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MAORI STONE ADZES IN GIGLIOLI'S COLLECTION

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The New Zealand section of Giglioli's Collection at the Museum of Prehistory and Ethnography 'L. Pigorini' of Rome represents, with its more than 500 pieces, a substantial late 19th century contribution to the knowledge of Maori culture in Italian museums. In the last 20 years of that century, Enrico Hillyer Giglioli was in contact with public museums and scholars such as Chapman, Forbes and Cheeseman, and from them acquired numerous items and ceremonial objects of Maori material culture. The collection includes a wide range of materials, from pieces of moa bone, chert, and obsidian, through a range of stone tools, some fishhooks in shell and bone, patu, bird spears, and a number of hafted adzes.¹ Some of these pieces come from important archaeological sites such as Moa Bone Point Cave, Shag Point and Monck's Cave (Von Haast 1875; Trotter 1970, 1975; Skinner 1924). Lithic artefacts, such as adzes, axes and chisels, are particularly well represented in the collection. Some of Maori names for the adzes and their description in the catalogue of Giglioli's collection were cited by Elsdon Best in his monograph on Maori stone tools (Best 1974: 172).

In April 1992 I started a project focused on the study of these lithic materials. The aim of this research was to fit the Maori adzes of Giglioli's collection into Duff's typology, and to assess the results in the light of recent archaeological research from New Zealand. In this article the main results of the study will be reported.

My main sample consisted of 154 unhafted adzes. A few of these were acquired by Giglioli in London, buying and exchanging goods from Sir Walter Buller, Henson, G.A. Frank and Miss Cutter, who inherited the Collection of Revd Beck, but the majority of the adzes came from New Zealand and Australia, in particular from the Museums of Auckland and Hobart, and from scholars and early collectors such as J.F. Cheeseman, F.R. Chapman, Miss Cowlshaw, C.G. Schmitt, E.P. Ramsay and others (Table 1).

An examination of the provenance of the artefacts (Fig. 1, Table 2) revealed a majority of North Island adzes (109, 71%) compared to South Island adzes (45, 29%) (Fig. 2). A morphological study of the adzes showed that 134 (87%) could be grouped within Duff's typology, nine (6%) could be regarded as

¹ Nine hafted adzes were present in Giglioli's collection. Four have sophisticated carved wooden handles (*toki pou tangata*). Four, with no carvings on the handle, were hafted as axes with the cutting edge on the same line as the handle. Only one among the five working adzes has the cutting edge in a perpendicular axis to the wooden handle, thus being hafted as an adze.

preforms and the other 11 (7%) were undiagnostic (Fig. 2).

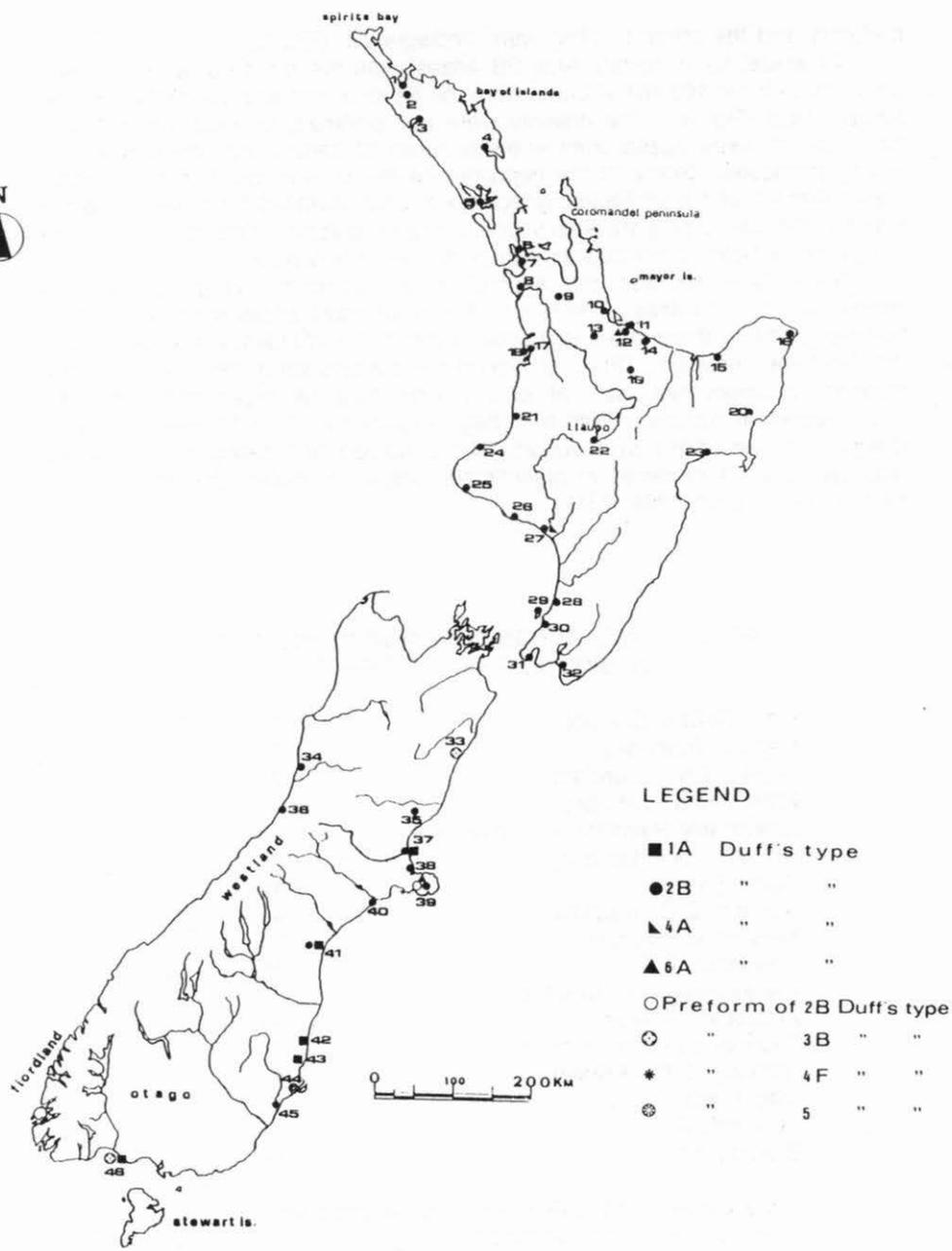
As would be expected, type 2B adzes were the most numerous. There were 119 in total: 103 (87%) came from the North Island and 16 (13%) from the South Island (Fig. 3). The majority were well polished, although the butt and the sides of some adzes often showed traces of hammering and pecking for hafting purposes. Some of the nephrite specimens have grooves at the front, clear evidence of a manufacturing technique which involved the sawing of larger nephrite blocks to prepare adzes and narrower chisels. One of the nephrite adzes has a hole in the butt indicating re-use as a pendent.

Duff's type 1A was the second most numerous category, and was represented by 10 adzes. The tangs of eight of these adzes were obtained by hammer-dressing through the reduction of the front and sides; in two cases only the front was reduced. The large size of these adzes suggests that some were possibly of ceremonial use. All of the Duff's type 1A adzes came from the South Island, in particular from the Otago region: four from Moeraki, two from Shag Point, one each from Riverton, Timaru, Kaiapoi and Kaikoura. One of the type 1A adzes is rendered in greenstone, despite its supposedly rare use for archaic adzes (Duff 1956: 231).

TABLE 1. ACQUISITION OF MAORI STONE ADZES
IN GIGLIOLI'S COLLECTION (*)

Gen. Robley (London)	1
Henson (London)	1
Frank, G.A. (London)	2
Miss Cutter (London)	4
(previously Revd Beck's collection)	
Sir W. Buller (London)	21
Butler (London)	12
Schmitt, C.G. (Auckland)	49
Miss H. Cowlshaw	5
Chapman, F.R.	15
Cheeseman, J.F. (Auckland)	4
Auckland Museum	29
Tasman Museum (Hobart)	2
Ramsay, E.P. (Sidney)	4
Otto Finsh	1
Boucard, A.	1
Branchi, G.	1

* the mode of acquisition was not reported for two of the adzes examined.



LEGEND

- 1A Duff's type
- 2B " "
- ▲ 4A " "
- ▲ 6A " "
- Preform of 2B Duff's type
- ⊕ " 3B " "
- * " 4F " "
- ⊗ " 5 " "

Fig. 1. Provenance of Maori stone adzes in Giglioli's Collection.

TABLE 2. THE SOURCES OF THE ADZES (Fig. 1)

1 Awanui	17 Aotea	33 Kaikoura
2 Kaitaia	18 Kawhia	34 Runanga
3 Hokianga	19 Rotorua	35 Waikari
4 Whangarei	20 Patutahi	36 Hokitika
5 Kaipara	21 Mokau Riv.Mouth	37 Kaiapoi
6 Auckland	22 Tokaanu	38 'Moa Cave'
7 Manukau	23 Mohaka	39 Akaroa
8 Maioro	24 Waitara	40 Rakaia
9 Waikare	25 Opunake	41 Timaru
10 Katikati	26 Waitotara	42 Moeraki
11 Maunganui	27 Wanganui	43 Shag Point
12 Tauranga	28 Otaki	44 Dunedin
13 Matamata	29 Kapiti	45 Taieri Riv. Mouth
14 Maketu	30 Waikanae	46 Riverton
15 Opotiki	31 Wellington	
16 Waiapu Riv.Mouth	32 Palliser Bay	

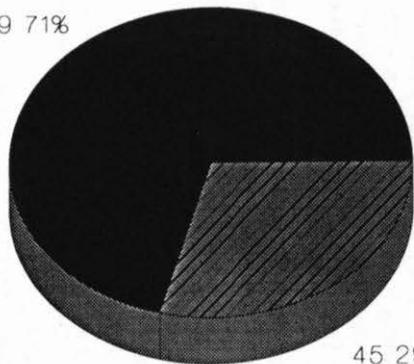
Among the remaining adzes, two of Duff's type 4A came from the Wanganui area (via Auckland Museum), two chisels of Duff's type 6A came from Tauranga in the North Island and Akaroa in the South Island, and finally a rare greywacke Duff's type 2C adze came from the North Island. Flaked preforms of Duff's type adzes were found only in the South Island: three of Duff's type 2B came from Otago, Amuri and Akaroa; four of Duff's type 3B from Kaikoura, Riverton and the Otago region; one each of Duff's type 5 and 4F came from the Otago region.

Eleven specimens are represented by broken mid-sections and roughly flaked adzes not suitable for grouping in any of the above categories. They were made mostly of argillite and came only from the South Island, particularly from 'un'antica officina a Riverton' (an old working floor from Riverton) (Leach and Leach 1980).

In this study length, width and thickness measurements were taken and then related to each other in order to test positive or negative correlations between the different parameters. Unfortunately a considerable percentage of the adzes revealed signs of damage at the cutting edge and at the butt, reducing the sample to 115 specimens suitable for measurement. The length was measured along the longitudinal axis in the centre line of the adze using sliding calipers. For measuring width and thickness a standard point, already adopted in other studies on Polynesian adzes, was chosen (Green and Purcell 1971; Green and Dessaint 1978). The width and thickness measurements of ungripped adzes were taken at the place corresponding to the longitudinal midpoint. For tanged specimens these measurements were taken just below the shoulder; for triangular, trapezoidal and irregular sectioned adzes I took the maximum possible measurement of width and thickness (either at the front or

North Island

109 71%

45 29%
South Island

Duff's types

134 87%

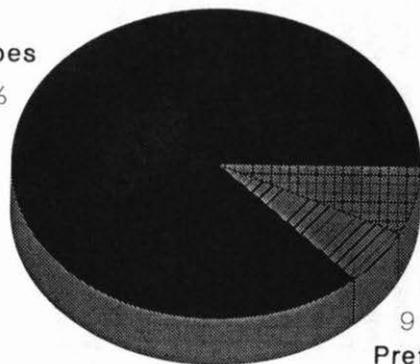
Undiagnostic
11 7%
9 6%
Preforms

Fig. 2. Percentages of adzes from the North and South Islands (left) and proportions of Duff types to other forms (right).

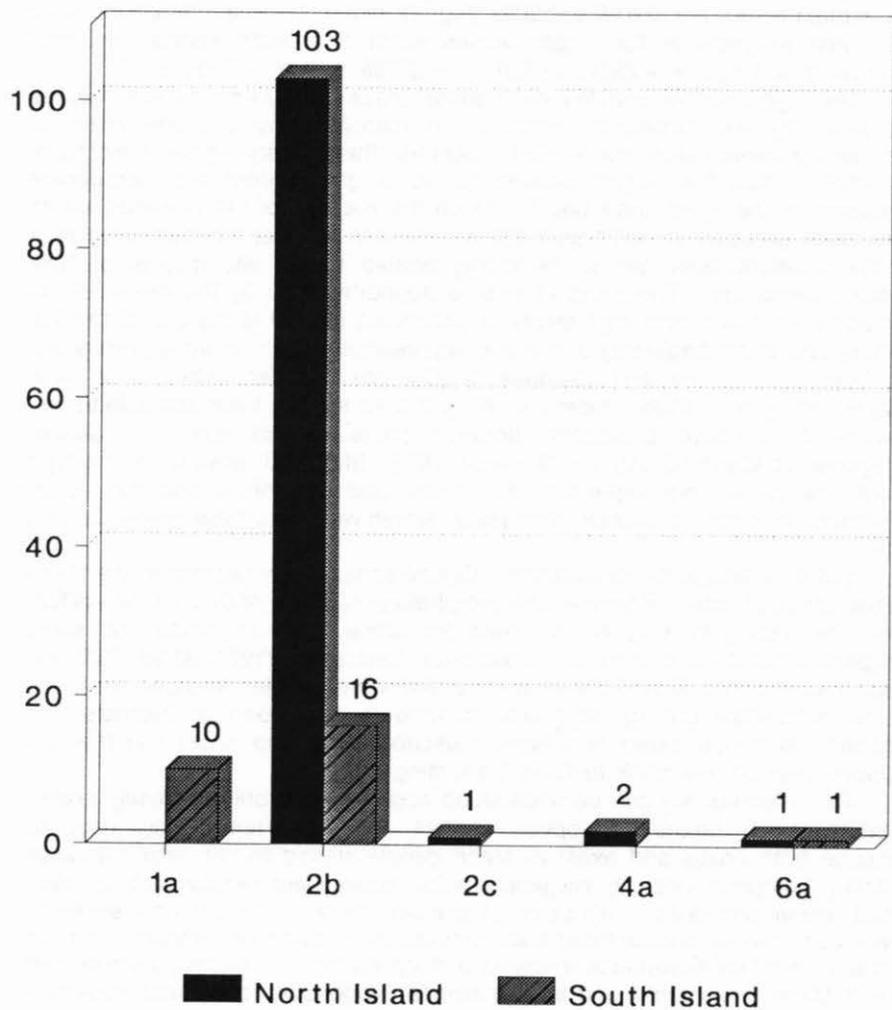


Fig. 3. Duff type adzes in the Giglioli Collection.

back of the adzes, whichever was the greater).

Scatterplots of the measurements were produced (Figs. 4-6). Their statistical analysis revealed high correlation among three data pairs. The graph of length versus thickness yielded a correlation of: $r = .93$ with an equation for the median line of $y = 5.417 + 2.809x$ (Fig. 4); higher positive correlations were calculated respectively for length versus width and width versus thickness ($r = .96$, $y = 7.838 + 4.297x$; $r = .97$, $y = 2.768 + 0.767$) (Figs. 5, 6).

The high positive correlations between these measurement pairs may be explained by the functional necessity, in manufacturing a stone adze, of maintaining certain structural relations between them to ensure the strength of the tool. Thus the length determined, to a great extent, the appropriate reduction of the sides (and back). Since the majority of the analysed adzes have been grouped in Duff's type 2B, we can assume that the high correlation of the measurements has to be mainly related to the late phases of New Zealand prehistory. This point of view is supported also by the nature of my sample: functional Maori implements in collections formed at the end of the last century and at the beginning of this one, representing mostly materials discarded by Maori during the first decades of European contact when they were supplanted by steel tools. However, in my limited sample I was not able to test positive or negative correlation between measurements taken on distinct categories of adzes (Green and Dessaint 1978). Statistical analysis of this type should be carried out separately on archaic and late forms, and the results compared in order to assess changes in length-width-thickness ratios through time.

In the catalogue of the collection, Giglioli scrupulously referred to the Maori names for each adze. However, the morphology of some of these adzes differs from the descriptions given by Best for stone tools to which the same indigenous terms were applied. In particular, Best states (1974: 24-25, 153) that Maori names like 'toki titaha' and 'toki paneke' were applied to stone axes with an equal-bevelled cutting edge and to modern steel axes or hatchets. In Giglioli's catalogue these two terms describe large and small sized adzes reduced only on the back to form the cutting edge.

This discrepancy can be understood assuming different but closely related hypotheses: 1) before European contact, the same terms were used to describe both adzes and axes; 2) Maori people started to haft adzes as axes imitating European tools; 3) indigenous adze names were transferred to modern metal adzes and axes. Although at present there is not enough evidence available to clearly comprehend such processes, it has to be remarked that the arrival of the first Europeans involved a deep change in the manufacture and use of Maori implements, and in their names, responding to external influences and demands.

The strong predominance of North Island late 2B adzes in this collection may be connected to three main factors: 1) the North Island was more densely populated than the South Island in prehistoric times; 2) a considerable growth of population occurred in the late phases of New Zealand prehistory; 3) old collections were mainly formed with functional Maori implements discarded at the time of the introduction of European implements.

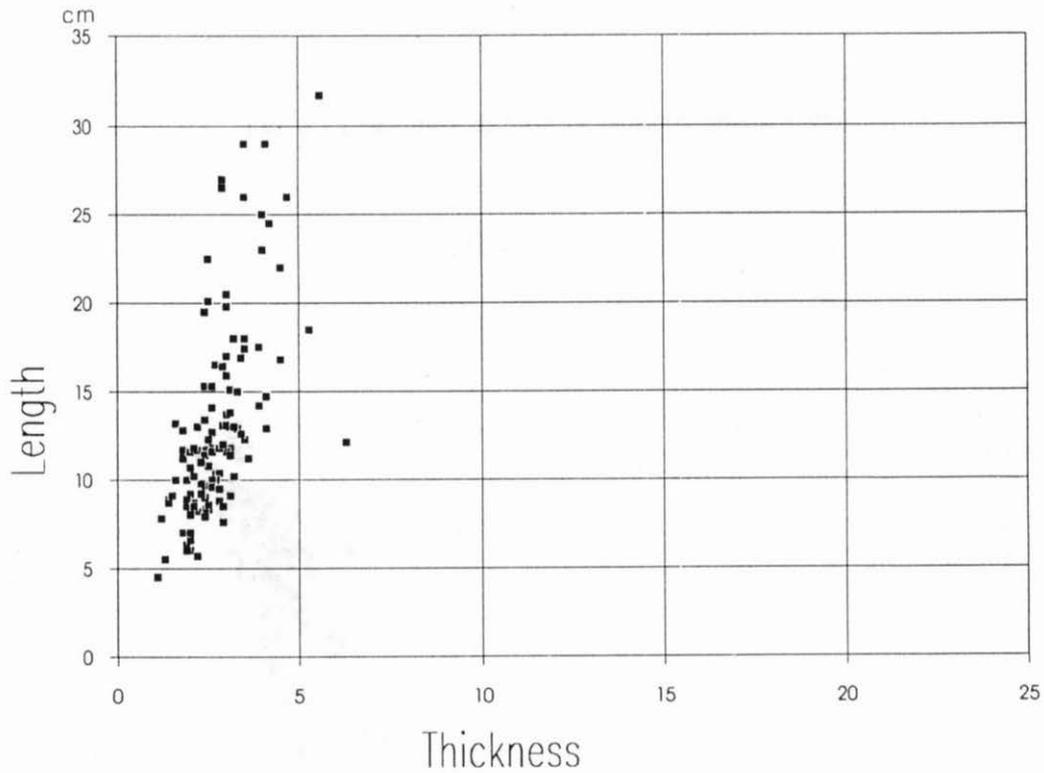


Fig. 4. Scatterplot of adze dimensions (length:thickness).

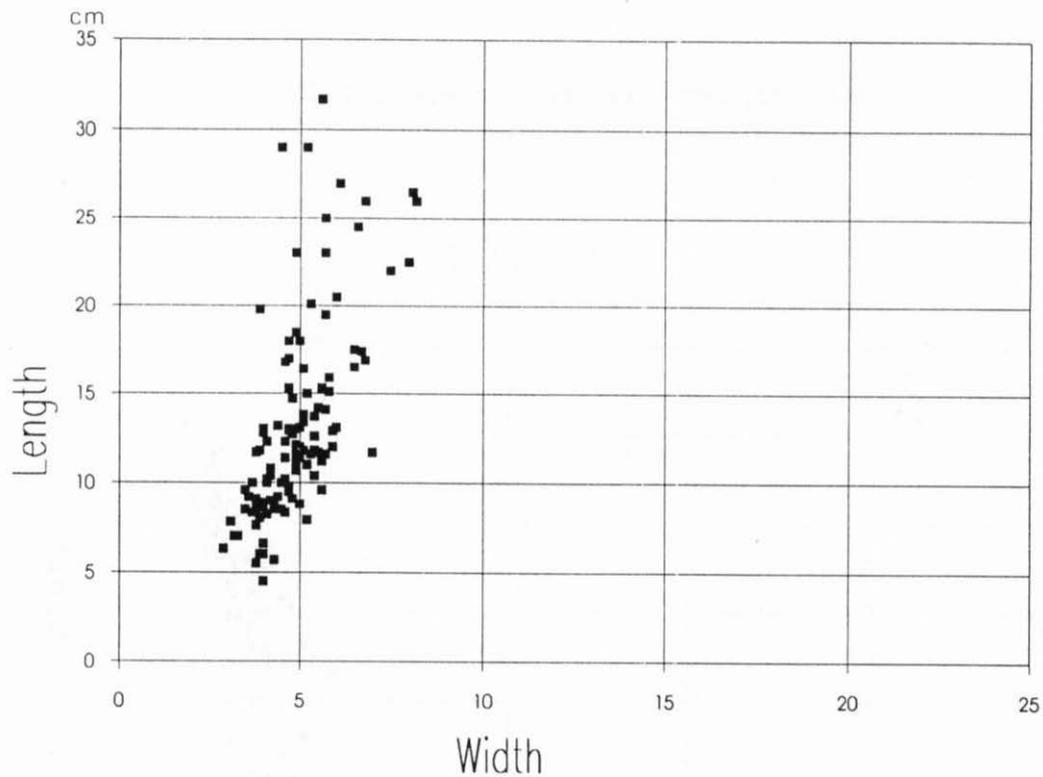


Fig. 5. Scatterplot of adze dimensions (length:width).

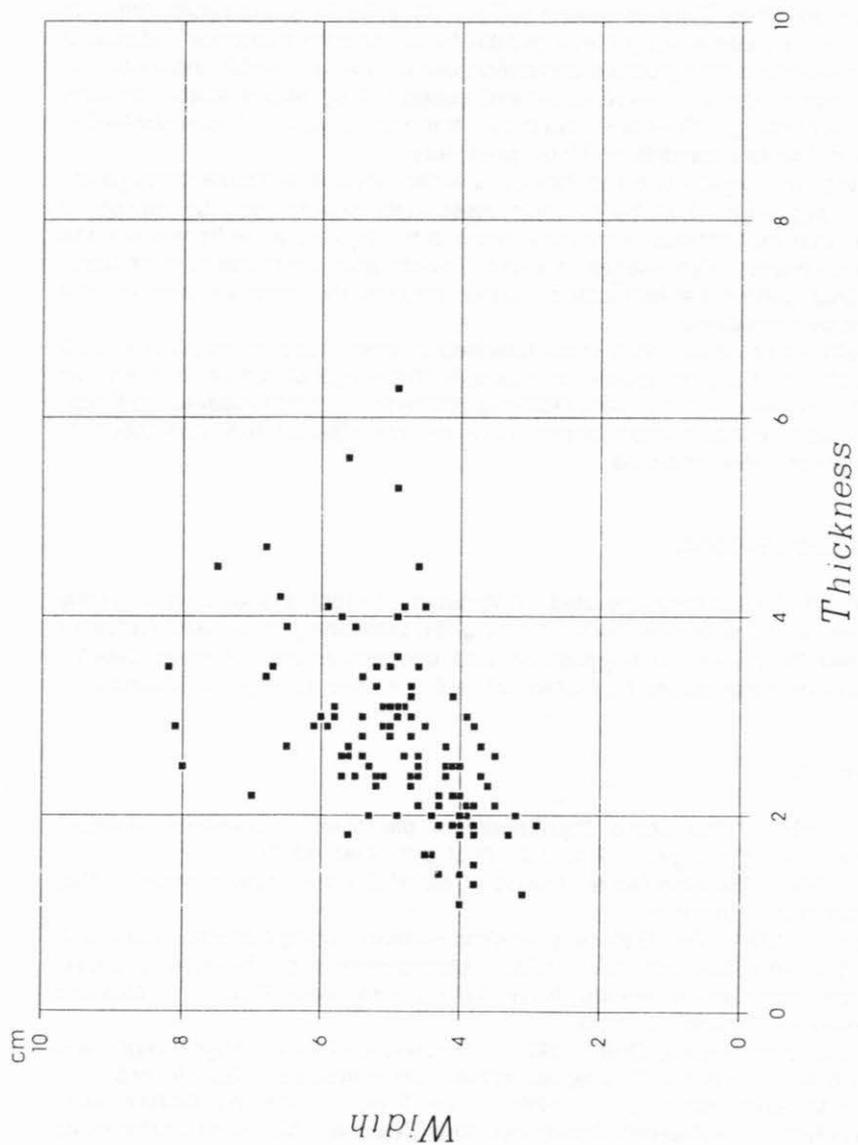


Fig. 6. Scatterplot of adze dimensions (width:thickness).

Archaic adzes, constituting a small percentage of the total sample, were probably collected from well-known old working floors such as that of Riverton, sites such as Shag Point or Monck's Cave, or even in a few cases previous forms still in late use among Maori people for ceremonial purposes. Statistical analysis revealed a high positive correlation between length, width and thickness of Maori stone adzes. I have assumed, supported by recent studies in New Zealand archaeology (Davidson 1984: 93), that this is due to a standardisation of forms in the late periods of Maori prehistory.

Statistical analyses need to include a wider range of measurements (width of the cutting edge, front:back ratio); these data should then be related to variables such as methods of manufacture and the type of stone from which the adzes were made. Hypotheses to explain modifications through time of Maori stone adzes cannot be formulated without defining the interplay between the factors above mentioned.

Finally, this research should be extended to other museum collections (both ethnographic and archaeological) to study the full range of variations in artefact types and the evolution of manufacturing techniques. Such research will also help to elucidate the circumstances in which late 19th century collections of Maori artefacts were acquired.

ACKNOWLEDGEMENTS

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