NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION NEWSLETTER

MOA-HUNTERS, AGRICULTURE AND CHANGING ANALOGIES IN NEW ZEALAND PREHISTORY

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Abstract

The interaction between reconstructions of prehistory outside New Zealand, whether in Europe, America, or the Pacific, and the interpretation of the New Zealand evidence is a fascinating subject which has its beginnings with Julius von Haast. This paper explores this issue with respect to Moa-hunters, their age, origin and association, or lack of it, with domestic plants and animals. It concludes that the interpretation of this aspect of New Zealand's prehistory has often had as much to do with concepts derived from elsewhere as it has arisen directly from consideration of the New Zealand evidence itself.

EARLY DOMINANCE OF EUROPEAN CONCEPTS

Radically new views on man's prehistory had only recently been formulated when Haast in 1870 named the earliest known inhabitants of New Zealand Moa-hunters. In 1871 he gave his views on the Moa-hunters explicit formulation by combining the New Zealand evidence with a series of concepts employed at the time in the reconstruction of the history of ancient man in Europe. Possible European sources were Charles Lyell's The Geological Evidences of the Antiquity of Man, first published in 1863 and Sir John Lubbock's Prehistoric Times, first published in 1865. Lyell, the geologist whom Haast so much admired, seems to have been a main source of ideas, though the terms Palaeolithic and Neolithic derive initially from Lubbock. From which source Haast acquired them is uncertain (Law, this issue). However, Haast's references to the work of Boucher de Perthe and the Palaeolithic, Neolithic, Bronze and Iron Ages show he was well acquainted with the major concepts and the European evidence used in support of them.

Among the ideas he acquired from these sources, the most important for our purposes are (1) great antiquity of the Moa-hunters, based on their association with an extinct post-Pliocene fauna, (2) a Palaeolithic status based on their use only of crudely chipped stone implements, (3) an association with a wild rather than domestic form of dog, and (4) quite separate origins and perhaps even different races to account for replacement of a Palaeolithic people by a Neolithic group. On all these points he was to be challenged by the evidence of the next eight years, and on

one he completely changed his mind when he learned that the European analogy did not fit as well as it should. "Thus it is evident that we can not divide the former inhabitants of New Zealand into two distinct races, from their having exclusively used unpolished or polished stone implements corresponding with the palaeolithic and neolithic periods of Europe" (von Haast 1879:411). On the other points he vacillated, though some change of initial position seems indicated for each, despite his assertions to the contrary (von Haast 1879:430).

For instance, on the antiquity of the Moa-hunters Haast's opinion altered in geological terms though it was still in conflict with the views of those who attributed the extinction of the moa to the Maori and restricted the date when this occurred to the last 600 years or less. The change was due to a modification in the European analogy initially employed which was necessitated by the New Zealand evidence. In 1871 the Moa-hunters were assigned to Lyell's post-Pliocene deposits with large quadrupeds and extinct fauna which in Europe possessed an estimated age of several hundred thousand years, rather than those of the Recent deposits which had a modern fauna and an estimated age of from 4000 to 7000 years (Lyell 1865:285-88, 28-29; Law, this issue). The analogy developed was "that the huge birds were the representatives of the gigantic quadrupeds of the northern hemisphere in the post-Pliocene period" (von Haast 1871:75). This age enabled him to postulate a former land bridge between the North and South Islands, and continental areas in the Pacific, for example, as well as to suggest that such geological explanations offered more satisfactory means for peopling and repeopling New Zealand than migrations.

Seven years later in the Geology of the Provinces of Canterbury and Westland, the Moa-hunters were assigned to the Quaternary. This Haast defined as a period between Hutton's glacial portion of the Pleistocene in Otago, which in Canterbury Haast called the Upper to post-Pliocene, and a Recent following the Quaternary based on association with Maori remains traditionally dated to the last 600 years (von Haast 1879: 251, 407, 424). The glacial deposits of the Upper to post-Pliocene possessed moa and other now extinct birds, as in Europe, but no sign of man. For New Zealand, in contrast to Europe, Haast suggested beginning the Quaternary with the first appearance of man. In discussion of the proposal, it was allowed that this line of division might be shifted back in time with more discoveries in the earlier members of New Zealand's younger beds. Haast also deemed it not impossible that man had already lived in New Zealand during the latter part of the great glacial period, in which case his proposed division between the glacial and Quaternary would be of no more value (von Haast 1879:407).

The assigning of the Moa-hunters to a late portion of an imperfectly known Quaternary, followed by a much younger Recent (600 years) than that of Europe, meant that Haast now conceived of the age of

Moa-hunters in thousands of years and not hundreds of thousands of years, and clearly recognized that extinction of the moa took place at a quite different time from that of the European faunal change he had previously cited. In this regard it is noteworthy that he dropped the proposition that "the moa-hunters had means to reach the northern island, whence they procured obsidian" and its attendant hypothesis of a land bridge, from his 1879 list (von Haast 1871:107; 1879:430). The implication is that along with the addition of polished stone tools and rock art to their no longer crude culture, he also granted to the Moa-hunters and their Pacific ancestors the means to travel by sea between the two islands (see discussion on dog below). In fact in something like exasperation he added this comment to the end of a paper in 1877 : "During the discussion as to the probable ages of the rock paintings in the Weka Pass Ranges, I observed that the expression applied to them by me, as being of great antiquity, gave rise to misunderstandings. In using such expression I never dreamt to do so in the sense it is used in the northern hemisphere, but in reference to the short space of time of which we have reliable traditional evidence in New Zealand." (von Haast 1877:54).

Assignment of the Moa-hunters to a New Zealand Quaternary rather than the post-Pliocene, meant, on analogy with complexes of comparable age in Europe, such as the Danish Peat and Shell Mound People, or even the Swiss Lake Dwellers, that Moa-hunter sites might contain evidence of either domesticated animals or agriculture. Haast, for example, seems to have employed an analogy from the Danish sites where the dog but not agriculture, was in evidence, in his discussion of the status of the New Zealand dog. He argued that the Moa-hunters lacked the domesticated dog, and instead killed and ate feral ones, because Moa-hunter dogs had not left, as did those of the Danish kitchen middens, traces of their teeth on refuse bones. Drawing on other European material he noted that not only did Palaeolithic hunters lack the dog, but that traces of the dogs of any sort were missing from the European record of that age, a further indication of the Neolithic status of the Moa-hunter. Puzzled by how a feral dog arrived in New Zealand in the Quaternary, because it was certainly not there before man's arrival on the scene, he lamely fell back on a passing ship and an analogy with feral pig and Captain Cook ! Various of the inconsistencies in Haast's position on the dog were taken up by de Quatrefages (1893:37-39), who offered the traditionally non-meat diet of the Polynesian (and Moa-hunter) dog as an explanation for the very limited evidence of gnawing on meat bones. His explanation, it now appears, is not without relevance (see below).

The presence or absence of agriculture, not surprisingly, was not discovered by any of the parties to the controversy. This holds not only for the Moa-hunters, but also for the economy of the shellfish or fish eaters who followed them, people who were presumably to be identified with the South Island Maori. Even McKay (1874:104), who saw both as a single group whose economy had changed with the gradual extinction of the moa,

did not mention agriculture. But in many instances in the South Island, the Maori employed little or no agriculture in their economy (Leach 1969) and its assignment to either Maori of Moa-hunter may have seemed to the investigators quite unwarranted without some direct evidence. Nor was it demanded by the European analogy, for the Danish kitchen middens, then placed in the Neolithic by their tools, recent fauna, and the domesticated dog, also lacked evidence for agriculture.

THE PERSISTENCE OF A SEPARATE ORIGIN OF MOA-HUNTERS

In dealing with the subject of race and separate origins of the Moa-hunters and Maori, Haast maintained the need for separate origins even after formally abandoning the Palaeolithic and Neolithic analogy which gave rise to it. He remained more equivocal on the matter of race. For Haast separate origins were required by chronological considerations, though both groups could stem from rather similar Pacific populations. At first the Moa-hunters were an autochthonous race of probable Polynesian origin, while later, like the present Maori, they were seen to have more or less strong affinities with a Melanesian type. He seems to have flirted with the idea of quite separate racial origins for the Moa-hunters. Although at times he conceived of a transition between them and Maori, resulting in the Maori being an admixture of both (von Haast 1871:79; 1879:424-27), he never assigned the Moa-hunters an entirely separate racial origin from the Maori.

The other European analogies discussed above were found inappropriate or in need of modification in their application to New Zealand. The issue was decided before the turn of the century in favour of the ancestors of the Maori having exterminated the moa at a time not long after they settled New Zealand, whether 550 or 1,350 years ago (Hutton 1891, McKay 1874, De Quatrefages 1893). However, the concept of separate origins for New Zealand's populations has never been completely abandoned. Indeed, shortly after the turn of the century, the thesis of inferior Melanesian settlers, followed by superior Polynesian conquerors with agriculture, gathered force, largely on the basis of traditional evidence (Best 1915; 1923). One result was that H.D. Skinner (1921, 1923a, 1923b, 1924) devoted much of his effort in the early decades of the 20th century, including a careful review of Haast's materials, to demonstrating that Moa-hunters and Moriori were Polynesian in origin on the basis of archaeology, ethnography, physical anthropology, tradition and language. He event went so far as to reverse the usual thesis by suggesting that Northern Culture of New Zealand, most closely identified with the Maori of the North Island, had a Western Pacific (Melanesian) inspiration and was brought by the first ethnic wave to settle the northern part of the North Island, whereas Southern Culture, mostly closely akin to Moa-hunter and Moriori, was Central and Eastern Polynesian in origin and later in time of arrival. The late arrivals, finding the north already populated, settled

first on the East Coast before expanding widely over southern New Zealand. This suggestion, he warned, warranted close examination before it was accepted (Skinner 1921:77).

THE DOMINANCE OF PACIFIC CONCEPTS AND METHODS

Rejecting European models or tradition for the prehistory of Polynesian and New Zealand, Skinner turned to the American notion of culture areas as a means of historical reconstruction, a method which in the 1920s, '30s and '40s yielded quite new conceptions of Polynesian prehistory. After employing the method in New Zealand, he turned to the task he had outlined of reviewing the New Zealand evidence within a Pacific culture area framework (Freeman 1959: references for 1926, 1933, 1935, 1936, 1942, 1947). In the process he progressively abandoned his initial suggestion of rather direct Melanesian inspiration in northern New Zealand, for one of marginal survival of once widespread art and ornament forms (Duff 1956:5). Skinner simply listed agriculture as a distinguishing criterion for some culture areas of New Zealand, particularly those of the North Island, without speculating as to its origin. Presumably he would have it introduced with the earlier Northern culture, using the explanation he had given of environmental restriction to account for its absence in most of the areas of Southern Culture (Skinner 1921:76).

In the context of the culture area approach as practised by Skinner, Gregory, Burrows, and Buck, Duff revived the Moa-hunter and Maori sequence for New Zealand, retaining in the process a dual origin hypothesis to account for the two groups. He followed Skinner in deriving both groups from East Polynesia, thereby overcoming any notion that racial differences were involved. Economic differences were substituted instead and a now very much revised picture of Polynesian prehistory resulting from the culture area approach was used in the interpretation of the New Zealand evidence. European prehistory and its theories, in particular those developed by Childe from 1925 to 1956, were neglected in favour of American methods as they were applied to the reconstruction of the broad outlines of Pacific prehistory. It was from this source that agriculture, which had assumed little importance in previous discussions of New Zealand prehistory, now became a dominant element in the dynamics of cultural change.

Starting with the culture area approach Duff first argued : "We may regard some disturbance at the centre as a prerequisite for these outward movements which we may liken to the dropping of a great stone in the centre of a pond. The impulse for the first billowing out of energy from these centres was doubtless the arrival of the Polynesians in their new island world, i.e. Buck's Early Polynesians, 5th to 11th century A.D.

The first explorations were so thorough that the major groups in each area were all settled at that time, New Zealand's discovery by tradition dating back at least 1,000 years. Buck believed these early Polynesians to have entered by the Micronesian route, losing, in the process, the pig, the dog, the fowl, the taro, and other food plants. The impetus, some six orseven centuries later, for the second great rippling out from the Eastern Hawaiki was, in his opinion, the introduction of these animals and plants to the Society Islands from the west and the importation of the sweet potato from the western coast of South America. The movement culminated in New Zealand with the arrival in the mid-fourteenth century of the canoes of the Fleet. The number of immigrants were small but, doubtless from their mana as introducers of the taro and kumara, they exercised an influence out of all proportion to their numbers and like the Normans in England, rapidly founded a new hierarchy of tribes and tribal power." (Duff 1947:281-82). He next turned his attention to the location of Wairau Bar and other sites in the South Island : "It is important, in view of the persistence of Maori tradition that the pre-Fleet tribes had not introduced the sweet potato (Ipomoea batatas), the taro.(Colocasia antiquorum), the yam (Dioscorea sp) and the gourd (Lagenaria sp), that the site appears unsuitable for cultivation. As the name implies the boulder bank is a narrow bar made up of millions of tons of beach stones and shingle thrown up by the sea. Even at the broader river-mouth end, where its width is 15 chains, it remains essentially a gravel and boulder deposit, deficient in soil. The same limitations to cultivation apply even more obviously to the remaining South Island sites, while south of the Opihi the climate would prohibit the growth of the sweet potato even if the soil were sufficient. Post-Fleet tribes succeeded, by taking great pains, in growing the sweet potato as far south as the Opihi river and to do so settlement was moved inland to richer and deeper soil. As this zone takes in the Wairau, Grassmere, Hurunui, Sumner and Rakaia camps one might expect, if the Moa-hunters practised agriculture, some trace of a Moa-hunter site on cultivable land." (Duff 1950:74).

On this basis he was able to summarize the hypothesis about Moa-hunters, agriculture, and domestic animals succinctly and in a fashion almost completely compatible with the then prevailing reconstruction of Polynesian prehistory : "Buck's important point that they were without food plants is confirmed for the South Island by the nature and position of the Moa-hunter settlements, and for the North Island and the Chathams by tradition. Buck's other claim that they were without domesticated animals is confirmed by local evidence as regards the pig and fowl, but not the dog." (Duff 1956:16).

THE CHANGE TO A EURO-AMERICAN CONCEPTUAL STRUCTURE

The establishment of academic archaeology in New Zealand in

1954-55 by two students of Childe and Clark not only introduced new methods of field archaeology from Europe, but also new theoretical constructs. The advances made in field procedures in New Zealand archaeology as a result are often acknowledged; the changes in the theoretical concepts employed in the analysis are less often discussed. Between 1925 and the first edition of the Dawn of European Civilization and 1956 and Piecing Together the Past, Childe had fostered a virtual revolution in European and Near Eastern Prehistory (Harriss 1971:39). On the one hand he had established the grounds for making archaeological definitions of distinct cultures, rather than simply classifying all assemblages by increasingly complicated division of the main technological stages. On the other hand he established a self-sufficient food producing economy as the basic criterion for distinguishing the Neolithic Revolution (Childe 1951:22-23) rather than one of the following, all of which were possible definition of Neolithic : an assemblage in which either polished stone, or pottery, or both were found, or a culture in which the people were settled though they might have neither polished stone, or pottery (Hole and Heizer 1965:241). Yet as far as one can tell none of these changes in European prehistory after 1925 affected the interpretation of New Zealand prehistory until the arrival of Golson and Gathercole. Their impact is evident, however, in Golson's (1959a) important "Culture Change in Prehistoric New Zealand". Its theoretical structure is largely based on Childe, with a tinge of American practice due in part to my presence on the scene at the time (Golson 1959a, fn.1).

When the change to a new conceptual structure for the analysis of New Zealand prehistory was advocated, several elements in Duff's reconstruction of the Moa-hunters were immediately placed under challenge. First a culture or phase was defined by recurrent assemblages of archaeological types and all phenomena, natural or cultural, associated with them. In this framework it was necessary to replace the term Moa-hunters as the one positive aspect on which Duff claimed to distinguish this culture with a term like Archaic which had its emphasis on recurrent assemblages or artefact types, whether associated with the moa or not. Indeed, only in this way was it possible to assess the importance of the moa in various Archaic sites, for it was evident that its refuse and industrial occurrence and its economic contribution to the diet varied considerably from site to site, including complete exclusion.

Next, although Golson found little reason to question inclusion of most of Duff's Moa-hunter attributions of portable artefact types in his definition of the Archaic phase, he did see fit, when he examined the North Island Archaic, to question the theory that Moa-hunters were without agriculture. His reasons were two. The first was that the New Zealand form of Polynesian agriculture in general employed wooden tools and little paraphernalia for harvesting or food preparation, making the survival of

much direct evidence in the form of portable artefacts unlikely in the archaeological record. The same applied to the food crops themselves. This meant that any inference for absence of agriculture in sites located in situations where it was possible must be advanced with caution. The second was that Duff's conclusion, based on the geographical situation of Archaic sites in the South Island employed an argument from localities where Polynesian agriculture was either not possible or only marginally so, and one that did not apply to many Archaic sites in the North Island.

Behind this, however, and nowhere made so explicit, lay Childe's view that it was an economy based on food production which constituted the hallmark of Neolithic societies. The Moa-hunters derived from such a society. To postulate that the founding New Zealand populations from East Polynesia gave up agriculture before being forced to do so by environmental restrictions in the South Island ran counter to the position that attainment of a Neolithic economic status was something not easily relinquished except for adequate cause. It also ran counter to Golson's advocacy of a single origin for the Archaic and Classic phases.

Except for the South Island, adequate reasons why the founding populations should have relinquished agriculture were no longer so easily demonstrated as they had been for Duff. Thus, although Golson did not emphasize it, the Buck synthesis of Polynesian prehistory employed by Duff was in process of revision. Golson himself (1959b), along with Emory (1959) and Suggs (1960), was then involved in reconstituting the hypothesis that Polynesians derived from Melanesia rather than Micronesia, and had possessed a root and tree horticultural system from the beginning. The populations who became Duff's Moa-hunters were on their departure from East Polynesia a settled food-producing Neolithic society with a fully neolithic material culture (Golson and Gathercole 1962:172). On the evidence of obsidian it appeared they first settled the North Island of New Zealand where the establishment of a portion of their Polynesian horticultural system was marginally possible under today's climatic situation, and, if a theory of climate change then current was correct, perhaps even more feasible than today (Golson and Gathercole 1962:172). It seemed strange, therefore, that Polynesian settlers in New Zealand should on arrival have retained the typological content of their material culture more or less unaltered, yet abandoned their familiar economic base completely in order to hunt a totally new avifauna, gather many totally new food plants, or exploit an abundance of marine resources, only some of which were familiar. Nor was it easy to argue that the food plants of Maori tradition were those which would easily perish on what was in theory only a chronologically earlier journey from the same source to New Zealand, or were of a type which would have failed to survive initially

in the climate or soils of the earlier landfall. Not only was it obvious that they had all been successfully transferred to New Zealand by Polynesians at some time, but archaeology was making it increasingly evident that founding groups in other Polynesian islands were usually equipped with at least some, if not all, of the necessary plants and animals, on landfall, and there was little reason to deny that this circumstance also applied to New Zealand. Finally there was little obvious typological change between Polynesia and New Zealand in the assemblage of portable artefacts from which to infer a comparable change in economy (see below).

In summary, theoretical arguments for the early introduction of some food plants from Polynesia were reasonably sound. Equally sound arguments for a lack of success in the introduction of food plants at any point in the New Zealand sequence were few. Moreover, Yen (1961), shortly thereafter, outlined the probable steps by which the development of systematic agriculture in New Zealand had proceeded, clarifying the basic processes of adaptation which were involved. Law (1970) has since examined these in detail, and shown that the importance of climatic change in the adaptation of new methods of propogation and storage has been over-emphasized. He makes the important point that without climatic change, the introductory stage of Yen's sequence, characterized by continuous vegetative reproduction of crops from stem-cutting as in the tropics, would have a geographic restriction to Bay of Plenty-Coromandel-Northland coast. This area has the longest available frost free and warm period for kumara growth and is the same area where voyages from East Polynesia had their greatest chances of a landfall. Although sweet potato crops in the ground may overwinter in parts of this area, only a low percentage retain their fertility. He also suggests four other likely means among a large number of possibilities by which the colonizing group could have protected the crop so it survived the first winter. Yen (1961:342) suggests others. Thus the introductory phase of Yen's sequence may have been short indeed, and the immigrants launched directly into the experimental stage. Here the point that round and square below ground store pits for a seasonal crop, the breadfruit, were an old and wide spread Polynesian practise needs emphasis (Law 1970:119). The New Zealand situation required, not the invention of storage pits for a seasonal food plant, but the application of the idea to the storage of sweet potato roots. As Yen (1961:339) noted Polynesians were well aware of the reproductive function of the root and used it for this purpose when the plant was transferred over long distances, though not when replanting their gardens. Presumably they used the root method on their initial arrival in New Zealand, and would have been forced to continue the practice if only a few fertile roots survived the first winter. The real innovation was the discovery that sweet potato roots could be stored in pits for later consumption or replanting. Yet without a warmer climate than today, the sweet potato, from the time of introduction, would have had to be grown as a seasonal

crop, with storage in some form the only alternative to immediate consumption. It is not altogether surprising, then, to find that the colonizers of New Zealand experimented with the one kind of seasonal food storage known to them in the islands.

Since 1959 the theoretical arguments for introduction of agriculture in the earliest stage of New Zealand's settlements have been advanced and subsequently refined. All that was required was the evidence, direct or inferred, that it had happened. Unfortunately that evidence has seemed more elusive than was originally imagined (see Groube 1967, 1968:142-43 and Law 1970, for a review of the record).

THE POSITION NOW

Fortunately, New Zealand archaeology has now regained a position it held at the time of Haast, and is familiar with and influenced by the latest changes in the practice of prehistory elsewhere in the world. There is now increasing use of conceptual tools which are elsewhere replacing the archaeological constructs of the 1950s and '60s. Such a trend is evident in recent papers by Shawcross (1967), H. Leach (1969) and Higham (1970) as well as much in preparation or in press. It is probable that through the application of new concepts the association between Archaic assemblages and economic pursuits such as seal or moa hunting, shell or marine fishing, plant collection, and the use of various domestic plants and animals may find better resolution. Here we are concerned with the role of domestic plants in the agricultural part of the economic system at the early end of the sequence.

With the advent of new evidence and systems of analysis, the simple contrast between hunter-gatherers and agriculturists, along with Childe's Neolithic Revolution as an abrupt transformation distinguished primarily by food-production, has undergone critical review and extensive modification (Leach 1969, Harriss 1971). If the critics are correct, no longer is the contrast one between two separate economic systems, rather it is a question of differential levels of dominance closely correlating with variations in the natural resources of quite localised micro-environments. Both Leach (1969) for the protohistoric Maori, and Higham (1970) for earlier archaeological sites, make this point for the southern part of the South Island. Groube (1970:157 and fig. 15) does so for the North Island. In this context Yen's (1971:2) current hypothesis is that : "the Polynesian colonization of New Zealand may be looked upon as one endpoint in migration that represents the area of most rigorous climate reached. The islands are presently marginal for the unassisted horticulture of tropical species, and it is not too much to suppose that they were so at initial settlement. It may be further suggested then that there was a segregation of the components of

the transferred subsistence pattern, one result being that agriculture was regulated to a minor, introductory role. At the same time, the environment, as large islands with the accustomed resources of sea and shore and the more extensive land areas in their variation and somewhat richer biota (especially in its faunal aspect) afforded a richer field for hunting and gathering than most of the tropical islands. Thus, if an hypothesis of unitary origin of New Zealand Maori culture is adhered to, one might expect a developmental sequence whose steps in their relevance to subsistence reveal change in dominance rather than qualitative conversion from one base (hunting and gathering) to another (agriculture)." (see also Kirch 1970:55 for Hawaii).

This position may be compared with that of Leach (1969:27) : "As has been shown, the Maori has been regarded as either an agriculturist, or a hunter-gatherer; few scholars have adopted the view that there are innumerable Maori economies responding to as many different biotypes. The words of early explorers have been often misread by prehistorians to supply proof of the broad two-fold division. A close examination of these sources suggests rather that Maori economies graded from pure hunter-gathering to semi-agricultural, a view not inconsistent with recent attempts to see cultural separations as clines rather than as lines."

The early New Zealand cultural assemblages can be derived from East Polynesia, where the economic association was with an agricultural system involving domesticated plants, some domesticated animals and suitable techniques of maritime exploitation. The portable artefact content of the assemblage was transferred to New Zealand more or less intact, as a comparison of the Maupiti and early Marquesan assemblages with those of the Archaic phase reveals (Emory and Sinoto 1964, Sinoto 1970, Golson 1959a). Items like pearl shell coconut graters and Cowrie and Tonna food scrapers dropped out, but so did the plants like the coconut and breadfruit with which they were closely associated. The stone food pounder was apparently a later East Polynesian innovation which did not appear until after dispersal to New Zealand and Easter Island (Groube 1968:145, Sinoto 1970:110). There was a failure to effect the transfer of the pig and chicken throughout the New Zealand sequence, indicating that loss during transfer may account for absence of some items, though the survival of the dog indicates that transfer of animals was not impossible. In New Zealand, moreover, there are few gross differences between the Archaic assemblages of the North and South Islands, and none which suggest major differences in their associated economy. We are faced then with similarities in traits such as fishing gear, adze kits, ornaments types, tattooing needles, burial types, and ovens, from East Polynesia through the North and South Islands to Stewart Island and the Chathams. From the

perspective of the extreme south where the associated economy almost certainly included no domestic plants and only the dog among the animals, one might argue that all similar assemblages in the North were also associated with a similar economy. In this view any change in economy would be explained solely as a result of transfer from tropical Polynesia to the more temperate environment of New Zealand. As was indicated above, this argument is theoretically weak, except in its application to those tropical domesticates which will not bear or reproduce in New Zealand. From the Polynesian perspective on the other hand one can make a reasonably strong case for an Archaic association with at least some of the domesticated plants capable of transfer, arguing that their differential importance in the economy varied according to the local micro-environments, with some areas being entirely deficient except for agricultural products acquired by trade.

If the usual range of portable artefacts offers no clues to the extent to which domesticated plants were part of the Moa-hunter economy, what will ? The obvious answer is in those items lacking in the non-agricultural parts of the South Island, but present to the north, which also possess a respectable antiquity from their archaeological occurrence and widespread distribution in Polynesia and Oceania. Such items are pits for food storage, stone field boundaries for garden plots, agricultural terracing both wet and dry, and buried garden soils (Yen 1971). Another answer is in more subtle differences between the North and South Island Archaic sites, in terms of frequencies of site types and seasons in which they were used. Yet another is in close study of the differences in the fauna and flora associated with these sites.

It is not necessary in advancing the thesis to establish that agriculture is as early as any known Archaic assemblage in the North Island. Rather it is enough to show that there is an association with the Archaic, for if it holds for the later end of the phase, in theory it should hold for the earlier end as well.

The first question, then, is how late is the Archaic in those parts of the North Island where agriculture is to be anticipated first. Discussing a summary of radiocarbon dates Shawcross (1969:193) concludes that "If attention is concentrated on the zone in which the majority of dates are clustered, it will be found that almost all of the sites which may be identified as early on artifactual and palaeontological grounds were first occupied during the twelfth century A.D. With the recent availability of determinations for the Mt Camel site, Houhora [N 6/4] in the far North, it is now possible to recognize a pattern of a dozen or so early settlements strung throughout the whole length of the country — a length of a thousand or so miles." Focusing on the region where agriculture is to be anticipated, it can be shown that this

pattern of Archaic settlements is maintained into the 14th or 15th centuries A.D. in those areas which have been examined archaeologically. This maintenance of the Archaic pattern into the 15th century is well known in the South Island but it is sometimes overlooked in the North. Yet the evidence is there. For example three low lying beach middens with typical Archaic assemblages are linked by their association with the Loisels pumice : N 30/5 on Great Barrier (Law ms.), Layer 4B of N 40/3 at Opito (Golson 1959:18), and Layer 5 of N 44/69 at Hot Water Beach (Leahy : 1971 and pers. comm.). Layer 4C underlying 4B at Opito is dated 1310 $\pm$ 50 A.D.; Layer 4, overlying 5 at Hot Water Beach, is dated by four samples to the 15th century A.D. (Leahy : 1971 and pers. comm.). Geologists place the Loisels pumice as 13th century but it may be slightly later, especially as a lag pumice in these sites. Finally obsidian flakes from N 30/5 and N 40/3, layer 4b, have an approximately similar thickness of hydration rim on each sample (Green 1964:135). Opito Layer 4A is therefore almost certainly of 14th century or later age, while the end of the sequence in the Archaic midden layers of Sarah's Gully (N 40/9) is also securely dated to the 14th century (Golson 1959a:45). Finally two sites, N 38/21 and 24, have a number of Archaic layers lying above the 13th century Rangitoto ash on Motutapu. Many of these can confidently be assigned to the 14th century, and some are probably of 15th century age or even later (Golson 1959a:45-46, Scott 1970:29, Davidson pers. comm.).

In summary, the New Zealand-wide Archaic of the 12th century A.D., in the central portion of the east coast region of the Auckland Province continued until the end of the 14th century A.D. without any of the usual indication of Classic Maori developments, influences, or site unit intrusions. In fact on Motutapu and the Coromandel 15th century dates apply to the Archaic. The earliest occupations on Mt Wellington (N 42/4), which are of this age could also be of Archaic origin (Golson 1961:51). Yet the northeast coast where these sites are is the region ranked 1 in an analysis that is "a fair indication of the order in which these regions would have been exploited agriculturally" (Groube 1970:157). For this reason evidence for Archaic agriculture in the region is not easily interpreted as an economic innovation borrowed from some other more favoured region in New Zealand where it developed first. Rather such data may be taken as a reasonable indication of the stage to which agricultural development had proceeded in Yen's outline of the process of adaptation to New Zealand conditions.

A rough <u>terminus ante quem</u> for Archaic site assemblages in the more favoured agricultural parts of the north may be placed on present evidence between 1500 and 1600 A.D. This is based on the existence of occupation dates of that age for the early levels in a number of different types of pa site containing Classic Maori assemblages which

are now known from the Waikato, Kauri Point and Kaipara (Ambrose 1968a and ms.; Bellwood 1971; Groube 1967:18, fn 14; McKinlay 1971; Shawcross 1968). As indicated in the summary of Archaic sites and dates above, terminal dates for the Archaic in the central part of the northeast coast region would appear to lie between 1400 and 1500 A.D. This being the case, what evidence is there of agricultural activity before 1500 A.D., especially that which can be associated with Archaic assemblages ?

On the basis of age alone there are two secure pre-1500 A.D. agricultural soils known in this region. One is reported by Groube (1968:143) on Moturua Island with an A.D. 800± 90 date. Further investigations and new dates indicate the earlier soil is 13th century in age and the later one is 15th century (Bellwood 1969:203, fn. 2; K.M. Peters, pers. comm.). The other is evidence for bush clearance followed by an agricultural soil and six small pits constructed in succession at the Kauri Point Pa (N 53-54/5) in the 14th century or earlier (Ambrose 1968a and ms.). Neither site has associated cultural assemblages which would allow an indisputable assignment to one phase or the other, but in distance neither is far from Archaic sites of the same age.

In Groube's Northwest Coast Region, ranked 2 on the scale of agricultural potential, Bellwood (1971:67) has excavated a pa (N 37/37) at Otakanini in which the first period is characterized by shell midden with four rectangular storage pits for kumara. The pa, which had not yet been divided into areas, was at this time defended by a terrace scarp 2 meters high with a palisade along the top. Again no artefacts indicative of cultural context were recovered, but the date A.D. 1351 ± 78 indicates a fair degree of chronological overlap with northeast coast Archaic assemblages. Also there is no reason to assume that Archaic assemblages on the west coast were replaced by Classic ones at any earlier date than on the east coast.

The northeast coast region also contains the two often cited pit complexes of Sarah's Gully (N 40/9) and Skipper's Ridge (N 40/7). If the pits are interpreted as kumara stores, as most would now agree, and of Archaic age, which is disputed, they would indicate that the agricultural adaptation had already passed through Yen's introductory and experimental stages, whatever the importance of kumara in the local economy. Bellwood (1969:203-4) has questioned the assignment of these pit complexes to the Archaic, but his arguments are open to challenge. Still the issue can never be resolved with any satisfaction as long as the full reports on the sites remain unpublished and much of the data unavailable. Working from my own acquaintance with the sites and the available records, I believe Golson's and Parker's equations of the pit

complexes with local assemblages of Archaic type is still reasonably well supported, though not necessarily on the grounds which they have outlined.

For N 40/9 at Sarah's Gully, Bellwood (1969) is correct in stating that the blanketing sand layer provides no more than a terminus ante quem for both the pits and the midden. He errs, I believe, in suggesting that "since this layer is undated there is little reason to assume that the pits are definitely Archaic, the more so since all other dated pits from excavation have turned out to be associated with unequivocally Classic Maori culture" Bellwood (1969:203). Events, including his own efforts, have tended to undermine the latter part of the statement, while he noted himself that because most pits have been associated with Classic Maori Culture, this is no basis for denying pits in the Archaic. His argument also fails in respect of the partial remains of one pit with a posthole, wood from which has been dated as A.D. 1140 $\pm$ 50, on the marine terrace edge in direct association with the Archaic assemblage.

The wind blown layer of sand, most easily traced in the flat behind the marine terrace, where it covered drains and a burial, apparently reflects a very local man-induced instability resulting from Archaic settlement on the terrace edge. It was not present, for example, on the adjacent headland pa (N 40/10). It would appear to derive from the abandoned and not yet stable beach midden strung along the marine terrace, not long after settlement ceased, rather than at some later date, especially as it lay deep enough not to be destroyed by modern farming.

Finally there is the question of proximity and types of site complexes in this small bay. Although there are several beach middens with Archaic assemblages, few sites with evidence of later assemblages have been reported. Principal indications of later occupation are one historic midden (N 40/13) at the base of the headland pa and one barbed fishhook in period III of the pa (N 40/10). Because pit complexes are often lacking in refuse and portable artefacts, not unlike the situation on some pa sites where refuse is often concentrated in particular areas and artefacts in others, it might be reasonable to view the closest midden with evidence of cooking, and industrial or other economic activity as the missing component. At Sarah's Gully the two complementary components are very closely juxtaposed with alternative possibilities for site conjunction being extremely limited. I, at least, would prefer an interpretation which yields a functioning community of two artefactually discrete components to one that yields single components of two culturally and temporally exclusive communities.

On this basis one can also examine the proposed conjunction of

the Skipper's Ridge pit sequence at N 40/7 with Layer 4 of the Archaic midden (N 40/3) on the beach front below. The distance between them is greater than at Sarah's Gully, and other beach middens of later age are available in the vicinity, yet the ridge is the first suitable ground for pits behind the sand beach. Also it is noteworthy that the pit components on the ridge span a much longer interval in time in concert with the longer sequence exhibited by the middens on the beach. The two types of site components are in some way related, and it is likely the pattern of relationship is one of long duration. Bellwood's point that Parker's typological comparisons with pits on the site of Kumarakaiamo (N 109/9) in South Taranaki are not very helpful in fixing the age or association of pits on Skipper's Ridge is valid, but his argument can not be extended to Parker's comparisons with Sarah's Gully. If small pits at Otakanini and Kauri Point are 14th century in date, then there is no reason to deny this age to those at Sarah's Gully, particularly as it is entirely in keeping with their close association with the 14th century Archaic midden remains discussed above. At Sarah's Gully the bin and small rectangular pits are clustered with two shallower rectangular pits of larger size possessing postholes in the central floor area and along the sides. The latter recall the larger (4 by 8 and 5 by 10 ft) pits of level III at N 40/7 at Skipper's Ridge which were also grouped with smaller bin pits. The same pattern of larger rectangular pit and smaller bin pit is in evidence at a site called Skipper's Ridge II, N 40/73, some 200 metres up the ridge from N 40/7 (Bellwood 1969:198). These last are of 18th century date, but the evidence suggests the pattern of relationship discussed above is one of some antiquity in the local area, and because one set is late is no reason to deny that others may be earlier.

The 18th century pits of N 40/73 were associated with an extensive flake industry and a classic type 2B adze, as well as a 2A and an adze made on a beach pebble which approximated to a 2B. Layer II at N 40/7 is more like the 18th century pit phase at N 40/73 than the layer below in the following characteristics : a greater number of obsidian flakes, with more than 30% of them from a non-Mayor Island (Whitianga ?) source, a beach pebble adze approaching type 2B, and a rectangular bin storage pit. Obsidian hydration rim comparisons (Green 1964:135) placed layer II as comparable in age to the main sequence at Kauri Point which has been dated to the 16th century or after (Ambrose 1968). Layer II at N 40/7 contrasts with N 40/73 in the possession of a typical late shell midden, ovens, and a small late type of bell-shaped underground storage pit. Bellwood (1969:204) reports a broken 4A adze unlisted by Parker who mentions only a good quality rectangular stone knife and files. On the whole, a 16th or 17th century age as implied by the obsidian and a cultural context of Maori seem justified.

If this is the case, then Layer III and IV at N 40/7 might be

expected to be 16th century or earlier in date. The layers yielded only 15 pieces of obsidian, and all but one was from the Mayor Island source. Hydration dating of the Mayor Island samples from each layer indicate rims of comparable thickness to those of layer 4B in N 40/3 on the beach below, which as indicated above is of 14th century date, layer 4A being even later. Layer III at N 40/7 has three triangular sectioned adze roughouts, variously reported as either "hog-backs" or two of Duff Type 4A and one of Duff Type 3. Only a chip from a highly polished adze was recovered in layer IV. Bellwood plausibly argues that the broken 4A adze of layer II may be out of context, but if so, this implies its displacement during the pit or oven excavations cut from layer II, making the adze further evidence for the Archaic nature of the earlier levels. His attempt to argue that triangular sectioned adze roughouts are not necessarily an indication of an Archaic assemblage does not carry great conviction, given that they are the most common adze form in the 14th century Archaic assemblages at Opito and Sarah's Gully. This suggests one might expect more roughouts of this form than any other to occur in Archaic assemblages, which is the case here.

To conclude, there is no convincing basis for assigning the Skipper's Ridge pit complexes of Layer III and IV at N 40/7 to some phase of Maori culture. They are stratigraphically earlier than a layer which may be so equated, and they contain some positive evidence indicating contemporaneity with layer 4B (and thus 4A) of the Archaic midden on the beach below as Parker originally suggested. Until evidence is forthcoming which diminishes this claim, they would appear to be acceptable as further evidence of agriculture in the Archaic Phase.

The pattern of undefended pit complexes on the low ridges immediately behind Archaic and Classic beach middens at Opito has been confirmed in more recent site surveys by myself. The extensive nature of such sites, many of them with signs of other domestic activities, including ovens, middens and even surface dwellings has been demonstrated for the later Maori phases of Motutapu (Davidson 1970a:11), and it is not unlikely that among the many such sites there are some that belong to the earlier phase. It is far more likely that undefended pit complexes of the Archaic gave rise to the defended and undefended food stores of the Classic, than that both have a late origin restricted to an association with Classic assemblages only. If so, it is in the differences in frequency and in types of sites and their conjunction in the agricultural north and the non-agricultural parts of the South Island that major contrasts will be found in the Archaic, despite an overall similarity in portable artefact assemblages.

Other subtle differences may be reflected in the study of seasonality and diets. Just such an outcome has resulted from Allo's (1971) study of the dentition of the Maori dog of New Zealand, namely that : "The evidence [of premortem tooth loss] supports the other indications of dietary differences between the dogs of the North and South Islands: that the dogs of the North Island, during both Archaic and Classic Periods, ate a larger proportion of soft vegetable foods than those of the South Island. That this was not an exclusive dependence, however, is indicated both from the wide range of fauna in the middens of both periods..... and by the almost complete absence of dental caries in the Polynesian dog of New Zealand." While Quatrefages, in his commentary on von Haast's theories about the dog, was not entirely correct, it indicates that theories on the diet of the moa-hunter provided by the dog remains were important concepts 100 years ago which we have largely neglected until recently. Yet little more was required than an examination of the evidence and some modification in concepts of analysis and interpretation.

CONCLUSION

This review has demonstrated that the interpretation of the Moa-hunter or Archaic Phase of New Zealand's prehistory has continually been influenced by changing interpretations of prehistory in Europe, America and the Pacific, with allegiances to first one and then another area. While none would claim this is not as it should be, some may be concerned with the often unwarranted conclusions based on rather slender evidence to which the practice has led. Others may feel more distressed, as I do, by the tendency for interpretations arrived at in this fashion to become conclusions, rather than hypotheses which are the means of stimulating closer examination of existing evidence, generating new data, and providing for revision of existing concepts.

In 100 years the Moa-hunters, who started as Palaeolithic hunters of great antiquity, quickly rose to Neolithic hunters and gatherers of somewhat lesser age. Their antiquity was thereafter reduced to within fluctuating but acceptable limits, though the concept of their non-agricultural status and that of their separate origin from the Maori remained. Since 1921 their origin has become increasingly precisely fixed in East Polynesia, though the actual island group has yet to be determined. A further change of theoretical constructs altered their designation to Archaic and the basis of their definition to artefacts. In the North Island it also opened the possibility of their having agriculture as well as being hunters and gatherers. Now

they threaten to prove to possess as seasonal and as varied economies as their Maori descendants, and for approximately the same reasons. In these economies it seems likely we now have to grant them an association, where the evidence and environmental circumstances warrant, with domesticated plants as well as the possession of dogs whose diets varied with the economic habits of their masters.

Haast, from the perspective of 100 years, may appear to have been wildly wrong, but he never ceased accumulating evidence, examining it in conjunction with existing data, and slowly modifying his opinion. The conceptual notions on which we can and do draw today are far more adequate than those he had for the task. Real advance now depends on the generation of new evidence from New Zealand itself supporting or modifying those views now held. If we look back in anger, it is only because we have taken so long, the path has been so devious, and opinions so rigidly held by some. Haast would not have been amused. He worked at the task for less than a decade, and in the course of that brief span his views changed more perceptibly than is sometimes acknowledged.

ACKNOWLEDGEMENTS

For the stimulus which led to writing of this paper and for comments and editing, I wish to thank the editor of this issue, Miss Janet M. Davidson. I also wish to acknowledge the background which a thesis by Hansen (1970) and two articles, one by Davidson (1967) and the other by Shawcross (1963) have provided in understanding the history of prehistory in New Zealand, though each approaches it from a different perspective. Discussions with Garry Law, Anne Leahy, Karel Peters, Wal Ambrose, Wilfred Shawcross and Peter Bellwood have helped to clarify various points. Given agriculture as a theme in this paper, it would be remiss not to mention Douglas Yen, our joint ventures into archaeology and ethnobotany and the lengthy discussions this has entailed. Though he has not commented directly on this paper, I have none-the-less profited from his insights. My approach, however, remains that of the cultural historian.

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