the constancy of climate within the last millennium is omitted. Archaeological research, such as the Wairarapa Project (Leach and Leach 1979), which has emphasised human-induced environmental deterioration, is similarly overlooked. Thorough criticism of McFadgen's (1985) research is beyond the scope of this paper. However, some further points are made here to indicate the vulnerability of his argument.

First, the field evidence used is from some 50 sites; 8 of which McFadgen visited and over 40 of which he reinterpreted, sometimes quite radically (see, for example, his analysis of the Redcliffs Flat and Moa-Bone Point Cave sites), "sight unseen". In the published account of the research, all sites conform to the general model being advanced and are used to support it.

Second, the crucial landsnail evidence said to show afforestation of the Manawatu and Flat Point landscapes during the putative stable phases does not do that (see Wallace, this volume). Flat Point is the type locality for McFadgen's sequence. The Manawatu location is also crucial to his argument.

In summary, the chronology of McFadgen's chronozones, the vegetation reconstructions based on landsnails and, most importantly, his model of causality are highly questionable. The nature-as-sole-cause explanation advanced by McFadgen is more polemical than scientific. At the very least it ought to be conceded that the relative importance of cultural and natural factors in the causality of geomorphological change is very difficult to establish.

Grant's (1985) recent paper divides the New Zealand Late Holocene into eight major episodes of erosion and alluvial sedimentation. These are:

- Taupo (1764 yrs B.P.)
- Post-Taupo (1600–1500 B.P.)
- Pre-Kaharoa (1300–900 B.P.)
- Waihirere (680–600 B.P.)
- Matawhero (450–330 B.P.)

- Wakarara (180–150 B.P.)
- Tamaki (A.D. 1870–1900)
- Waipawa (A.D. 1950–present)

Grant (1985: 67) joins McFadgen (1985) in identifying nature-as-sole-cause.

> The Taupo period, which is identified only in the North Island, possibly resulted from heavy rainfalls induced by the Taupo Pumice eruption. The other seven periods, which probably occurred universally in both main islands of New Zealand, were almost certainly caused by increased northerly airflow and atmospheric warming over New Zealand, and the associated increased magnitude of major rainstorms and floods, producing increased rates of erosion and channel sediment transport.

His research is vulnerable to the criticism that the periodisation proposed is too fine-grained and very likely to be affected by local processes as well as the general ones which are emphasised. However, the most serious weakness in Grant's scenario is his inability to recognise that cultural influences as widespread and profound as Polynesian deforestation would have had a major impact on depositional processes.

It is now necessary to ask whether the onset of large scale Late Holocene landscape instability in New Zealand could have been human-induced.

There is a most interesting convergence in the work of McGlone (1983), McFadgen (1985) and Grant (1985), in that each of them identifies the beginning of major environmental instability as occurring within the interval 2500–1500 B.P. and largely within the shorter period 1800–1500 B.P. In each case this change, although simultaneous over a vast area, is attributed to a natural cause.

The identified causes are contradictory. McGlone (1983: 13) claims that deforestation of large parts of "Central Otago, and adjacent areas in Southland and South Canterbury" was due to natural fires during periods of exceptionally dry climate. Conversely, McFadgen (1985) and Grant (1985) claim that the Tamatean and post-Taupo instability phases began at 1800 and 1600 B.P. respectively because of a widespread increase in storminess and rainfall.

For McGlone (1983: 13), the early southern deforestation is natural because it precedes Davidson's (1981) Polynesian era, because of the apparent absence of comparably early archaeological evidence and because McGlone (pers. comm. 1986) does not believe that the early minor fluctuations in the pollen spectra can identify the date of first human arrival. The change documented by Grant (1985) and McFadgen (1985), on the other hand, is natural as a matter of principle where the principle or dogma being advanced is that nature is sole and sufficient cause.

Since Kirch's (1986) paper it is necessary to weigh the evidence anew. Given the practicability of direct voyaging from West Polynesia to the Southern Cooks, probable settlement of the Marquesas by *circa* 200 B.C. and the existence of a pre-Archaic horizon in Hawaii and the Marquesas, it is quite conceivable that people got to New Zealand within the interval 0–A.D. 500. In this situation, the commencement of McFadgen's Tamatean phase, Grant's post-Taupo phase and the early southern burning could be due, at least in part, to cultural influences.

Independent evidence which corroborates this proposition comes from both recent unpublished research and a range of published sources.

For instance, Osborne's (1983) recent research, although difficult to interpret for the present purpose, has identified a major burning horizon near Marsden Point, which may be dated by association to *circa* 1400 B.P.

Further, at Pataua, east of Whangarei, Cox (1977: 42) found a lens of volcanic ash in the subsoil overlying small charred stumps, probably of manuka (*Leptospermum scoparium*), found in the growing position. The ash is identified mineralogically as Taupo Ash and the wood gave a radiocarbon age of 1795 ± 65 yr B.P.

> Scattered fragments of burnt stone are enclosed in the ash but no intact oven could be located that would conclusively prove the presence of Man at the site before the Taupo Ash fell.

It is noteworthy that the age of this possibly cultural burning is 1800 B.P. and that the vegetation burnt at that time was manuka scrubland, which is commonly itself a product of firing.

At Puketurua, west of Whangarei, Schouten and Cox (1973) dated an intensively burnt soil to 1580 ± 65 B.P. (Fossil Record Form N19/655; Radiocarbon Number N.Z. 1712). Their results are summarised as follows:

> ... a series of buried plant materials occur in fan and stream bed deposits .... These are mainly charred logs, and they date fires approximately 200, 400, 800, 1550 and 7700 years ago. ... The oldest fire is unlikely to have been caused by Man but the 1550-year-old one may well have been.

At Stillwater on the Whangaparoa Peninsula north of Auckland, Cox (1973) dated a burnt shell horizon to 1440 ± 60 (Sample N38/645; Cox pers. comm. 1986).

In the Paparua County, Canterbury, Cox (1978) mapped the vegetation cover as at A.D. 1000 and found that a large part of it was kanuka (*Leptospermum ericoides*) scrubland. This implies the occurrence of earlier and extensive fires. Cox (1978: Figure 5) noted that the mid-Canterbury rivers are flanked by mobile coarse sediments deposited within the last 1000 years. Further, he found that soils of the Waimakariri age group, deposited within the interval 2400–700 B.P., covered first and second millennium B.P. land surfaces with up to 6 m of sediment (Cox 1978; Cox and Mead 1963: 31–3, Figure 3; also additional radiocarbon dates provided by Cox pers. comm. 1986).

Notwithstanding this evidence, coastal, often rivermouth, "Moa hunter settlements", radiocarbon dated to less than 1000 B.P., are identified as the earliest archaeological sites in Canterbury and used to define the length of the New Zealand sequence (McCulloch and Trotter 1975; Trotter 1982). However, no attempt has been made to define the coastline as it was prior to the Waimakariri age and to search this fossil landsurface for occupation evidence, despite the fact that such approaches have led to major changes in Oceanic prehistory (see for example Green and Davidson 1974; Spriggs 1981).[6]

A similar situation has developed in the Far North. Over a decade ago Fleming and Powell (1974), working on the extinct flax snail, *Placostylus ambagiosus pricus*, near Cape Maria van Diemen, concluded that fire

> was the most likely cause of the sand dune advance and forest destruction, but what, some 2140±90 years ago lit fires is an unanswered question.

Cox (1977: 42) noted that *Placostylus* sp. may have an intrinsic radiocarbon age of 900 years. This would reduce the Fleming and Powell (1974) age to about A.D. 1150. However, 12 of the 38 bird bone assemblage locations dated by Millener (1981: Appendix 2) show abrupt landscape change occurring in the interval 2500–1500 B.P. This evidence may

corroborate the second millennium B.P. date for *Placostylus* sp. and Hicks' (1977) 1500 B.P. estimate of date of first Polynesian forest clearance at Aupouri-Karikari. However, Millener began and ended his work on the Late Holocene decline and extinction of North Island avian species without critical assessment of the assumption that "people first arrived in New Zealand about 1000 years BP" (Millener 1981: 447). It is probable that at least some of the deforestation Millener dated to within the second millennium B.P. was human-induced.

THE POSSIBILITY OF MULTIPLE ORIGINS

There are a number of serious problems with current models of early New Zealand prehistory which need to be resolved if we are to make progress in assessing the accuracy of models of single *versus* multiple colonisation. These follow from the view that the simplest model of the past that the evidence will allow is necessarily the best available. By pursuing this line we have arrived at the position of having a sequence which features one unidirectional migration from a single island or island group of origin and then either "adaptation and change" (Green 1975) or "evolution" (Kirch 1984: see his Figure 1 for a classic representation of "The Differentiation of Polynesian Societies from a Common Ancestral Society") giving rise to two phases; the Archaic and the Classic. Although Leach (1981) and Davidson (1984), for example, did not use the Archaic: Classic apposition it continues to be used in the everyday language of New Zealand archaeology and is therefore still part of current thinking.

This section of the paper argues that New Zealand was not a cul-de-sac prior to contact. The most recent practical simulations of ancient Polynesian voyaging suggest that recurrent contact in either direction is likely to have occurred. Then it discusses the Archaic phase and rejects its continued use on specified grounds. Finally, it suggests a programme of research which would date major Maori woodcarvings in absolute terms and so allow assumptions of unitary origin and single colonisation to be tested against a chronology of stylistic variation.

Voyaging and the Possibility of Multiple Origins

Hokule'a's recent voyages to and from New Zealand, from Samoa to Aitutaki and then Rarotonga to Tahiti (Finney 1986) imply that ancient long distance Polynesian voyaging was easier, quicker and, very possibly, more frequent than has been generally accepted to date.

Radiocarbon dates from the Kermadecs (Anderson 1980) and Norfolk Island (Meredith *et al.* 1985) and culturally redistributed New Zealand obsidians (Leach *et al.* 1986) show that repeated one-way voyages over distances greater than 900 km took place in southwest Polynesia before A.D. 1200.

It follows from this evidence, Sharp's (1963: 34) documentation of regular two-way voyaging in Tahiti and the nearer Tuamotus and Biggs' (1972) emphasis on multiple intra-Polynesian migration that the homeland of Archaic East Polynesian culture covered a very large area of Polynesia, including islands in the Marquesas, the Society group and the understudied Austral Islands. It is likely that this homeland included some of the Cook Islands. It is possible that innovations were brought into this homeland region from New Zealand, as well as taken there. More generally, it appears likely that the influential Levison, Ward and Webb (1973) computer simulation study effectively drew precontact Polynesia apart by overestimating the actual difficulties of interisland journeys.

Artefactual Evidence and the Possibility of Multiple Origins

As Green (1966: 31–3) argued two decades ago on linguistic and artefactual grounds and on the basis of elements of Maori traditional history, it is likely that New Zealand was settled more than once and from more than one area.

Several pieces of evidence accumulated since 1966 endorse that possibility. First, the marked differences which exist between early New Zealand adze assemblages, as between those from the Washpool, Mt Camel and Wairau Bar (Davidson 1984), could indicate multiple settlement, rather than being due to regional and functional variation.

Second, recombinant DNA data on variants of the globin gene within Oceania identify the Southern Cooks population as a highly probable biological origin of the New Zealand Maori population (see Sutton 1985a). Also, shared linguistic innovations in the Maori dialect of the East Coast and Southern Cook Islands strongly suggest that the latter were the origin of some settlement of New Zealand (Green 1966; Harlow 1979). However, neither the Archaic nor the Classic phase New Zealand adzes can be readily derived from the known adzes of the Southern Cooks. Walter (n.d.) has recently studied adzes held in the Cook Islands Museum, Rarotonga, and found that the type 2B adze is represented by only three examples.

Moreover, as Davidson (1984: 94) recently noted,

> Adzes from all these sites [Hane, Maupiti and Vaito'otia] are more similar to slightly earlier assemblages from West Polynesia than they are to those from Wairau Bar. The principal differences are the high proportion of ungripped adzes (more than ninety per cent at Vaito'otia and Hane; seventy-three per cent at Maupiti) and the presence of adzes of plano-convex and oval sections.

This statement strengthens the possibility of multiple recolonisation by implying that the Classic Maori 2B adze would be more easily derived from the Hane, Maupiti and Vaito'otia assemblages or from antecedents to the west than from Wairau Bar.

The present author is interested in the stylistic affinities between pa and adzes of Rapa, at the southeastern end of the Australs, and those of New Zealand. These suggest that the pre-1600 culture of that region had a role in the settlement of New Zealand.

The possibility that New Zealand was first settled substantially before the Archaic was fully formed in the Marquesas means that the first assemblages brought to New Zealand need not have been Archaic, in the currently recognised meaning of that term. The question that arises is, if so, would they have been recognised, given that the archaeological identification of early sites depends on the presence of Archaic artefact forms and extinct species. These can either be found together or apart in early sites or be entirely absent from them. The argument that there may be early and pre-Archaic sites in New Zealand is as follows.

If the Marquesas were the primary dispersal centre of Archaic East Polynesian culture from which it came to New Zealand via the Society Islands (as shown in Figure 1), the earliest sites here would contain similar artefacts to the pre-Archaic sites in Hawaii, described by Kirch (1985: 67–88). These are

> assemblages characterised by such items as reversed-triangular section adzes, a variety of one-piece fishhooks in pearl shell and bone (including incurved shank types, and double-notched line-lashing devices), porpoise-tooth pendants, a double-perforated trolling lure point ..., as well as sea urchin spine and coral abraders, dog's tooth ornaments, flake tools, and other items .... Absent from these or any other Hawaiian sites are such supposedly "diagnostic" Archaic East Polynesian types as shaped whale-tooth pendants, lanceolate pearl-shell ornaments, reels, or harpoon heads (Kirch 1986: 31).

Not surprisingly, almost all of these artefact types are represented in New Zealand. The reversed triangular adzes are found in a range of early sites (Duff 1977).

Porpoise-tooth pendants, although uncommon in New Zealand, are found here. Two accumulations of them were found with Burial 2 at Wairau Bar; 412 at the neck and 386 just beyond the skull (Duff 1977: 29).

Double-perforated trolling lure points have been found in "early" contexts at Mt Camel, Wairaru Bar and Shag River (Davidson 1984: 65).

Dog tooth ornaments have been found at a number of sites including Wairau Bar and Oruarangi (Davidson 1984: 80). The latter site dates to between A.D. 1500 and European contact (Davidson 1984; Best 1980).

Flake tools are common in New Zealand sites, although they continue to be an under studied category of Polynesian material culture (Cleghorn n.d.).

The presence of almost all of the pre-Archaic Hawaiian artefact types might be taken to mean that there is a pre-Archaic horizon in New Zealand. However, those forms could have been brought to New Zealand as parts of the material culture of A.D. 1000 or later. Proof of a pre-Archaic horizon would require a distinctive assemblage, including some of the earliest known forms, dated to before A.D. 850–950. However, as far as is known at present, these artefact types do not form a distinctive time horizon. They are found in irregular combinations, sometimes with the so-called diagnostic artefact types, within spatially scattered sites *some* of which are dated.

It is most unlikely that a pre-Archaic horizon identical to the Hawaiian one will be found in New Zealand. This is because of the extreme improbability that New Zealand was settled directly either from the Marquesas or from the Marquesas-Society Islands region without involvement of any island in the Cooks, the Australs or the Tuamotus. In this sense the settlement history of New Zealand is more complex than that of Hawaii. However, an attempt should be made here to disaggregate the evidence of stylistic variation within the precontact period. Two steps in that direction are suggested below; discontinuation of use of the term Archaic and absolute dating of major carvings.

The Archaic Phase

Since Golson (1959) drew all of the diagnostic New Zealand Archaic artefact types together and separated them categorically from the Classic types, that evidence has undergone reification, forming an excessively simple conceptual framework in which the Archaic is seen as a discrete phase common to all areas, which was followed after about 1400 by the Classic phase (for examples, see some regional sequence essays in Prickett 1982).

This is far from the truth. New Zealand Archaic culture typically consists of irregular and small combinations of the diagnostic artefacts found in sites spread over a relatively long period of time, of the order of 500 years. These assemblages are confined within much of that interval to a portion of the country largely on the east coast, with concentrations on the Coromandel and at points along the coast south from East Cape to Stewart Island.

There are large gaps in the spatial distribution of Archaic evidence; for instance, on the central portion of the east coast of Northland and on part of the West Coast of the South Island. These have never been satisfactorily explained (for a detailed discussion of the distribution of Archaic sites in time and space see Davidson 1984).

The diagnostic Archaic artefacts listed by Golson (1959) have never been found together in a single archaeological horizon.

The Archaic is not a discrete time horizon, since Archaic artefacts were in use on the Coromandel when clearly non-Archaic assemblages were present over almost all of the rest of the country.

Furthermore, it is abundantly clear that only a proportion of the sites before A.D. 1400 contain diagnostic artefacts. Many of them do not contain any extinct species. They cannot therefore be identified as Archaic or early on the basis of either of these two criteria. The fact that these are almost the sole means by which archaeologists have identified early sites has led to a high degree of circularity in our research designs. The earth scientists have never adopted these criteria. From outside the archaeological paradigm they have identified widespread environmental disturbance which may have been human-induced, from the second millennium B.P.

Although it is thought to have been in existence for at least 400 years, the New Zealand Archaic phase has no clear internal sequence of local development and addition through contact.

Attempts at the explanation of the Archaic-Classic transition have been very limited, as noted by Shawcross (1969) and Davidson (1984). Best's (1977) functional change explanation of the differences between Archaic and Classic adze types can hardly be entirely incorrect. However, it applies only to some of the Archaic adzes and it leaves changes in many other artefact categories unexplained (see for example Skinner 1974; Mead 1975, 1984; and Davidson 1984).

A recent statement on changes through time in Maori pendant styles demonstrates some of the limitations of current thinking on this topic.

> A further consideration concerns the relationship of archaic pendants or necklace units and later Maori forms. Similar notions concerning such matters as descent, mana, role and status are widespread throughout Polynesia and it is unlikely these fundamental social concepts changed much in New Zealand. It is the formal symbolisms or representations of such concepts in art and ornament which tend to change and not the underlying concepts themselves. An argument can be made that pendant forms in New Zealand, both early and late, relate something of importance concerning the wearer. It might be expected therefore that the range of messages would be more or less the same for the early and late ranges of artefacts (Prickett 1985: 28).

This statement seriously underestimates the significance of Polynesian cultural variation, both over space and through time.

In a similar way, many analyses of the New Zealand Archaic have accepted that it is a unitary phenomenon which was most probably brought here intact via the Society Islands from a single origin in the Marquesas. It is noteworthy, however, that some of the New Zealand Archaic artefacts are not in the East Polynesian Archaic. I refer here to chevroned amulets (discussed further below) and twin-lobed pendants (Prickett 1985).

Furthermore, some of the artefacts attributed to the Archaic phase here are probably not early at all. The reason is that Skinner (1974) and others after him, including Duff (1977), applied the term Archaic or its equivalent to artefacts which resembled items found in tropical Polynesia, whether or not they were found in early contexts within New Zealand. For example,

> Among the *hei-tiki* first figured here are a group described as archaic. The word is used, not because they were found in deposits of ancient date (up to the present time no *hei-tiki* has been found in such deposits), but because amulets of closely allied form occur in the Marquesas. I accept the close similarity in details as well as in overall form and name of the Marquesan amulets as justification of the use of the word 'archaic' to describe these Maori forms (Skinner 1974: 49; Figures 4.1, 4.2, 4.3). [Note: this paragraph was added to the Amulets paper by Skinner between 1966 and 1973].

The use of the Archaic: Classic dichotomy has effectively shortened the length of time over which various artefact types are reckoned to have been in use. For instance, Golson (1959) attributed chevroned amulets to the Archaic phase, although the 17 known specimens vary greatly in form and some have been found in evidently late contexts. This attribution was based on the discovery by Robson (1867) of one chevroned amulet on the surface near a concentration of moa bone at Lake Grassmere in Canterbury (see C. Smith n.d.).

Other artefact types have been treated in the same either/or manner. For instance, all of the ten known twin-lobed pendants are attributed to the Archaic phase (see Prickett 1985), although only half of them come from clearly Archaic contexts. In a similar manner harpoons are widely regarded as Archaic artefacts (see Skinner 1974: Chapter 10), although a significant proportion of the New Zealand examples appear to come from late contexts (I.W.G. Smith pers. comm. 1986; see also Davidson 1984).

The efficacy of the concept of an Archaic phase is so limited that Davidson (1984) has noted that some eighteenth century New Zealand artefact forms would be termed Archaic on stylistic grounds if they were recovered from archaeological excavations.

Chronology and precontact stylistic variation

Clearly, that concept of the Archaic is terminally deficient. However, the deficiencies are not due to the nature of the evidence. Under the terms of a paradigm which stipulates single colonisation from one cultural and biological origin there is a strong tendency for stylistic variation in material culture to be arranged, at least in the scholar's mind, lineally into a phylogenetic model emphasising common, frequently unitary, origin and descent with modification over time. This model is not forced upon us by the evidence; the converse is true. At present it underlies most thinking about New Zealand prehistory.

Ethnological analysis of the "Kaitaia lintel" exemplifies the limitations implicit in this model. This spectacular carving (see Figure 3) was found near Awanui in 1921. Not surprisingly, there has been some disagreement about where it fits into the sequence. "Most authorities assign it an early date, usually in the A.D. 1300–1400 range" (Davidson 1984: 211). Mead (1984: 73–74; Figure 15) has termed it "a prime example of art of Te Tipunga period (1200–1500)".

However, there has never been a serious attempt made at stratigraphic or radiometric dating of the lintel. Instead, interpretations of it continue to reflect controversy which was current at the time of its discovery. S. Percy Smith (1921: 91–92) suggested then that it could represent the "Melanesio-Polynesians ... these *tangata-whenua* people, who were eventually driven to the Chatham Islands, or absorbed ...." H. D. Skinner (1921a, b) replied emphatically that the lintel was Maori and very early. He implied that it posed no problem for the well informed ethnologist.

This response is part of Skinner's argument for the unitary origin of prehistoric Maori culture which he developed as a reply to and contradiction of Smith's (1910) belief in an early and racially distinct population. The fact that Skinner won that argument using comparative ethnology and went on to become a very influential figure, while Smith's views were clearly ahistorical and racist (Sutton 1985b) is among the factors which have led to a reluctance among New Zealand prehistorians to pursue the possibility of multiple settlement.

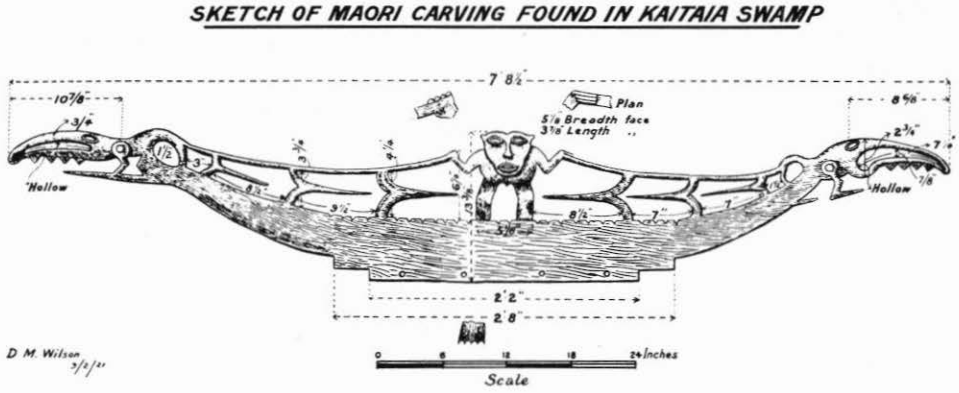

Figure 3: The Kaitaia carving (from Smith 1921; drawing by D. M. Wilson, 3/2/21. Reproduced by permission of the Polynesian Society Inc.).

As Green (1966: 80–1) noted,

> most recent theorists have argued that early settlement of New Zealand was from a single source in East Polynesia *in their legitimate efforts to do away with* earlier theories of initial settlement by Melanesians or non-Polynesians [emphasis mine].

The closest stylistic affinities of the Kaitaia lintel are with the Doubtless Bay canoe prow (Mead 1984: Plate 20) and the Awanui plank, both of which are widely held to be early (Davidson 1984: 211 ff.), again in the absence of attempts at absolute dating. Of this group of carvings, all of which were found within a small area north and east of Kaitaia, Archey (cited in Davidson 1984: 211) said they are "examples of a local style rather than stages in a chronological sequence". Of the lintel itself Archey (ibid.) wrote "its design is so thoroughly abstract as to be of possibly late development" and, "it is a creation of Maori art, as likely to be late as early". This paper suggests that ethnologists should stop basing models of precontact stylistic change on perceived or real morphological similarities and date the major carvings, particularly the three mentioned here, as an aid to their interpretation. My guess is that at least the Kaitaia lintel may be quite late in the sequence. If so, the most likely source of this secondary colonisation is the Austral Islands, because that is the area in which most similar historic artefacts have been found.[7]

Identification of the wood and a detailed wood anatomy of each carving would be needed to control for errors due to age of the timber at the time of carving. Dating of microsamples, chosen from suitable points in the wood anatomy, would give absolute ages. It is possible to do this, with no harm to the carvings, using the accelerator radiocarbon dating method. All of the facilities and expertise required are available within New Zealand.

CONCLUSION

The concept of an Archaic phase in New Zealand has long outlived its usefulness. However, it must be recognised that the concept is part of a broader set of assumptions which continue to restrict the intellectual scope of archaeology and prehistory in New Zealand.

The assumptions in question are ideological, in so far as the emphasis on unitary origin emerged out of the controversy between Smith and Skinner. They are also minimalist, in that colonisation is usually assumed to have taken place once only and from only one source (see Figures 1 and 2); where one is the smallest allowable number in each case. Finally, they are phylogenetic, in that variation is arranged lineally into a model emphasising common origin and descent with modification over time. This approach, which is currently being resurrected on a broad scale by Kirch and Green (n.d.), tends to engender the false view that the significant problems are all either solved or, at least, identified.

I suggest that a revision of major aspects of New Zealand prehistory is warranted now. Date of first settlement is likely to be earlier than A.D. 800 and possibly much earlier. Application of Chester's (1986) criterion for the identification of cultural influences on the vegetation to McGlone's (1983) published data suggests A.D. 250 as a possible date of first settlement. An earlier date is made possible by the earth sciences reviewed above.

Further, a rethinking of New Zealand's early prehistory is needed. Recognition of the probability of multiple settlement before A.D. 1550 is long overdue. Recolonisation after that date is improbable given the evident absence of late prehistoric tropical Polynesian artefact forms in New Zealand and the converse. The presence of a pre-Archaic horizon is implied by the suggested dates of first settlement. This would probably be indicated by the early presence of ungripped adzes, and adzes of oval and plano-convex sections. Significantly, the last of these is the adze associated with Lapita assemblages. Ornaments closely comparable to the early West Polynesian styles should be looked for carefully.

Finally, New Zealand archaeologists should consider changing the methods used in trying to identify early sites. The interdisciplinary gap between soil science and palynology on the one hand and archaeology on the other has been wasteful. Partly because of the existence of that gap, the current paradigm of New Zealand prehistory is very conservative. The purpose of this paper has been to reject that paradigm so that the New Zealand evidence can be looked at anew.

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NOTES

1. Linguistic evidence indicates that first settlement of New Zealand occurred after the separation of the Rapanui language from the Eastern Polynesian Subgroup (Green 1985). This event is dated to no later than A.D. 500 by the oldest known archaeological evidence on Easter Island.

2. Hokule'a sailed from Samoa to Aitutaki 7–14 July, 1986. She then went on to sail from Rarotonga to Tahiti 12–20 August, 1986.

3. Spriggs (1986) has cited Kurashina as stating that "Lapita-derived plain pottery" was found recently on Rarotonga. This citation is not, however, confirmed by either Spriggs or Kurashina. It has no basis in fact.

4. Hokule'a's recent voyage (Finney 1986) is very important in this context because it strengthens the possibility that the Southern Cooks were settled from Western Polynesia, as is implied by the Tutakimoa adze cache from Rarotonga (Bellwood 1978).

5. This revision is also independent of the controversial true age or ages of the Kaharoa ash, although that issue may affect the absolute date of first human arrival proposed by Chester (1986).

6. The expected consequences of the series of events described above would be a major depositional episode beginning within the interval 2500–1500 B.P. It would be accompanied by widespread sediment deposition and coastal progradation. A reduction in sediment supply would occur after 1500 B.P. and be accompanied by some coastal erosion, particularly near and at river mouths.

7. There is some indirect evidence as to the absolute age of the Kaitaia lintel. McGlone has an unpublished pollen core from the Kaimaumau swamp, quite near where the lintel was found. First forest disturbance there apparently occurred at 400 B.P. (McGlone pers. comm. 1986). Despite the occurrence of much earlier dates for forest clearance in other areas, such as the coastal Bay of Islands (Chester 1986) and the Far North (Fleming and Powell 1974; Hicks 1977), it is just possible that this date sets a limit before which the lintel cannot have been deposited. If McGlone's (n.d.) date applies to the lintel, it is likely to represent styles brought to New Zealand between A.D. 1500 and 1600.

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