

ARCHAEOLOGICAL INVESTIGATIONS ON MOTUTAPU ISLAND, NEW ZEALAND

Introduction to recent fieldwork, and further results

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Abstract. Further excavations carried out at Station Bay, Motutapu Island, during 1970/71 are introduced. Radiocarbon dates for site N38/37 and source identifications of obsidians from sites N38/24, N38/30 and N38/37 are described. A prehistoric cultural sequence on Motutapu is outlined.

Archaeological investigations carried out on Motutapu Island under the auspices of the Auckland Institute and Museum are part of a continuing programme of research. A brief description of the island, the advantages it offers for research, and a summary of investigations up to 1968 have been presented elsewhere (Davidson 1970a) together with more detailed reports on some excavations (Scott 1970, Davidson 1970b, Leahy 1970, Allo 1970).

THE 1970/71 SEASON

Another season of fieldwork took place during the summer of 1970/71. While Miss Leahy extended her excavation of site N38/30, previously investigated in 1967/68 (Leahy 1970, Leahy this volume), most of the work was concentrated on site N38/25, the headland pa with adjacent pits at Station Bay, close to the previously excavated undefended sites, N38/30 and N38/37. Results of the excavation of one of the pits adjacent to the pa but outside the defences are presented in a following paper (Sullivan this volume). Analysis of material recovered from the main excavation of the pa is still proceeding, however, and only a preliminary report is presented here.

EXCAVATIONS AT N38/25

N38/25 is a fortified headland with pronounced and well preserved earthworks. Some erosion has taken place on the steep scarps, but in general the surface features of the site are obvious and undisturbed, except for some fossicking by an unknown and irresponsible person during the period 1968-69. The location of the site on a steep narrow headland on the north-east side of Station Bay and its general appearance may be perceived by reference to two earlier papers (Davidson 1970a, Figs. 1 and 2; 1970b, Figs. 1 and 2).

A well preserved transverse ditch (Fig. 1 — b - c) forms the principal defence. This ditch continues for a short distance as a lateral defence on the western side. The largest flat area on the site is immediately inside the ditch. A series of small terraces leads down on either side and up towards the *tihi* (Fig. 1 — d - e) which is a relatively small area surrounded by a scarp on all sides. On the south side of the *tihi* is a particularly high and steep scarp, below which is a terrace similar to but slightly smaller than the *tihi* and bounded on its south side by a second shal-

lower and eroded transverse ditch. Beyond this a long narrow gently sloping area, with a number of indeterminate features, extends southwards, becoming steeper and narrower, until it drops away in a steep razor-backed slope to the rocks below.

Immediately north of the principal defensive ditch is an apparently truncated terrace, which gives some suggestion of continuing down the western slope as a possible earlier ditch. North of this terrace are three large pits, the largest of which was excavated by Sullivan (Sullivan this volume).

The aims of the 1970/71 investigations were several. The site was selected in order to investigate the similarities and differences between this fortified site, and the two undefended sites already excavated in the same bay. In addition to the obvious and perhaps misleading difference between fortified and undefended sites, it was hoped to obtain from the pa evidence about the layout of the site, details of its structures, samples of midden and an artifactual assemblage which could be compared with similar data from the undefended sites. At the same time it was hoped to investigate the uniquely different aspect of the pa, namely the nature of its defences.

Certain internal problems concerning the site itself were apparent. The possible existence of an earlier defensive ditch, inconclusively suggested by surface evidence, required investigation, as did the relationship to the fortified site of the three large and still clearly visible surface pits outside the defences.

Investigation of the largest of the external pits was undertaken as a separate project by Mrs Sullivan, and is separately reported on. Although it is not possible to connect this pit directly by stratigraphic evidence to the interior of the pa sufficient evidence was revealed for the relationship of the pit to the sequence of events inside the pa to be inferred with some confidence.

Four other areas of the site were investigated.

The outer terrace

A 4.5 x 1 m trench aligned with the grid of the large pit was set out on the terrace just north of the main ditch. Results here were inconclusive, in that the terrace was shown to be artificial, but not a partially filled ditch, as had been suspected from surface evidence.

The tihi

A single square on the *tihi* revealed a sequence of pit use and abandonment. Earliest features were two parallel pits lying roughly east-west, only parts of which were in the excavated square. The northern of the two, of which a greater area was uncovered, was a fairly small rectangular pit with a single central line of postholes. It had been obliterated by an intentional fill thrown in while a thick layer of bracken fronds was burning in the base of the pit. On the south side of the square a large pit, aligned in a north-south direction, had been cut through the fill of the earlier pit. This later pit had a buttress at the north end, and a scoop hearth at the north-west corner. A double burial of two adults in an extended position had been placed on the floor of the pit, which had then been filled deliberately. The filling of the pits created a surface which became a deliberate floor, as it formed a recognisable level beneath the soil and carried a scatter of small pebbles, and a quantity of small obsidian flakes. No associated features were encountered.

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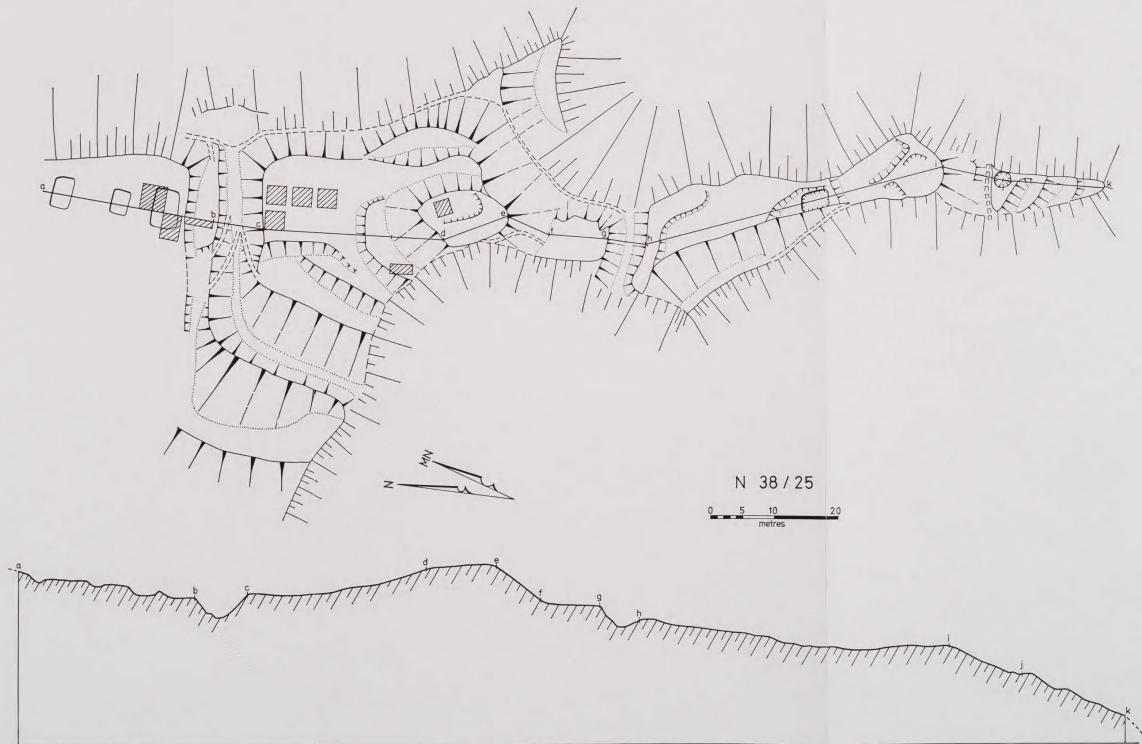


Fig. 1. Plan and profile of site N38/25, the headland pa at Station Bay, Motutapu Island.

Inner terrace

A 3.5 x 2 m area was excavated on the small terrace immediately north-west of the *tihi*. Here a sequence similar to, but simpler than that on the *tihi* was revealed. A rectangular pit had been dug in this area, aligned in the same direction as the terrace. It had a buttress at the southern end, a central row of postholes and no drain. Deliberate infilling subsequently established a hard surface, on which were a couple of very slight fireplaces, and a scatter of obsidian flakes. No other features were recognised.

Central flat area

The bulk of the excavation was concentrated on the flattish area just inside the ditch, where four 3 m squares were excavated. The sequence of events proved extremely complicated, with the result that a smaller area was excavated than had originally been hoped.

The overall stratigraphy in the area was relatively simple; the complexity resulted from the large number of features associated with the major layers, which were as follows:

Layer 1, turf and topsoil over the entire area.

Layer 2, a midden layer of varying thickness, incorporating localised lenses of concentrated shell, and patches of fine ashy midden. Several *haangi* were associated with this layer and it filled a number of postholes of various sizes.

Layer 3, a mixed deposit of yellow clay with scattered midden which filled a number of features, mostly pits.

Layer 4, undisturbed clay derived from weathered greywacke.

Features filled with layer 3 included thirteen rectangular pits of varying sizes and depths, five small rectangular pits (less than 1 m long) with irregular floors, a narrow round-ended pit of a most unusual nature, and about ten palisade postholes. None of the pits was excavated in its entirety, as all either extended beyond the excavated area, or had been truncated by other pits. Of the two largest pits, one showed evidence of two successive floors, while the floor of the other had been broken by several smaller later features. Some of the earliest pits had been filled with particularly hard compacted clay similar to that encountered by Sullivan.

Details of the stratigraphy and features will be presented in the full report of this excavation. A few tentative conclusions, however, may be drawn at this stage, for consideration in the discussion to follow.

The earliest features in the central area seem to have been pits, and some of these apparently preceded any evidence of palisades. The use of the area for pits evidently continued for a considerable period of time, as many pits are cut by other pits. Layer three, which fills all these features, contains little midden and almost no artifacts, suggesting that relatively little other activity took place on this part of the site at this time. A number of the larger pits appear to have been subsequently used in a secondary manner, as Sullivan's large pit was, but layer 3 inside the pa nowhere incorporates the extensive burned and other vegetable matter of Sullivan's pit.

The first palisades inside the ditch may have been constructed while the last of the pits were still in use. Subsequently, however, the pits were all filled in and the accumulation of layer 2 began. The fortifications were renewed along similar lines, and the last set of palisades is filled with layer 2, rather than with layer 3. At this period there was probably a fighting stage associated with the stockade.

Further areas should be excavated on the pa in an attempt to correlate the as yet unrelated sequences from different areas. The following points can be made, however. There are no pits visible on the surface of the pa, but each area investigated revealed a sequence from pits to flat surfaces. Little can be said of the function of the flat surfaces in squares L-4 and I-6, although the quantity of obsidian present on each and the fireplaces on one suggest open work areas, perhaps close to houses. The midden build-up in the central area, however, bears unmistakable sign of a communal cooking and dumping area. So far, then, the limited area excavated at N38/25 suggests greater spatial separation of activities than was apparent at either of the undefended sites, as well as greater intensity of utilisation (in the form of numerous overlapping structures) in the central flat area of N38/25 than on other sites, or, indeed, other areas of this site.

The pits uncovered, in so far as they can be reconstructed, add to the ever-increasing range of structural forms known from Motutapu. Since no two pits uncovered during the 1967/68 season were exactly alike, it is hardly surprising that new proportions and new posthole patterns have emerged from the 1970/71 excavations. N38/25, indeed, has pits larger than any from N38/37 and N38/30, and a range of very small pits unlike any from the other sites.

Analysis of midden and artifacts from N38/25 is not yet complete. Artifacts were very few, and include one small and markedly quadrangular sectioned adze (in contrast to the range of cross-sections on adzes from the undefended sites), one barbed bone fishhook point, and a tattooing chisel. The most notable difference between N38/25 on one hand, and all other Motutapu sites excavated on the other, is the almost complete absence from excavated portions of the pa of adzes and flakes of local greywacke, and hammer stones of local cherts and jaspers. This may be due to insufficient sampling of the more spatially specialised pa; the items may be present in unexcavated parts of the site. On the other hand, obsidian, chert, and greywacke flakes had similar distribution on working floors at other sites, whereas here only obsidian is found. Thus failure to use local rocks may indicate the arrival of another group of people on the island.

During excavation of the midden, a definite impression was formed that this midden contained a far greater proportion of rocky shore shellfish, particularly mussel, than had the undefended sites. In general characteristics, however, and in the predominance of shells and fishbones, and virtual absence of other bones, the middens of the three sites are not too dissimilar.

In conclusion, then, on present evidence the following premises may be established.

1. The pits outside the defences were probably associated with the early stages of occupation of the area before construction of the principal defensive ditch.
2. Surface indications of an earlier ditch are not substantiated.

3. The sequence of occupation activities on the site appears to change from undefended pit complex to defended site with pits as part of the occupation complex, to defended site with few or no pits and discrete activity areas.

4. An important difference between the occupants of the pa on one hand and the undefended sites on the other is the apparent failure of the former to make much use of local greywacke and chert. Further excavation of other areas is needed to substantiate that this is not a result of insufficient sampling.

FURTHER RESULTS FROM EARLIER SEASONS

Results of two different kinds of analyses have become available since the publication of the earlier site reports. These results when incorporated with existing evidence, provide a basis for reviewing the entire prehistoric sequence on Motutapu.

CARBON DATES FROM N38/37

Five radiocarbon determinations for charcoal samples from N38/37 are now available (Table 1).

Table 1. Carbon dates from site N38/37.

Sample No.	Description	Age (years B.P.)
NZ 1164	charcoal from base of pit 5	600 \pm 40
NZ 1165	charred twigs from undisturbed contexts beneath Rangitoto ash*	600 \pm 40
NZ 1166		507 \pm 74
NZ 1167		410 \pm 73
NZ 1168	charcoal from small <i>haangi</i> , fill of pit 1	185 \pm 71

* Samples NZ 1165 and NZ 1166 came from square M-8 and sample NZ 1167 from square M-11.

The three samples from beneath the ash (NZ 1165, NZ 1166, NZ 1167) were all of similar material (small charred twigs), and all from an identical stratigraphic context apparently very similar to that from which Golson and Brothers obtained one of two earlier samples used to establish the approximate late 12th century age of the ash shower (Brothers & Golson 1959).

These three dates from N38/37, although from identical contexts within a small area, show some variation, and if the two earlier dates obtained by Golson and Brothers are also taken into account, the variety of dates for the same event is considerable.

Continuing work on the geology of Rangitoto has suggested a continuation of activity there to a time considerably more recent than the date suggested by the earlier determinations for the ash shower. However, there is as yet no evidence that the eruptive cycle included more than one ash shower. Certainly the locations of the three samples from N38/37 are so close horizontally, and so identical stratigraphically, that there can be no doubt that these three samples date the same event. The three results support this in exhibiting no significant difference.

A more recent date for the ash shower would have the effect of compressing the entire archaeological sequence on Motutapu; the most significant result of this

would be that the long sequence of layers containing Archaic artifacts above Rangitoto ash at Golson's Pig Bay site (N38/21) would also be brought closer to the present.

At present, the most that can be said about these samples is that the date of the ash shower must be regarded as less precisely fixed at about 1200 A.D. than was previously thought. In view of the importance of the ash shower as a marker above which considerable Archaic occupation occurred, it is to be hoped that further work may clarify this problem.

The two carbon samples from cultural (post-eruptive) contexts at N38/37 date events which, because of their stratigraphic position, must be later than the event dated by the previous three samples. Sufficient time had passed after the ash shower for the island to become habitable again. Both samples come from the fills of pits which had been dug through the ash into the underlying clay. The determination on sample NZ 1164 (which is identical with the earliest of the three from beneath the ash shower) can only be regarded as an instance of old charcoal or wood being used in, or intruded into, a much later deposit. Sample NZ 1168, however, from a small *haangi* associated with the occupation of N38/37, appears to date an event (the *haangi*) which took place during occupation of the site.

An 18th century date for N38/37 is quite acceptable, although slightly later than was anticipated. The site was previously interpreted as belonging to an Early Maori Phase, with the proviso that it might still be of late date, in view of what was already known about the cultural sequence on Motutapu (Davidson 1970b, p.59).

In sum, then, the carbon dates for this site suggest that the occupation of the site itself may be as late as the 18th century; the age of the Rangitoto ash shower, however, which is so important in the archaeological sequence, appears more uncertain than hitherto.

SOURCES OF OBSIDIAN

A series of obsidian items from N38/37, N38/30 (Station Bay undefended sites) and N38/24 (the Sunde site) was submitted to Dr R. Reeves of Massey University, for source determinations. Details of the analyses are given in Appendix 1.

Five pieces of obsidian from the Sunde site were analysed. These came from levels 2 and 4 above the Rangitoto ash. Only one piece of obsidian had been found beneath the Rangitoto ash, and this had previously been used for hydration rim analysis, and was no longer available. Green (1964) had attributed it to a Mayor Island source, and in view of the repeated confirmation of visual identifications of Mayor Island obsidian there is no reason to question this attribution.

Of the five pieces from levels 2 and 4, two are from the Huruiki source in Northland, one other is probably also from the same source, one is from Mayor Island, and one is significantly different from all sources known at the time the analysis was carried out. Other archaeological samples have been found which do not conform to any known sources, suggesting the existence of either an as yet unknown source, or a significantly different minor flow associated with one of the known major sources (Reeves, pers. comm.).

Two "green" pieces of obsidian, and eleven "grey" pieces from the two undefended sites were selected for analysis. One green and one grey piece were from N38/37 and the remainder from N38/30. The two "green" pieces were confirmed as being from Mayor Island. Despite apparent visual differences, ten grey pieces were found to be from Great Barrier Island (including the single piece from N38/37). The remaining grey piece, not visually different from some of the Great Barrier pieces, was from Whitianga.

The failure of visual inspection by Green and myself to distinguish at all between "grey" obsidian from Huruiki, Great Barrier, Whitianga, and the unknown source shows that future reliance must be on more sophisticated methods of analysis of grey obsidians. On the other hand, continued identification of "green" pieces as of Mayor Island origin, seems reasonable. However, the single piece from the Sunde site identified by Dr Reeves as almost certainly from Mayor Island (on density only), was not recognisably green, showing that Mayor Island sources may also yield some "grey" obsidian.

The results show that Mayor Island obsidian was used throughout the sequence on Motutapu Island, although never as the major source except for the statistically minute sample from beneath the Rangitoto ash at the Sunde site. The Great Barrier Island source, popular during the later stages of Auckland prehistory, may have been unknown until a relatively late point in the sequence, since it is not represented in the Sunde site at all. On the other hand its popularity at site N38/30 is matched by results from other relatively late sites on the Auckland mainland (Green 1964).

The identification of both Huruiki obsidian and an "unknown" source in the post-eruption Archaic layers at the Sunde site is of particular interest. It contributes to a knowledge of the sequence of discovery and exploitation of sources; adds to the very limited knowledge of the cultural relationships of Auckland Archaic; and relates level 2 at the Sunde site, despite its paucity of Archaic artifacts, more securely to the earlier layers at the same site, while distinguishing between that site and the undefended sites, from which no Huruiki obsidian has yet been identified. Unfortunately, the identification of only one of 104 grey pieces from N38/37 is insufficient to rule out the presence in that site of grey obsidian from other sources. The much larger sample from N38/30 is a better indication of the importance of Great Barrier and decline of Huruiki in later times. It is to be hoped that the analysis can be extended in future to include more obsidian from N38/37, as well as a selection from the headland pa N38/25.

TOWARDS A CULTURAL SEQUENCE ON MOTUTAPU

Sufficient work has now been carried out on Motutapu for some consideration to be given to the formulation of a sequence incorporating all the sites so far investigated. Such a sequence must of necessity be tentative, for analysis of results from N38/25 is still at a preliminary stage. Moreover, much depends on the final results from the Pig Bay site, N38/21, the first and in many ways the most important site excavated on the island, which remains unpublished except for preliminary reports. Finally, of course, further fieldwork may shed new light in many areas.

Historical and traditional evidence for the conclusion of the prehistoric sequence are scanty. Transfer of the island from Maori owners to Europeans

probably took place in the early days of European settlement of Auckland. The earliest extant plans (O.L.C. 164, 164A) show Grahame's claim to the south end of the island which was granted in 1857. A later plan (O.L.C. 293) shows the whole island, with Grahame's claim, Maxwell's claim to the northern part, granted in 1870, and a Public Reserve at what is now Administration Bay, gazetted in 1870. Both plans show the island substantially without bush. The earlier shows dead trees in gullies and fern on ridges; the later plan shows one patch of bush on the coast to the north of Station Bay, where the only substantial remnant stand of bush still survives. It is difficult to assess the effect of European ownership on the vegetation in the years preceding the surveys, for the island received only passing mention in early accounts (e.g. Cruise 1957, p.155).

Motutapu, like other Hauraki Gulf islands and eastern parts of the Auckland mainland, was in the possession of Ngati Paoa and allied tribes at the time of European discovery. There appears to have been, however, little indication of actual occupation when the island was first seen and mentioned by Europeans. But at various stages during their occupation of the eastern Auckland area Ngati Paoa are believed to have had settlements on Motutapu. The closing stage of the prehistoric sequence on the island thus belongs to them, and some evidence of their occupation should be present.

Ngati Paoa acquired their Auckland domains by infiltration and conquest from the poorly remembered federation of interrelated tribal groups variously known as Kawerau, Wai-o-hua and by other names. Whether Ngati Paoa were in any way culturally distinct from these earlier tribes is uncertain; whether the arrival of Ngati Paoa on Motutapu and elsewhere in the Auckland area can be documented from the archaeological record is doubtful.

The early part of the archaeological sequence on the island is well represented, although still inadequately dated, by material from the Sunde site (N38/24) and the Pig Bay site (N38/21). Indisputably the earliest deposit yet found is the layer beneath the Rangitoto ash at the former site. Only an imprecise *terminus ante quem* is available for this deposit, and the recent carbon dates tend to suggest that this *terminus ante quem* may be more recent than was formerly thought. Against this, however, can be set Scott's remarks about the date of the layer (1970, p. 17) and the fact that the single obsidian flake from this deposit had a hydration rim greater than any other from the Auckland province (Green 1964). Despite doubts about the age of the ash shower, it still appears reasonable to regard this layer as an early one relative to other known early sites in the Auckland province, as well as in its position in the particular local sequence under consideration here.

Two layers above the ash at the same site yielded artifacts similar to those from below the ash, suggesting the return of a culturally similar group after the eruption. The similarity depends on adzes and fishing gear and their manufacture. A third still younger layer is less certainly associated with the same group of people; there are some similarities of drill points and of adzes in a more restricted range, but no other positive evidence either of similarity or of new traits. For all these layers the only date is a *terminus post quem* which is also the *terminus ante quem* for the earlier layer.

While there is a definite continuity in styles of adzes and fishhooks from beneath the ash at least to level 3 and perhaps to level 2, there is marked change

in economy above the ash. This is reflected in Tables 1 and 2 of Scott's report (1970, pp. 19, 21). At least 19 species of bird, tuataras and fur seals were among the bones from beneath the ash, as well as the dog and fish, which continued in the later layers. By contrast there were five species of bird in level 4, three in level 3 and none in levels 1 and 2. There are just sufficient bones of bush birds in level 4 to indicate slight though very reduced dependence on such. From later layers, however, they have completely vanished, and it is possible to imagine that by the time of the level 3 occupation at this site the vegetation of the island had reached a state not very different from that prevailing in early European times. Failure of the vegetation to follow a natural succession back to coastal forest after this time was probably entirely due to the activity of man.

Level 1 at the Sunde site is not unlike levels 2 and 3 in faunal content, but is so entirely lacking in comparable artifactual material, that it must be considered to be quite different from them, either in the nature of the occupation it reflects, or in the cultural affinities of its occupants, or both.

There is no real equivalent of the pre-eruption layer at Pig Bay (N38/21), but otherwise the sequences are evidently similar. Thus level 1 at the Sunde site is matched by layer 9 at Pig Bay, a similar midden layer without artifacts in contrast to the layers below. It was associated with a hearth from which a 17th century date was obtained (Brothers & Golson 1959). Between this hearth and the ash deposit was a complex and deep deposit of many successive layers, which apparently parallel levels 4 and 3, or 4, 3 and 2 at the Sunde site. The combined evidence from these equivalent layers at the two sites should provide good documentation of material culture of the Archaic phase on Motutapu, for the Pig Bay site was considerably richer in artifacts than the Sunde site.

The interpretation of level 2 at the Sunde site is more important than might be thought. The layer could be regarded as one of a series of Archaic layers whose inhabitants used similar techniques for working the local greywacke. The absence from this particular layer of a wide range of diagnostic Archaic artifacts could merely be due to inadequate sampling. On the other hand, the adzes and flakes of level 2, with their restricted range, include nothing which could not be matched in the material culture of the undefended sites — sites in which diagnostic Archaic artifacts were neither present, nor expected to be present. Much depends on whether a wide range of truly Archaic artifacts was actually present in the middle and upper part of the Archaic sequence of the Pig Bay site as claimed (Golson 1959, p.46); or whether the continuation of greywacke flakes and roughouts, of a more restricted range of types, but still of the same tradition, gave rise to the impression that the full range of the Archaic assemblage persisted until a late point in the sequence, as one preliminary report suggested (Brothers & Golson 1959, p. 576).

The two undefended sites are different in kind from the two sites discussed above; they are situated on ridges, rather than sandy flats by stream mouths, and they contain a range of structural evidence, particularly storage pits, which is naturally missing from the other sites. They also appear to be later than the Archaic sites; one carbon date from N38/37 is late, but in addition to this there is the absence of Archaic artifacts from both sites, and the presence of a few items such as the barbed fishhook point from N38/30 which can be presumed to be

later chronologically than the Archaic hooks. There is a complete absence of bird bones in the undefended sites while dog bones are rare. The lack of Huruiki obsidian and the predominance of Great Barrier obsidian are also significant.

Both the undefended sites, however, contain flakes and evidence of adze manufacture not very different from those of level 2 at the Sunde site. There is a strong suggestion that the same tradition of working the local greywacke continued, even if the types of adze became restricted, and a ground and untanged adze of elliptical or oval cross-section developed as a local variant of the more markedly quadrangular Classic Maori adze of other areas (Leahy 1970, pp. 70-74).

The relative ages of N38/30 and N38/37 are still not known. Certainly it is not likely that the sites are exactly contemporary, nor is it probable that they are separated by a great interval in time. The overall similarities in artifacts and midden, and burial customs seem to outweigh the variations in structures (which are no greater than the internal differences within each site) or the small variations in artifacts and midden. The principal difference between the sites lies in their composition. The excavated area of N38/30 consisted of one house, two pits, a courtyard and a cooking area on a discrete terrace, whereas at N38/37 a larger group of structures was not divided into recognisable discrete units. The terrace at N38/30 can be identified as belonging to a small domestic group. N38/37, however, appears to have been occupied by a larger group which did not accord separate spatial recognition of activity areas to smaller units within it. (Only one cooking area is recognisable at N38/37 to serve a much greater number of structures).

Both undefended sites can tentatively be assigned to the same division of the Motutapu sequence, which in view of differences between these sites and the earlier Archaic deposits, can be designated as a separate phase.

The traditions relating to the Auckland area, although vague as they relate to earlier periods, leave little doubt that warfare was a common aspect of Auckland life from the most remotely remembered times. It was not continuous; periods of prosperity and relative peace occurred which probably lasted many decades. Warfare as such, however, began long before the invasions of Ngati Paoa and Ngati Whatua who were in occupation of the area at the point at which documented history begins. There is no traditional reason to suppose, therefore, that fortifications on Motutapu should all be late, or associated only with the period of Ngati Paoa encroachment.

It was not thought, on the basis of the site survey, that undefended and fortified sites on Motutapu represented chronologically distinct occupations, with fundamentally different settlement patterns. On the contrary, it seemed more likely that both kinds of site could be manifestations of a single culture and type of occupation, although more than one phase could be represented by the total number of such sites on the island. Consequently, the excavation of N38/25 was undertaken partly to test the hypothesis that N38/25 belonged to the same cultural phase as N38/30 and N38/37, rather than the opposite. However, preliminary results outlined above are sufficient to suggest that it is worth examining the hypothesis that the pa differs from, and is probably later than the two excavated undefended sites.

Widely differing interpretations can be advanced for the apparent differences between the pa and the undefended sites. The apparent difference in midden content of N38/25, not yet verified by full analysis of samples, does not serve to establish that the pa is later. Indeed a preference for rocky shore shellfish is shared with the earlier Archaic sites, and may have one of several other explanations.

The most telling evidence of dissimilarity lies in the differences in material culture and burial customs. These differences have to be judged in the light of other possible explanations. The former, as already explained, could be a result of inadequate sampling of the pa, while the burials on the pa could be the result of hasty burial of war casualties, and so different from the normal peace time procedure. Finally, the much greater spatial separation of different activities on the pa could be a cultural difference, or merely be due to organisation of the pa to meet defensive needs.

A further difficulty arises from the fact that the pa itself has a complicated history. During its early occupation it seems to have been a specialised storage site without associated living debris — and yet it is evident from N38/30 that such debris may be present in one small area and completely absent from a storage pit a very few metres away. On present evidence, however, this debris is absent from the early levels of the pa, leaving little means of determining the cultural affiliations of its inhabitants. It is during the later occupation, when the pa had reached its present form and the layer 2 deposit was accumulating, that the differences between this site and the others are most apparent. It could be argued that the site was first a specialised storage area, and then a fortified storage area, and that it was taken and/or reoccupied by another group of people who, at least while they occupied the pa, were less interested in storage pits than their predecessors.

Only much further work can determine the validity of these speculations. Even if the pa can be shown to be later than the undefended sites and the work of a different group of people, it may never be possible to identify that incoming group of people with Ngati Paoa.

With these uncertainties stated, some outlines of a cultural sequence on Motutapu can be suggested. They may be summarised as follows.

1. Settlement Phase. Represented so far only at the Sunde site. Distinguished by Archaic material culture associated with a very wide range of fauna which was never again available. At the same time, the wide range of bush birds suggests that agricultural clearance was slight or non-existent in this vicinity. Mayor Island obsidian in limited quantity.

2. Archaic Phase. Represented by levels 3 and 4 at the Sunde site, and the lower part of the deposit at Pig Bay. A range of Archaic artifacts, substantial but declining dog population, fishing and shellfish, but few birds in the diet. Agriculture is not represented in the two sites discussed, but the lack of bush birds in the sites suggests a lack of bush, which could be due to clearance. Recent discoveries of early agricultural evidence from less favourable parts of the country suggest that agriculture is by no means unlikely. Some Mayor Island obsidian, but obsidian now obtained predominantly from Northland.

3. Auckland Maori Phase. Represented by sites N38/30 and N38/37. Loss of many Archaic items, particularly fishing gear and some adze types, although tradition of working local greywacke continues. Tattooing present. Obsidian now predominantly from Great Barrier Island, although Mayor Island and Whitianga sources also utilised. Crouch burials in or near occupation sites. This phase is also well represented on the Auckland mainland, notably in recent excavations at Mt. Wellington.

4. Classic Maori Phase. Tentatively identified at N38/25. Distinctively Classic Maori adze and fishhook, tattooing continues. Fortification, decline in agriculture (in favour of fernroot?). Extended burials, which may, however, be a unique local variation. Mayor Island obsidian, but also a grey obsidian, not yet analysed for its source.

Several excavated deposits are not assigned to phases. Level 2 at the Sunde site may belong either to the Archaic, or Auckland Maori Phases. Some layers at the Pig Bay site are similarly uncertain. The uppermost layers at the Sunde and Pig Bay sites probably belong to Classic Maori, but could belong to Auckland Maori. The same applies to the earlier structures at N38/25.

The concept of an Auckland Maori phase requires some explanation. The name is tentative, and in a wider study this manifestation could be regarded as an Auckland Aspect of an Early Maori Phase. The phenomenon designated in this way is seen as one which has a fully "Maori" economy, based on agriculture, fishing, and doubtless fernroot. The material culture, which has lost many of its Archaic elements, can no longer be called Archaic but some Classic traits are also lacking. There is a presumption of continuity from the earlier Archaic Phase with internal change rather than forced intrusion. The Auckland volcanic cones were probably occupied during this phase, and extensive terraced sites on hills and ridges may have been preferred to smaller more compact pa.

The temptation to identify a Classic Maori Phase with invasions of Auckland by Ngati Paoa and Ngati Whatua is strong. The *caveat* expressed earlier in this discussion should not be lost sight of, however. Independent of the tempting framework for interpretation provided by the scanty traditional evidence, there is sufficient archaeological evidence at least to postulate a later phase on Motutapu than that represented by the undefended sites, and one which has closer similarities to Classic Maori, as that term is presently understood.

It will be apparent from the foregoing discussion that this organisation of the Motutapu evidence draws on frameworks previously suggested by Golson (1959) and Green (1963), while differing in some respects from both. This is partly because I have been discussing the prehistoric sequence of an island of less than 4000 acres. More important, however, there is more evidence from different kinds of sites of different ages on Motutapu than has previously been available from any single small area of the North Island. The attempt to organise this evidence seems to raise more problems than it solves. By this means, however, directions for further work are suggested.

Some important questions have not been considered at all, notably the relations of Motutapu to the wider Auckland area, and the many other sites and activities of those Maoris who once briefly occupied one or other of the five sites

discussed here. For while it is theoretically possible for prehistoric Polynesians to have lived permanently on Motutapu, relying solely on its soils and surrounding waters for subsistence, it is unlikely that any did so, if traditional accounts of mobility in the greater Auckland area have any foundation in fact.

However, a start has been made in sketching an outline of what happened on Motutapu throughout its pre-European occupation. That outline must now be expanded and improved, and extended to include not only Motutapu, but adjacent parts of the mainland, and some of the nearby islands — the wider area which was probably also occupied by those who left their mark on Motutapu.

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APPENDIX 1

ANALYSIS OF OBSIDIANS FROM MOTUTAPU SITES (communicated by Dr R. Reeves)

A. Obsidians from Motutapu Island undefended sites, N38/30 and N38/37.

Sample No.	% Na	% K	% Fe	ppm Mn	ppm Zn	Density (gcm ⁻³)
743B	3.39	4.03	0.98	199	44	2.361
761	3.37	3.97	0.96	196	43	
773A	3.36	3.88	0.96	195	42	
773B	3.39	4.03	0.98	196	40	
782A	3.26	3.92	0.97	196	41	
782F	3.48	3.98	0.97	199	40	
782E	3.27	3.87	1.02	212	43	
810	3.41	4.03	0.98	213	48	
855B	3.41	3.90	0.96	198	44	
882	3.33	3.93	0.95	207	44	
Typical Great Barrier I. analyses	3.30 3.33	3.95 3.92	0.99 0.94	205 200	44 43	
743C	not determined					2.389
782C	4.52	3.57	3.20	702	222	2.396
Typical Mayor I. analyses	4.60 4.59	3.63 3.61	3.21 3.27	700 695	211 222	

Sample 743C has a density consistent with a Mayor Island origin.

743A	3.78	2.93	1.02	447	42
Typical Whitianga analyses	3.87 3.71	2.87 2.84	1.03 1.00	443 439	45 42

Conclusion. Ten samples are of Great Barrier I. origin, one of Mayor I., one Mayor I. probable, and one of Whitianga.

B. Obsidians from the Sunde site, Motutapu Island.

Sample No.	% Na	% K	% Fe	ppm Mn	ppm Zn	Density (gcm ⁻³)
1570/3A	4.20	3.26	1.05	216	47	2.361
1574/4	4.21	3.20	1.01	217	59	2.361
Typical Huruiki	4.09	3.12	1.06	225	55	
analyses	4.17	3.13	1.01	228	48	
1572/4			not determined			2.365

Density of sample 1572/4 is within the range exhibited by Huruiki obsidian, although there is an overlap with Whitianga densities at about this point.

1570/3B	not determined	2.418
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This density is within the range shown by Mayor Island obsidians.

1568/9	3.51	3.47	0.77	381	31
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Sample 1568/9 is one of a small number of really baffling archaeological specimens we have examined. This set of figures does not correspond to any of the natural sources we have studied.

Conclusion. Two samples are of Huruiki origin, one Huruiki probable, one almost certainly Mayor I., and one is of unknown origin.

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