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Geographic and Temporal Variation in Maori Rock Drawings in Two Regions of Southern New Zealand

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ABSTRACT

ABSTRACT This paper analyses regional stylistic variations in the rock drawings and paintings of North Otago and South Canterbury on the basis of the superimpositional analysis of Fomison (n.d.). Drawings of fish, dogs, birds, canoes and humans were studied and distinct stylistic variations noted within and between the two areas.
Keywords: ROCK DRAWINGS, NORTH OTAGO, SOUTH CANTERBURY, STYLISTIC VARIATION, SUMPERIMPOSITION.

INTRODUCTION

Drawings are the most common variety of rock art in New Zealand and they are most closely concentrated in the limestone areas of North Otago and South Canterbury. Drawing is defined as the use of a pigment such as charcoal or haematite which is applied dry to a surface, and painting is where the charcoal or haematite is mixed with an oil or fat to form a type of paint (Haast 1877; Hamilton 1896). The distinction between drawings and paintings is often unclear in the site record forms and literature and for the purpose of this analysis they have been combined under the title of drawings which most, in fact, are.

Many theories have emerged about the age and cultural association of the rock drawings since they were first recorded by Mantell (1852) but facts are few, even today. Most of the work on the chronology of the drawings has attempted to relate radiocarbon dates from the floor deposits of the shelters to drawings on the walls, but there has also been some use of such relative dating methods as superimpositional analysis. This method has been widely used in Europe and Australia with varying degrees of success (Leroi-Gourhan 1967; Megaw 1967; Brandl 1977; Maynard 1979; Morwood 1980), the main problem being that superimpositions do not necessarily represent important time differences. However, where stylistic differences and superimpositions are consistently related, it may be possible to construct regional style sequences. Experimental research is being carried out in Australia and Europe (Clegg 1977a, 1977b, 1978, 1979; Clegg *et al.* 1977; Stevens 1975; Morwood 1980; Rosenfeld 1982) and this paper, which summarises research detailed by Bain (1982), represents an attempt to deal similarly with rock drawings in southern New Zealand.

FOMISON'S MODEL

Superimpositions in New Zealand rock art have been studied briefly by Ambrose (1970) in the Waitaki Gorge, and Fomison (1962, 1963, n.d.) in the North Otago and South Canterbury regions. Fomison (n.d.) attempted to present a relative chronology from an analysis of superimpositions, drawing style and subject matter, in an attempt to counter

> ...the weight of non-stylistic accounts of local rock art and the tendency to describe rock art through its subject matter alone, and not its style. (Fomison n.d.:7).

This latter approach to rock art has been prevalent in most studies of the subject where the drawings are described but rarely analysed. In Fomison's superimpositional analysis, styles which consistently overlay others were allocated to a later date in the development of Maori rock art than those under them. The term "style" was used to describe how the subject matter was presented.

Fomison defined five stages of drawings. The "Early Style" drawings (Figs. 1-7) were related to the Polynesian origins of the New Zealand Maori and were divided into two stages:

Stage One. This group is based on realism and the common occurrence of naturalistic subjects such as birds, dogs and fish. The main features are the use of the internal blank, the flexed position of the human and the use of the colour black.

Stage Two. This group is similar in style to Stage One but with a greater use of local materials such as red and white pigments.

The "Classic Style" encompassed both the Third and the Fourth Stages of the sequence (Figs. 8-9):

Stage Three. This group showed increased colour variation and style modifications such as the generalised treatment of the body with less separation into respective parts. More mythical creatures were depicted, but fewer naturalistic subjects.

Stage Four. This group is stylistically similar to Stage Three but with more emphasis on the colour red and the drawings are more linear.

The "Contact Period" *(Stage Five)* shows a return to monochrome drawings with representations of European subjects such as houses, ships, horses and pigs (Fig.10).

I have divided the drawings into Fomison's three periods rather than his five stages in order to work with a greater sample base for each period. This analysis of South Island rock art attempted to test the consistency of Fomison's model of development and to seek geographical variation in the drawing styles.

PHOTOGRAPHIC ANALYSIS

North Otago and South Canterbury were chosen as the two areas of study because they are geographically discrete and have both been extensively surveyed (Fig. 11). An attempt was made to relocate all known sites in North Otago to assess deterioration of the drawings (Bain 1982:33) and problems of relocation. Tracings were then made of two groups of drawings and when the author's tracings were compared to other tracings of the same drawings, a degree of personal interpretation was evident in the replication. Ideally, to overcome this interpretative problem, tracings by only one investigator would be used. This, however, was not possible because of the range of people involved in the recording of Maori rock art in the past. Consequently, only those tracings of North Otago and South Canterbury drawings held in the Canterbury Museum were subsequently considered in this study. The South Canterbury drawings were almost entirely traced by Tony Fomison and in North Otago, Michael Trotter recorded the majority of sites (Bain 1982:38).

Figure 1: "Early Style" drawing, S127/57.

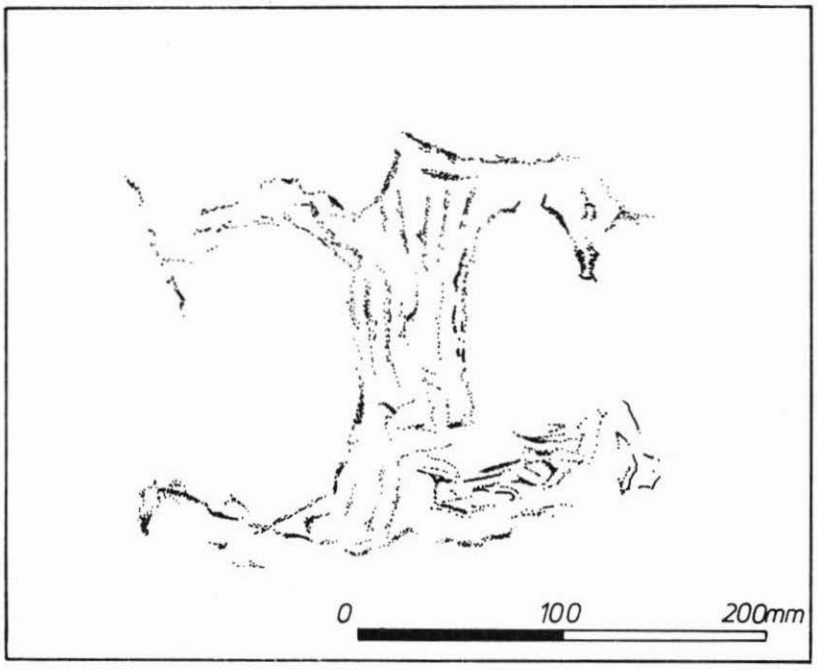


Figure 2: "Early Style" drawing, S127/17.

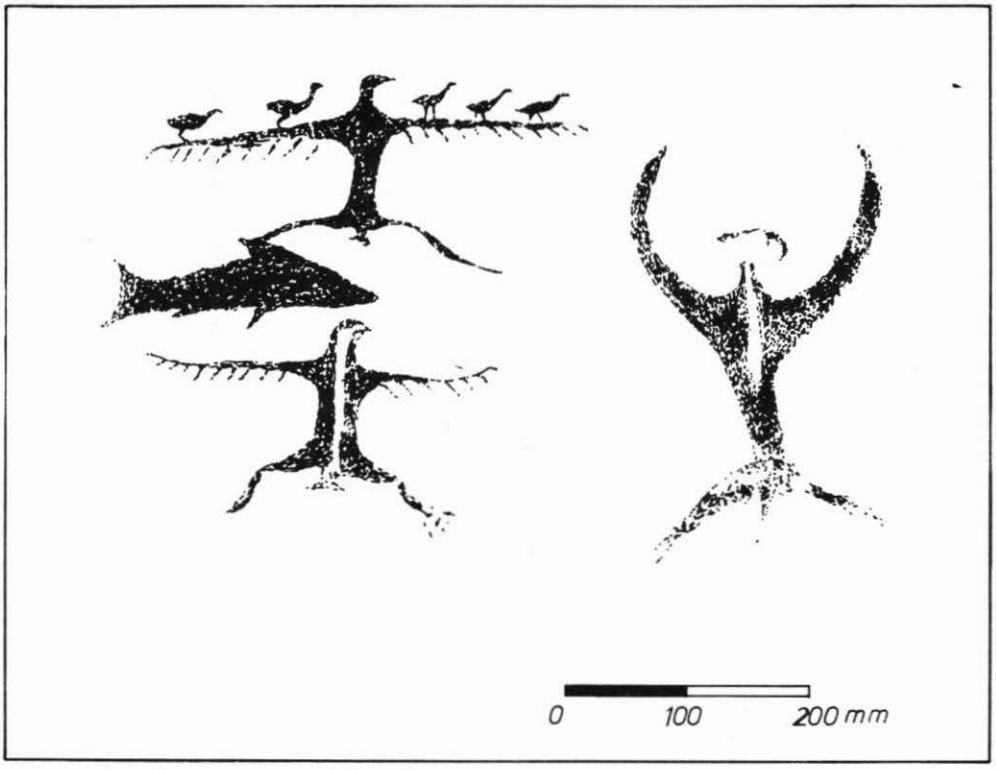


Figure 3: "Early Style" drawing, S111/6.

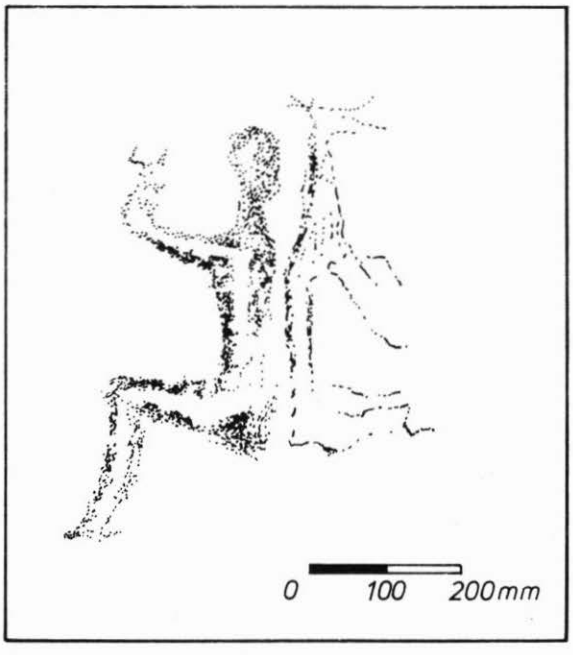


Figure 4: "Early Style" drawing, S127/27.

Figure 5: "Early Style" drawing, S127/66.

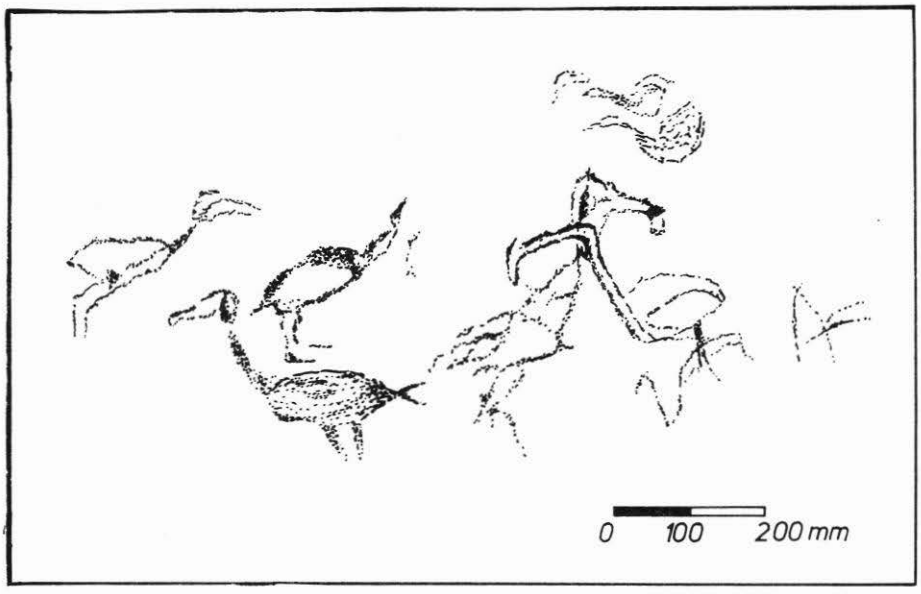


Figure 6: "Early Style" drawing, S127/33.

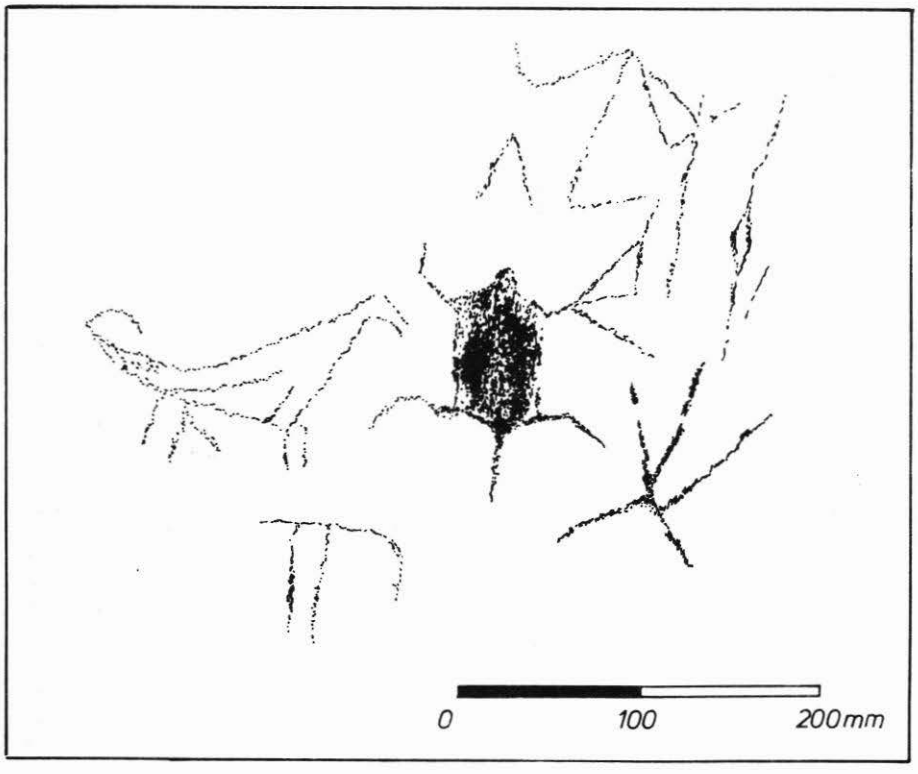


Figure 7: "Early Style" drawing, S102/41.

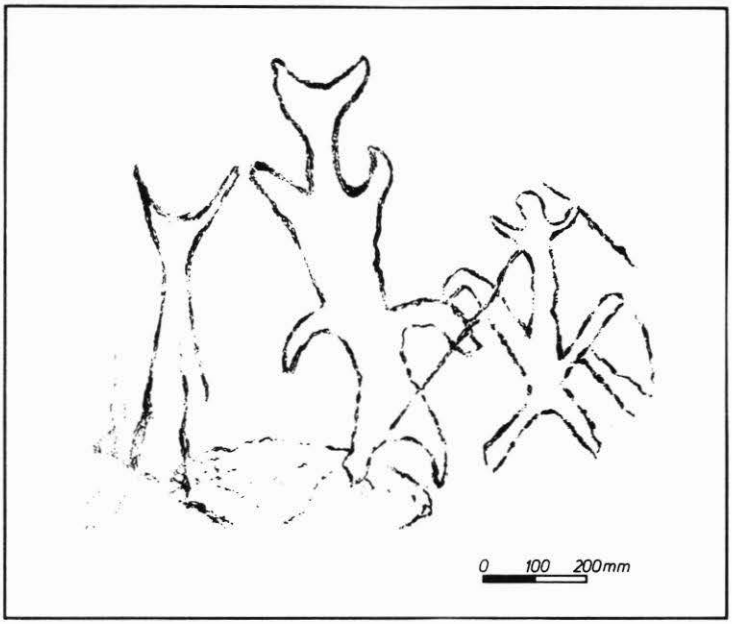


Figure 8: "Classic Style" drawing, S102/36.

Figure 9: "Classic Style" drawing, S102/46.

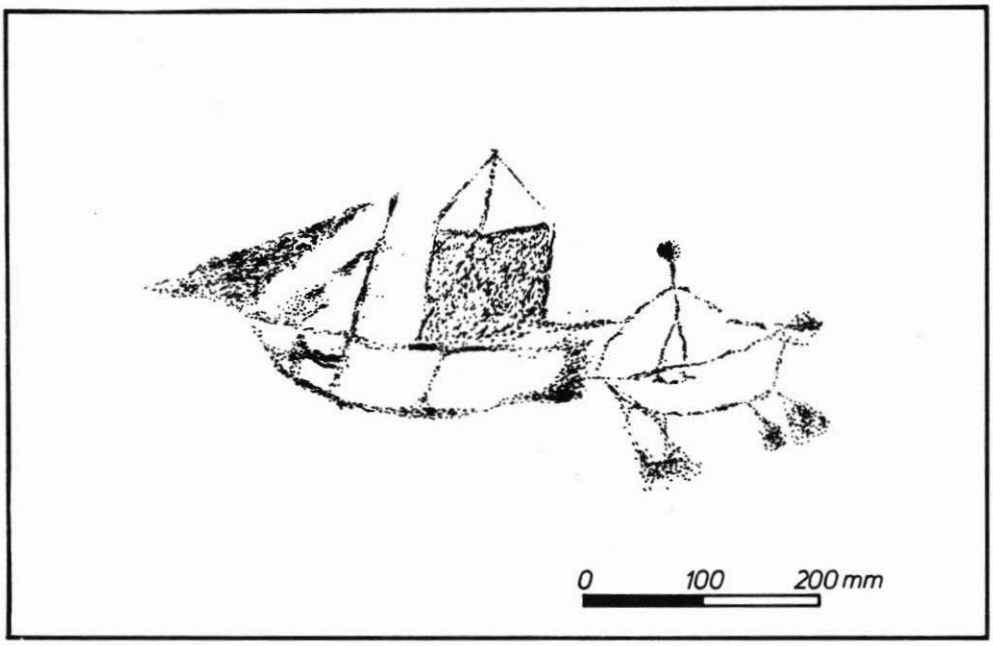


Figure 10: "Contact Period" drawing, S127/2.

All tracings were photographed and the photographs initially grouped according to subject matter into five categories: birds and associated drawings, dogs, fish, humans and canoes. Although the task of classification was a difficult and subjective one, these motifs were easier to define than others such as mythical creatures and *taniwha* (Brandl 1980; Trotter and McCulloch 1981).

The drawings in these five categories were then assigned to Fomison's three style groups according to his criteria and it was found that all bird drawings, dog drawings and canoe drawings were completed during the "Early Style" period. Most of the human and fish drawings also belonged to this period with a few represented in the "Classic Style" and "Contact Style" periods (Bain 1982:40).

The drawings were then studied in relation to their geographical position. Drawings in each subject group were analysed according to a set of variables appropriate to that group. In the case of dogs, for example, it was noted whether the animal was drawn with or without ears (Table 1). Size was excluded from this study, since it was felt that this variable related more to the constraints of drawing space than to any stylistic preference.

"EARLY STYLE" DOG DRAWINGS

Ten sites studied contained dog drawings, although one contained more than one dog, a total of 11 altogether. All were assigned to Fomison's "Early Style". Clear stylistic differences were evident between North Otago and South Canterbury. Dogs in North Otago nearly always faced right and had a body blank (Fig. 5). They also had genitals depicted and down-curved hindquarters in contrast to the upraised tail

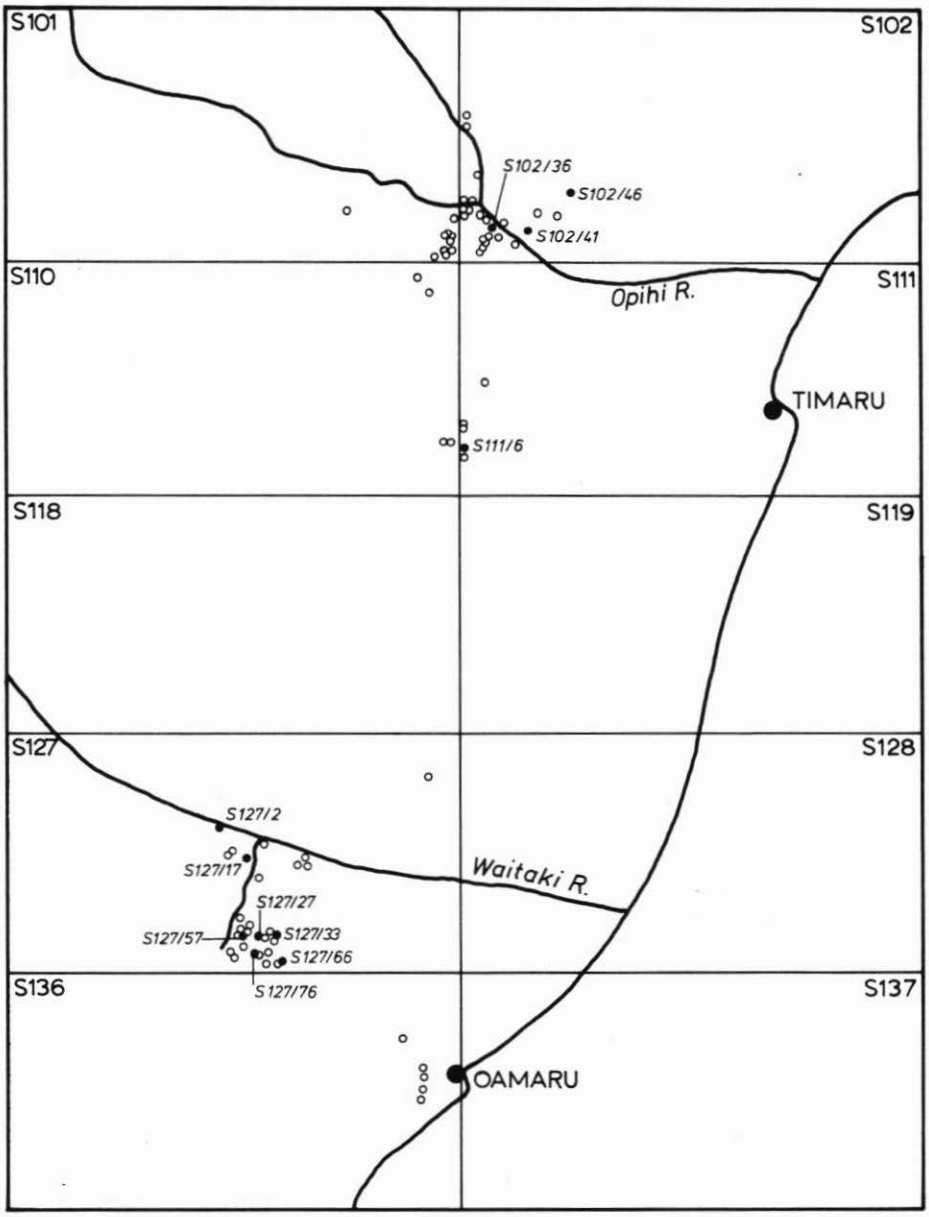


Figure 11: Distribution of rock drawing sites in South Canterbury and North Otago.

common in South Canterbury (Fig. 7). The dog drawings appeared to depict a breed with massive neck muscles as suggested by Anderson (1981). This trait of muscular forequarters was not restricted geographically and it may not, therefore, be a stylistic feature so much as a representation of actual physical characteristics.

TABLE 1
DATA ON DOG DRAWINGS (PRESENCE/ABSENCE)

	S111 /5	S111 /6	S102 /13	S102 /41	S127 /17	S127 /66	S127 /81	S127 /64	S127 /35	S127 /66	S127 /66
Blanked body	–	–	–	–	–	x	x	x	x	x	x
Head blank	–	–	x	–	–	x	x	x	x	x	x
Upraised tail	x	x	x	x	x	–	–	–	–	–	–
Curved hindquarters	–	–	–	–	–	x	x	x	x	x	x
Genitals	–	–	–	–	–	x	–	–	x	x	x
Outlined	–	x	–	x	–	–	–	–	–	–	–
Facing left	x	x	–	–	–	–	–	–	–	–	–
Facing right	–	–	x	x	x	x	x	x	x	x	x
Ears	x	–	–	–	–	–	–	–	–	–	–
Muscular forequarters	–	–	x	x	–	x	x	–	–	–	x
Black	x	x	–	–	x	x	x	x	x	x	x
Red	–	–	–	x	–	–	–	–	–	–	–
Black and red	–	–	x	–	–	–	–	–	–	–	–

x = present – = absent

"EARLY STYLE" BIRD DRAWINGS

Thirty-seven drawings of birds and birdmen from 22 sites were included in the study. Using Fomison's criteria I assigned them all to his "Early Style". The 21 North Otago bird drawings formed a distinct group. Sixteen were naturalistic (Figs. 1, 6) and an attempt could be made to identify the species shown in many of them (Stevenson 1947; Bain 1982). Within North Otago, bird drawings in close geographical proximity were often more closely related stylistically to each other than to those elsewhere in North Otago (S127/33, S127/40, S127/101). In South Canterbury, the bird drawings were non-naturalistic and all except one were representations of birdmen.

"EARLY STYLE" FISH DRAWINGS

Only seven tracings of fish drawings could be assigned to the "Early Style". It was felt that such a small number of drawings was not adequate to reach any conclusions on geographical distribution.

"EARLY STYLE" CANOE DRAWINGS

No canoe drawings were traced south of the Waitaki River, although Shortland (1851) commented on the use of the *mokihi* on the Waitaki River itself. The depictions of canoes at all five sites in South Canterbury appeared to represent *mokihi*.

"EARLY STYLE" HUMAN DRAWINGS

This study included 139 "Early Style" human drawings at 72 sites. Distinctive differences were found between North Otago and South Canterbury, and also within these areas. Profile humans were present only in North Otago (Fig. 4). Also occurring in North Otago is the depiction of a human with no head (Fig.3) as shown in a carved pebble found at Waitati on the Otago Coast (Skinner 1974).[1]

Within North Otago, variation could also be recognised. In the Ngapara district (Fig. 12), a distinctive human figure occurred regularly (S127/76, S127/75, S127/78, S127/80, S127/98).

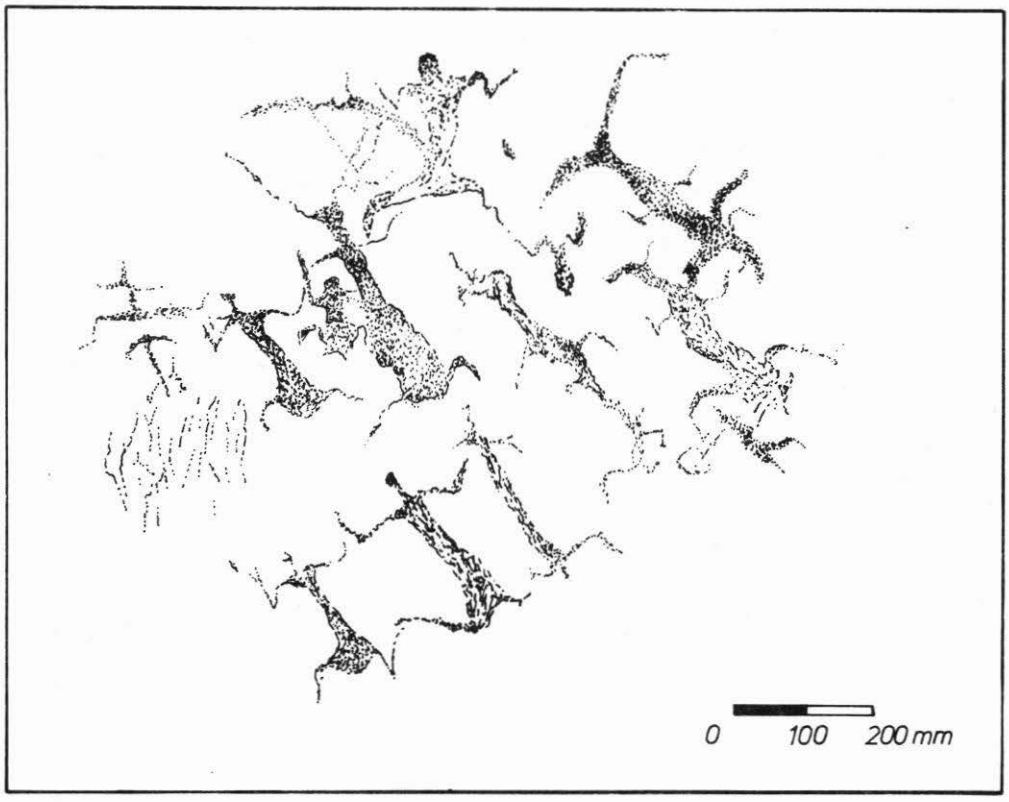


Figure 12: Distinctive figures typical of the Ngapara district, North Otago.

Colour appeared to be an important distinctive variable. In North Otago there was little use of red and no white but extensive use of both colours occurred in South Canterbury.

"CLASSIC STYLE" FISH DRAWINGS

Only five fish drawings were assigned to the "Classic Style" and therefore no geographical variations in style could be defined accurately using such a small sample.

"CLASSIC STYLE" HUMAN DRAWINGS

As there was only one "Classic Style" human drawing traced in North Otago, no conclusions could be reached about geographical stylistic variation within this group of drawings.

"CONTACT STYLE" DRAWINGS

No comparisons could be made about stylistic variations between North Otago and South Canterbury "Contact Style" drawings as the subject matter varied between the two areas. For example, there were no examples of house drawings in North Otago, and no ship drawings in South Canterbury.

COMPUTER ANALYSIS

Once the photographic analysis was completed, the information was subjected to a detailed statistical analysis carried out on a VAX-11 computer at the University of Otago, using S.P.S.S. Discriminant analysis was employed to test intuitively derived regional style groupings (cf. Klecka 1975:435).

Drawings were divided into two groups based on their geographical position. South Canterbury drawings formed Group One and North Otago drawings were placed into Group Two. A discriminant function analysis was then run on each assemblage of drawings. This method was chosen as it is ideally suited to coping with presence or absence data (Bain 1982:42). Each of the variables associated with the drawings (Appendices 1-3) was recorded by a one indicating presence or a zero for absence; for example, whether each dog had ears or not.

Results relating to the relationships between Group One and Group Two were presented to the operator. The analysis tests how closely related the two groups are but does not redefine the groups. The programme provided such information as whether the groups were statistically separate, and how many cases within each group had been correctly grouped (Tables 2-6). Group centroids were also compiled as an indication of how widely the two groups were separated and the statistical significance of the groupings was given.

DOG DRAWINGS

As with the photographic analysis, a total of 13 variables were processed using the discriminant analysis technique and the four South Canterbury dog drawings were compared to the seven North Otago dog drawings. The variables selected by the computer to define the two groups were the same as those noted in the photographic analysis; upraised tail, facing right, blanked head and blanked body. The cases were found to be 100 percent correctly grouped (Table 2) and highly significant, indicating a clear stylistic difference in dog drawings between North Otago and South Canterbury.

BIRD DRAWINGS

Twenty-five variables were analysed for the 16 drawings from South Canterbury and the 21 North Otago drawings. Two drawings grouped with South Canterbury were more closely related to the drawings in the North Otago group, and one North Otago drawing was more closely aligned to the South Canterbury group of drawings. However 91.89 percent were correctly grouped (Table 3).

To test internal stylistic variation, a discriminant analysis was run on the 21 North Otago drawings, separating out S127/101, S127/40, S127/33 to test if they differed significantly from the rest of North Otago (Bain 1982). The cases were grouped 100 percent correctly, suggesting strong evidence for internal variation within North Otago. It is possible that the distinct group of drawings at S127/101, S127/40, S127/33 was the work of a single artist (Table 4).

"EARLY STYLE" HUMAN DRAWINGS

This group of data was the largest studied with a total of 45 variables and 230 cases divided between the 172 South Canterbury drawings and the 58 North Otago drawings. Of the 230 cases analysed, 11 drawings in the South Canterbury group were more closely aligned to the North Otago drawings and 14 of the North Otago drawings were incorrectly grouped (Table 5). However, an overall total of 89.1 percent of the cases were grouped correctly.

FOMISON'S STYLES

As this stylistic analysis was based entirely on the assumption that Fomison's model was correct, the "Early Style" and "Classic Style" human drawings were subjected to a discriminant analysis also. A total of 262 cases were studied, comparing the 230 "Early Style" human drawings and the 32 "Classic Style" human drawings. With 97.33 percent of the cases correctly grouped (Table 6) Fomison's model is supported: i.e. it does seem that there are the two distinct groups which he has named "Early Style" and "Classic Style".

DISCUSSIONS AND CONCLUSIONS

It can be seen from a study of superimpositions and style within rock art that distinct stylistic differences do exist between the drawings in South Canterbury and North Otago. The use of Fomison's superimpositional analysis for a chronological sequence showed the potential value of this method for relative dating of rock art in New Zealand. Since no non-destructive method of absolute dating is yet available in New Zealand (Brandl 1973), we must still rely upon relative dating methods. Therefore it is interesting to examine the correlation of some drawings with radiocarbon dates from their shelter floor deposits (Fomison n.d.).

Early dates with implications for the "Early Style" were provided by Ambrose (1970) in the Waitaki Gorge. He recorded two periods of drawing at the Gooseneck Bend shelter (S117/8) which belonged to Fomison's (n.d.) First and Second Stages. Ambrose related them to two pre-European occupation layers in the shelter floor, the lower containing midden material with a C14 date of A.D. 1100 ±150 (ANU-48). At Ahuriri (S117/4), where all the drawings belonged to the earliest stage of the sequence, the sole occupation layer yielded a C14 date of A.D. 1324 ±65 (ANU-47). In this occupation layer an ivory pendant was located which would not have been out of place in an Archaic Phase assemblage. However, it must be emphasised that no firm associations can be established between the rock drawings and the floor deposits.

Regional stylistic variations in rock drawings doubtless reflect, to some degree, the kind of regional variation which is being established by archaeologists in other evidence (Prickett 1982). Local innovation was present in most aspects of Maori culture (Anderson 1982, 1983) and its appearance in the rock art is no surprise (Trotter and McCulloch 1981). In the present case, one might suggest that the Waitaki River, dividing South Canterbury from North Otago, has acted as a local cultural boundary.

Where do we go from here? The next step would be an extension of the analysis to consider stylistic differences between other local regions such as South Canterbury and North Canterbury.

ACKNOWLEDGEMENTS

I would like to thank Dr Atholl Anderson (University of Otago) for helpful advice and support, Tony Fomison for valuable information and access to unpublished material, and Michael Trotter for access to the Canterbury Museum's rock art tracings.

Note

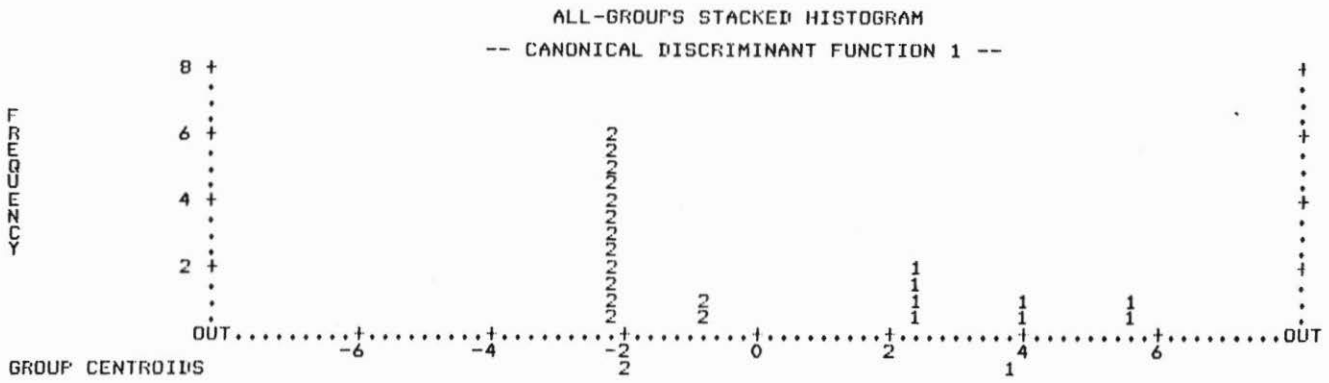
1. Otago Museum records indicate that the pebble almost certainly came from Waitati, north of Dunedin, rather than Waitaki River Mouth, as Skinner believed (Wendy Harsant, pers.comm.)

TABLE 2

DISCRIMINANT ANALYSIS ON DOGS

SYMBOLS USED IN PLOTS

SYMBOL	GROUP	LABEL
1	1	SUBFILE SOUTH
2	2	SUBFILE NORTH



CLASSIFICATION RESULTS -

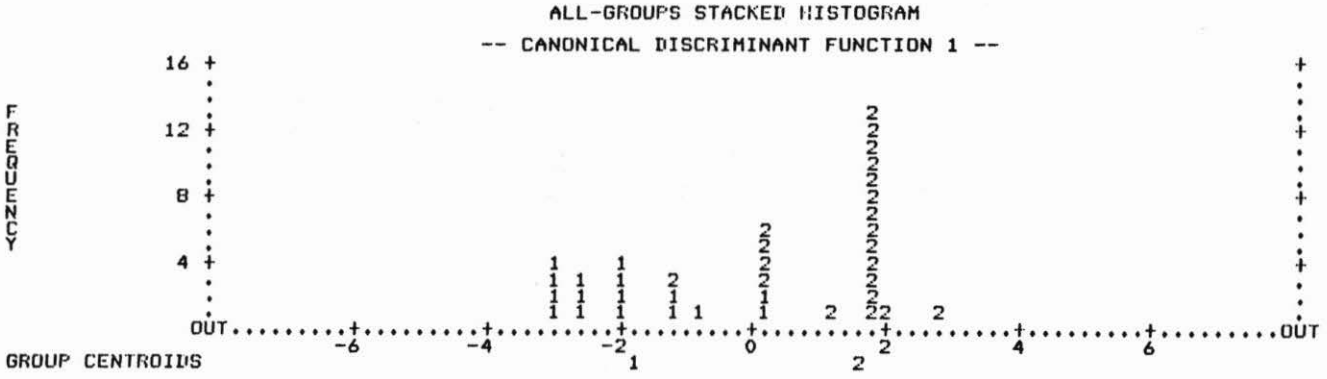
ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 SUBFILE SOUTH	4	4 100.0%	0 0.0%
GROUP 2 SUBFILE NORTH	7	0 0.0%	7 100.0%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 100.00%

DISCRIMINANT ANALYSIS ON BIRDS

SYMBOLS USED IN PLOTS

SYMBOL	GROUP	LABEL
1	1	SUBFILE SOUTH
2	2	SUBFILE NORTH



CLASSIFICATION RESULTS -

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 SUBFILE SOUTH	16	14 87.5%	2 12.5%
GROUP 2 SUBFILE NORTH	21	1 4.8%	20 95.2%

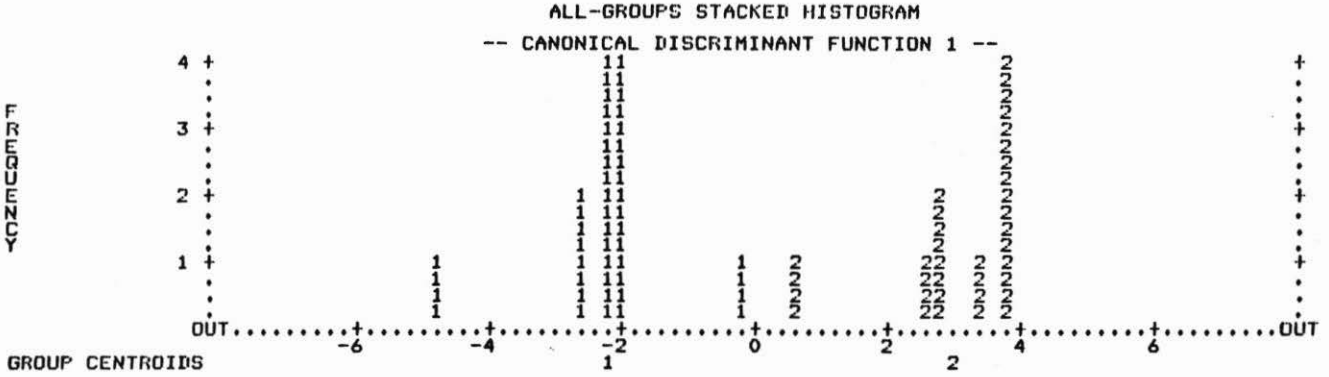
PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 91.89%

TABLE 4

DISCRIMINANT ANALYSIS ON NORTH OTAGO BIRDS

SYMBOLS USED IN PLOTS

SYMBOL	GROUP	LABEL
1	1	SUBFILE MIXED
2	2	SUBFILE AWAMOKO



CLASSIFICATION RESULTS -

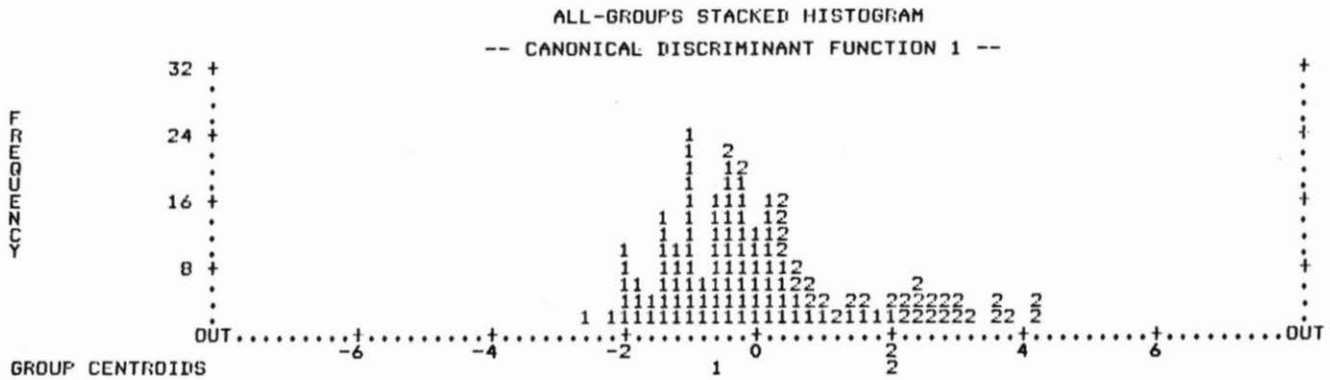
ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 SUBFILE MIXED	12	12 100.0%	0 0.0%
GROUP 2 SUBFILE AWAMOKO	9	0 0.0%	9 100.0%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 100.00%

DISCRIMINANT ANALYSIS ON "EARLY STYLE" HUMANS

SYMBOLS USED IN PLOTS

SYMBOL	GROUP	LABEL
1	1	SUBFILE SOUTH
2	2	SUBFILE NORTH



GROUP CENTROIDS

1	-1.5
2	2.5

CLASSIFICATION RESULTS -

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 SUBFILE SOUTH	172	161 93.6%	11 6.4%
GROUP 2 SUBFILE NORTH	58	14 24.1%	44 75.9%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 89.13%

TABLE 6

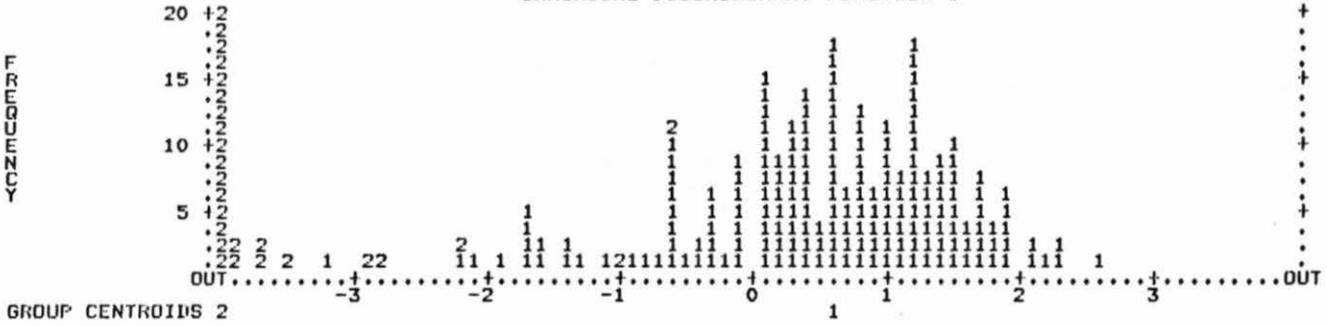
DISCRIMINANT ANALYSIS ON ALL HUMANS

SYMBOLS USED IN PLOTS

SYMBOL	GROUP	LABEL
1	1	SUBFILE EARLY
2	2	SUBFILE CLASSIC

ALL-GROUPS STACKED HISTOGRAM

-- CANONICAL DISCRIMINANT FUNCTION 1 --



GROUP CENTROIDS 2

CLASSIFICATION RESULTS -

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 SUBFILE EARLY	230	226 98.3%	4 1.7%
GROUP 2 SUBFILE CLASSIC	32	3 9.4%	29 90.6%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 97.33%

APPENDIX 1
VARIABLES STUDIED IN ANALYSIS OF DOG DRAWINGS

1. Body blank—when the motif is not entirely filled in by pigment so that part of it is left blank
2. Head blank
3. Upraised tail
4. Curved hindquarters
5. Genitals
6. Outlined—when the drawing is just outlined and not filled in with pigment
7. Facing left
8. Facing right
9. Ears
10. Muscular forequarters—when emphasis is placed in the drawing on the development of a muscular neck or forequarters
11. Black
12. Red
13. Black and red

APPENDIX 2
VARIABLES STUDIED IN ANALYSIS OF BIRD DRAWINGS

1. Naturalistic
2. Birdman
3. Outstretched wings
4. Small birds on wings
5. Facing right
6. Facing left
7. Open beak
8. Filled in
9. Triangular shaped body and tail
10. Stick feet
11. Long neck
12. Blanked
13. Flesh on legs
14. Blanked head
15. Hooked beak
16. Peaked tail
17. Feathers
18. Triangular birdman tail—as opposed to the peaked tail of the more naturalistic birds
19. Stick birdman—birdman drawn as a stick outline
20. Bird in flight
21. Round body shape
22. Double head—a double head in profile
23. Outlined
24. Black
25. Partially blanked

APPENDIX 3
VARIABLES STUDIED IN THE ANALYSIS OF THE "EARLY STYLE" HUMANS

1. Black
2. Red
3. Red and black
4. White
5. White and black
6. Profile, bent knee sitting position
7. Addition of fingers and/or toes
8. Flexed position
9. No head
10. Double ended—mirror image from waist, but not usually symmetrical
11. Double headed

12. Paired circles attached to waist
13. Facial features
14. Chevrons attached to body
15. Evenly shaped body
16. Waisted—the motif is shaped in at the waist
17. Outlined long neck
18. Flat even base
19. Holding some object
20. Wide base
21. Long neck filled in
22. Outlined head
23. No separate head
24. Stick drawn arms and/or legs
25. Outstretched arms
26. Outstretched legs
27. Outlined legs
28. Filled in arms and/or legs
29. Outlined arms
30. Wider shoulder than hip
31. Genealogies
32. Circles on head
33. A narrative scene
34. Long body
35. Spiral attached to the body
36. Shapeless outline
37. Stick human and waisted
38. Two-piece—human formed of two triangles coming together at a point at the waist
39. Flat topped head
40. Filled in head
41. Round insect shaped body
42. Stick body
43. Uni-terminal head
44. Wide shoulder, long body, wide hip
45. Feathers

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