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MAORI ROCK DRAWINGS

A STYLISTIC ANALYSIS OF DRAWINGS
IN NORTH OTAGO AND
SOUTH CANTERBURY

PAMELA J. BAIN

A thesis submitted in fulfilment
of the requirements for the degree of
Master of Arts in Anthropology at
the
University of Otago
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CHAPTER ONE

INTRODUCTION

A valuable part of the history and prehistory of New Zealand in the form of drawings, paintings and engravings, is present in many of the limestone areas of New Zealand. Although undated, the drawings give an indication of the way of life and the culture of the artists.

There are three kinds of rock art in New Zealand: drawings or paintings and engravings in rock shelters and engravings on portable rocks. The most common variety of rock art is the drawings. Concentrated recording has revealed sites throughout New Zealand, but most commonly in North Otago and South Canterbury. The drawings and paintings from these areas will be dealt with in this thesis, with only brief mention of engravings and portable art forms.

Drawing is defined as the use of a pigment such as charcoal and haematite applied dry to a surface. The drawings are not only executed in monochrome, but often incorporate red, black, and white.
Evidence of paintings is less common. Many of the earlier writers suggested that the charcoal and haematite were mixed with an oil or fat (Haast 1877, Hamilton 1896) to form a type of paint. When applied to a rock wall the resultant effect was quite different to the drawings, with the paint seeping into the contours of the rock surface. The distinction between drawings and paintings is often unclear in the literature and site record forms. For the purpose of this analysis, therefore, they have been combined under the title of drawings. No definitive statement can be made therefore with regard to the place of paintings as distinct from drawings in a chronological or spatial stylistic sequence.

Engravings take various forms such as carvings, where the motif is cut into the stone, or raised relief engravings, where the stone is pecked away from around the design.

The distribution of these varieties of rock art varies throughout New Zealand. In the South Island the most common type of rock art is the drawing executed in red, black and white. Examples occur throughout the island but they are heavily concentrated near the east coast especially around the North Otago and South Canterbury limestone areas. Paintings and engravings in the South
Island are rare (Figure 1, Figure 2) when compared to the vast number of drawings located (Figure 3).

In the North Island, sites usually occur individually rather than in large clusters as is the case with the South Canterbury and North Otago drawings. Engravings are the most common type of rock art recorded, with drawings and paintings rare when compared to the number of such sites in the South Island (Figure 4). This may however reflect the lack of detailed surveys, as for example, the Taupo and Taranaki areas have many sites recorded (Figure 5, Figure 6). The sites are concentrated in the central and northern districts of the North Island, with very few sites to the south.

This thesis is primarily based on a study of North Otago and South Canterbury rock drawings and has, as its main objective, an analysis of stylistic variation between these areas. Following a review of previous research into rock art in New Zealand, the methods and materials used in the analysis are discussed and the results of that analysis are presented and considered.
Inset: See Fig 2
- Paintings
- Engravings

FIGURE 1: Paintings and Engravings in the South Island
FIGURE 2: Paintings and Engravings in North Otago and South Canterbury
FIGURE 3: Rock Drawings in the South Island
(Based on Trotter and McCulloch 1981)
FIGURE 4: Distribution of Engravings, Drawings, and Paintings in the North Island
FIGURE 5: Distribution of Engravings and Pigment Markings in the Taupo Area
Since the late 19th century there has been considerable interest in Māori rock art. This began during the period when major debates were being conducted into the importance of the moa to the Māori (Mantell 1868, Haast 1871, Stack 1871, Hector 1871, MacKay 1874) and was prompted by the fact that the art was of a form no longer being practised and about which there were no traditional records. The view that Māori settlers of the prehistoric era were responsible for the artistry was expressed by Haast (1877). He noted that many of the rock art drawings were quite different in design and subject matter to historical Māori art. Enthusiastic discussions on the meaning of the drawings occurred privately, during meetings of interested parties and through the newspapers and radio stations - discussions which continue to the present day. Participants in these debates have suggested that the drawings represented legends and mythical beings (Beattie 1941), that they held religious significance (Schoon 1947), that they were mere doodles (Duff 1946), and even that they were associated with writing (Beattie 1946).
Maori art in the North Island is represented by a larger number of engravings than drawings (Downes 1925, Hamilton 1925, Best 1927, Delph 1939, Phillips 1927, 1947, 1948, 1950, 1962, Davis 1958, Ambrose 1961, Schoefield 1962, Miller 1962). The first recorded site was in 1910 when Buddle found rock engravings in the soft limestone on a pa in the Kaipara district. He suggested that they were only about 150 years old and typically Maori. He attempted to explain their purpose by comparison with Egyptian customs. There everyday articles were placed in tombs as part of the death ritual, but later, these items were replaced by carved representations placed on the walls of the tombs. This suggested link with Egypt was a continuing theme in North Island rock art and was reiterated with the later find of the Kaingaroa engravings (New Zealand Herald, October 5, 6 1925).

Drawings in the North Island were not located until 1927 when Archey recorded black drawings of canoes, probably war canoes (waka taua) as in the Kaingaroa carvings. He noted some marks made from red ochre beside the black drawings, although no connection between the two could be inferred. He suggested that the cave was probably used as a temporary site.
The next group of drawings to be recorded was at Punaromia at Lake Tarawera by Gregg (1956). A series of 'paintings', predominantly canoe motifs, and a 'ladder' type of drawing were executed in red.

Employed by the New Zealand Historic Places Trust to survey and record sites in the Waipapa district, Davis and Ambrose (1957) made a detailed study of the rock drawings in the area. The drawings were all in red or black, some infilled and others just outlined. The subject matter was varied and included canoes, dogs, human figures and spirals. Red daubs were often superimposed upon the black drawings. The importance of red as a colour associated with death and ritual to the Maori people was suggested by Davis and Ambrose (1957) as evidence for a ritualistic association with the drawings. They concluded:

... All that can be said with any certainty about the paintings' meaning and importance is that they were of considerable age, and that they were probably magical in intention (Davis and Ambrose 1957:19).

Since Davis and Ambrose (1957), research carried out in the North Island has been centred on petroglyph sites (Law 1969, 1970, Day 1980, Pomison 1980, Prickett 1981).
SOUTH ISLAND ROCK DRAWINGS

Although early settlers had covered the major routeways and areas where drawings occurred (Selwyn n.d., Shortland 1851, n.d.), it was not until 1852 that the first account was published. Walter Mantell in his Sketchbook, December 1851-1852 depicted the drawings from the Takiroa shelter in North Otago with the caption 'Ngatimamoe Paintings Otakiroa Caves'. Mantell went further in his estimation of the age of the drawings by linking them with the moa hunting period.

The next written record also linked the drawings to the Ngati Mamoe. MacKay wrote that the Ngati Mamoe, weakened by successive defeats, and terrified at the treatment they met with from the dominant tribe, ... ceased to build pahs, secreted themselves in caverns, and fled upon the approach of strangers. In Lyttleton harbour there is a cave which formed the retreat of a small tribe, and near Timaru there are several, the sides of which are covered with rude images of men, fishes etc, which in like manner afforded shelter to this unhappy people. In the course of time, however, peace was again renewed between the remnant of this tribe and their conquerers... (MacKay 1873:Vol 1:45).

This idea was later reiterated by White (1887:Vol.3).

In 1875, the Rev. Stack visited some drawings in South Canterbury having "... heard for many years from
the Maoris of the existence of these drawings, which were popularly attributed to the Ngatimamoe..." (Stack 1877a:55). He went on to say that "... since the natives have lost their superstitious regard for these relics of antiquity, the eeling parties who frequent the spot make a practice of scratching rude drawings with charcoal all over them" (Stack 1877a:55). In fact Stack seemed to have had three periods of drawing in mind because he also observed that "... traces of their... (Ngatimamoe)... occupation are shown in the rude drawings overlying those of a more ancient date" (Stack 1877b:83).

In 1877 Haast provided the first detailed article on Maori rock art noting their state of preservation and situation. He also gave the first evidence for the pigments used in the drawings.

The paint consists of kokowai (red oxide of iron), of which the present aborigines of New Zealand make still extensive use, and of some fatty substance, such as fish oil, or perhaps some oily bird-fat (Haast 1877:45).

The black drawings were "... painted with charcoal mixed with some oily animal substance" (Haast 1877:45). Haast

1. It is likely that these modern scrawls were actually prehistoric drawings (Trotter and McCulloch 1981:7).
believed that the black drawings may have been executed by a different race of men from those who drew the red ones. In this matter he had been informed by Stack that the drawings were old due to the information he received from Matiaho Tiramorehu, the Maori chief at Moeraki.

... these paintings are attributed to the Ngapuhi, the oldest inhabitants of this island of which there are any traditions. In fact, the Ngapuhi are a somewhat mythical people to whom, besides these drawings, the destruction of the moa, or anything the origin of which is unknown, is always attributed (Haast 1877:46).

Haast's own opinion of the origins was that the artists were perhaps the descendents of shipwrecked Indian sailors serving as slaves among the earlier inhabitants of New Zealand. He believed that some of the figures represented letters of some oriental languages and used as an example a Tamil inscription around an antique bronze bell claiming Cameron's 1878 work as support for this theory of antiquity. More importantly, Haast attempted to link these drawings to the archaeology of the shelters. He carried out an investigation at Weka Pass (S61/4) revealing a variety of bird and animal species and comments:

It perhaps would not be too rash to surmise that the people who formed the kitchen middens made the paintings, during the
visits... I must confess I was rather disappointed not to receive a larger quantity of objects from the kitchen middens, and of more interest. We must, therefore, conclude that the rock-shelter was only seldom visited by man, and then was only inhabited for a very short time (Haast 1877:53).

With such a variety of ideas put forward by Haast concerning the Maori rock drawings and the prehistory of New Zealand in general, it is little wonder that he came up against much opposition. One opponent was Maskell (1882) who divided the drawings into three groups: red designs, black designs outlined, and black designs with the whole outline filled in with pigment. Maskell discussed the theories of McKenzie Cameron (1878) and Haast, but rejected both in favour of the paintings being

... simply the work of some Maori artist or artists, not necessarily done at any one time, by no means of any great antiquity, and without any particular collective meaning (Maskell 1882:61).

Maskell's arguments opened the way for the discussions and disagreements recorded in the New Zealand Journal of Science of 1882, in which various ideas and views were propounded by the authorities of the day on both the extinction of the moa and the age of the drawings.

During this period, W. Smith was investigating rock shelters in the South Canterbury area between the Opuha
and Tengawai rivers. He put forward an hypothesis for the origin of the drawings similar in content to that of MacKay (1873) but quite contrary to that of Haast.

From a careful study of the traditions and mythology of the South Island tribes, there seems to me little doubt that the rude impressions of men, lizards, fishes and mythical taniwhas are the work of the Ngati Mamoe, while the apparently later, rarer, and better executed scrollwork-like sketches, closely resembling wood carvings of the Ngai-Tahu, were probably the work of that people after their incorporation with or extinction of the Ngati-Mamoe (Smith 1897:158).

Not everyone was convinced of the Maori origins of the Weka Pass drawings. Following an editorial in the Christchurch Press (November 27, 1897) which outlined the views of Maskell (1882) and took a strong line with regard to the preservation of these drawings, various letters to the paper resulted. Some claimed that the drawings were done by Europeans and many defended the landowners' treatment of the Weka Pass drawings.

During this controversy, drawings in the Waitaki Valley and South Canterbury were being sketched and photographed by Augustus Hamilton (1897). His realisation of the "personal equation" or the subjective nature of personal sketches clarified one aspect of the
study of rock art which still stands as a major recording problem today. He divided the figures at the Takiroa Cave into three groups:

... those painted on the surface of the rock with a thick medium of animal fat or oil in black or red..., figures drawn in black without any medium at all, probably with a charred stick or piece of charcoal..., a few initials and marks cut in with knives by the modern vandals or travelling swaggers (Hamilton 1896:170).

During an examination of the floor of the shelter Hamilton found a variety of small bird bone including the extinct quail, and echoed the conclusions of Haast (1877) when he surmised that the shelter had been used as a temporary resting place. Hamilton carried out a similar examination in some South Canterbury shelters, recording drawings by photograph and sketch. His views on the authenticity of the drawings were clear.

I see no reason to doubt that the majority of the red and many of the black pictographs are genuine works of the natives inhabiting this part prior to the arrival of Europeans (Hamilton 1897:28).

In an article in the Oamaru Mail, W.H. Roberts commented that the red drawings were "... formed of kokowai and fish oil" (Roberts 1908:7) and were attributed to the Nga Puhi by the Ngati Mamoe, as the
paintings were on the rocks when they came to the country about 1577 (Roberts n.d.).

During 1916, Dr Elmore, a visiting American amateur photographed, traced and drew much of the rock art in Canterbury and North Otago. These drawings, now housed in the Otago Museum, were often stylised versions of the originals, although the inter-relationship between the drawings themselves was accurate.

In a letter to the government, the question of protection and legislation was raised by W.H. Skinner, to no avail. Of the drawings themselves he commented:

All the evidence in my mind points to the view that they were undertaken at their leisure, at varying and distant periods, and during their periodic bird hunting and fishing excursions from the permanent pas and kaiangas on the coast (Skinner n.d.).

Until this time, few people had made positive evaluations on the purpose of the drawings although subjective views on the origins of the drawings were part of major discussions at the time.

In 1916, H.D. Skinner published a paper entitled *Evolution in Maori Art* in which he related a specific type of headless human figure found in rock art in the
Waitaki area to a similar figure on a pendant also found in the area. He took the association no further, however, beyond noting the frequency with which the headless figure appeared generally in the South Pacific, and specifically in the Chatham Islands culture (Skinner 1923).

In the South Island H. Beattie was recording information on traditions from elderly Maoris, collecting ideas and place names. His work led him to the view that the Waitaha people were responsible for the black designs. These were believed to represent their writing and hence preserve incidents of their history.

The red paintings, continued my informant, were done many generations later than the black, and were the work of Kati-Mamoe, who simply copied the Waitaha figures (Beattie 1918:149).

Beattie also quoted Percy Smith who wrote "The traditional account of the paintings is that they are a species of writing brought by their ancestors from far Hawaiki..." (Beattie 1941:42). Elsdon Best disagreed with this theory and summed up the more widely accepted view as follows:

The Maori folk had no form of script, no method of recording events or knowledge by means of any form of written character. It has been suggested that in olden days, some form of written characters was
employed, but that art has been lost. There is no reliable evidence to support such statements or theories... (Best 1924 Vol.2:201).

Some of the original drawings at Weka Pass were repainted by W.R.B. Oliver in 1929 in an attempt to preserve them. He used Cousin's replica paintings published in Haast's (1877) article as a guideline but it is possible that his drawings differed somewhat from the originals, highlighting the difficulties of exact copying as noted by Hamilton (1896). Attempts at using ultra-violet and infra-red light to study the pigment of the original drawings have been made unsuccessfully (Trotter and McCulloch 1981:12).

A local North Otago historian G.B. Stevenson with a long interest in Maori sites of the area had visited rock art shelters with Hamilton and other interested people. Writing an article in *The Journal of the Polynesian Society* (1943) about one of these trips to the Gooseneck Bend and Shepherd's Creek drawings he recalled that at Shepherd's Creek he had found not only drawings but also an etching of a fish with a hook in its mouth. Stevenson linked various designs at these sites with those in the wider North Otago area.
In another article on the Kokoamo drawings in North Otago (Stevenson 1946) he described a drawing depicting a group of birds which he interpreted as a stilt, a kiwi or moa, a shag, a rail and an extinct swan. He linked the shag to a similar one located at Gooseneck Bend and suggested that "There appears to be sufficient resemblance to justify the opinion that both sketches are by the same artist" (Stevenson 1946:219). In an attempt to arouse public interest in rock art, H.E. Wedde accompanied Stevenson to the Kokoamo drawings and wrote an article for the Otago Daily Times (July 2, 1946) outlining the history of the investigations into rock art in the Waitaki Valley.

The most detailed work on Maori rock art in North Otago was written by Stevenson (1947), encompassing his ideas and evidence on the various rock drawings, Maori place names and legends. In this valuable book he suggested that

It would be wrong to assume that the paintings belonged to any one tribe or period... It is not to be wondered at that the historians could get little information about the people who camped in these shelters in the Waitaki Valley. In the early part of the 19th century the sub-tribes of the South Island were engaged in extremely bitter fighting amongst themselves, besides repelling attacks from the north (Stevenson 1947:18).
He went on to describe various shelters in the valley, relating them to the available economic resources in the area and to other drawings. At Maerewhenua, a burial was located.

It was discovered about 1900 by an authority on Maori customs who said that certain marks on the rock wall indicated the presence of a grave. Yet I have been told by a very well informed Maori that it was entirely contrary to custom to mark a place of burial. Nevertheless, the fact that only paintings of a very early period are found nearby seems to show that the shelter had never again been occupied after the burial took place (Stevenson 1947:20).

He also described the drawings he had recorded earlier, such as those at Gooseneck Bend and Kokoamo, and went on to develop a comprehensive list of Maori place names and meanings in the North Otago area.

In an article entitled "Art or Doodles" (1946) R. Duff, the Director of the Canterbury Museum and a respected authority on Maori history, suggested that more thought should be given to the function of the drawings. Duff noted that

The absence in the rock shelters of indications of the sex of the subjects drawn suggests to me that the traveller who scrawled them had no serious purpose and was not trying to portray any historical figures or incidents. His subjects were puppets without identity, pedigree or purpose (Duff 1946:22).
He also drew valuable conclusions on the similarities of some of the designs with later Maori art, such as the double spiral formed by the entwining tail of a *taniwha* (Duff 1950). He also pointed to similarities between Chatham Island and Polynesian art, such as the typical human shape with flexed legs found in the South Island. He linked the *taniwha* shape with the bulbed spiral of the *koru*, placing it later in time, in association with later Maori art such as wood carving and rafter patterns.

Contrary to Duff’s view, Theo Schoon believed that the rock shelters were the exclusive precincts of the *tohungas* and that the drawings were part of their magical practises. Schoon was employed by the Department of Internal Affairs to record and survey sites in Canterbury and North Otago. To better define some drawings, he found that to wet the rock made them easier to distinguish and when this was not successful he resorted to dot by dot retouching. His reproductions, held in the Canterbury Museum, often oversimplified the actual drawings and were therefore not a true representation of the originals. In addition, his paintings usually gave no indication of the relation of the drawings to each other as part of a frieze. Yet despite the rampant criticism about the retouching of some drawings it must not be forgotten that Schoon did much valuable work on a minimal wage and living
under much hardship (Schoon 1967). His paintings, photographs, maps, records and survey work was carried out not only in the South Canterbury area but also in Southland and Kaikoura.

Accompanying Schoon on his search in the Kaikoura area was T.S. Scott who had already been on an enthusiasts expedition to the Duntroon area. Sensitive to the aerie and ancient feeling associated with the limestone areas he wrote of the drawings,

... the men who made them were working in some sense I felt sure, expressing, it seemed with conviction some deep side of themselves and giving these places a special reality in their lives (Scott 1950:293).

Duff's and Schoon's contrary ideas were aired on the radio for the reaction of the public, and the feedback often came in the form of letters to the Listener, 1952. Nothing could be agreed upon largely due to the fact that all the theories expressed were based on very little fieldwork and no overall synthesis. That the rock art sites in New Zealand are many and varied was shown by Schoon in his fieldwork, and again in 1950 by Duff, when he and a group of friends located drawings in Fiordland. Here they found charcoal drawings, especially noteworthy was a 'birdman' figure similar to those found in South Canterbury and North Otago (Duff 1952).
A realisation of the value of these sites and the need for accurate site surveys lead to the New Zealand Historic Places Trust employing W. Ambrose and F. Davis in 1958 to carry out a survey in the Waitaki Gorge where sites were to be drowned by a proposed hydroelectric scheme. They had previously worked in the North Island at Waipapa, recording drawings affected by that dam site. To record the drawings they used crayon on water resistant cellophane which allowed the texture of the rock surface to show in the tracings. Infra-red film was used in the photography in an attempt to obtain clearer reproductions (Davis and Ambrose 1957, Ambrose and Davis 1958, 1959, 1960). In 1970 Ambrose published a synthesis of his work in the area describing the individual sites, the drawings, his excavations and dates. He concluded that the black drawings were usually more naturalistic in style and subject matter than the red ones (Ambrose 1970:431) and generally discussed the potential of style and superimposition as a form of relative chronology. Over the years, the emphasis on interpretation of the individual shelters and figures changed towards an overall drive at recording the sites and tracing replicas. Interpretation of the drawings was shelved with arguments revolving more around the dating and the function. Ambrose (1970) attempted to interpret the drawings as did Fomison in the 1960's. Fomison was employed by the New Zealand
Historic Places Trust to survey and record shelter sites in South Canterbury and comment on preservation and publicity for certain sites. Fomison (1962) made valuable suggestions regarding the subject matter of the drawings interpreting many as subjects common in Maori life such as dogs and birds and noting the stylisation of the human form. He also extended Duff's (1950) comments on the relationship of some of the Maori rock drawings to Classic Maori arts such as tattooing, rafter and *taniko* patterns.

Fomison wrote a manuscript which attempted to draw up a relative chronology from an analysis of superimposition, style and subject matter, which will be discussed in detail later. This tentative chronology set out an initial period of naturalistic drawings similar in subject matter to the early East Polynesian culture, a later 'Classic Style', and a 'Contact Period' style (Fomison n.d.). This manuscript is the most comprehensive work on Maori rock art written. He took the problem as a whole in an attempt to find some order and association within the field and to interpret the drawings stylistically through time. His fieldwork lead him to the conclusion that many of the drawings occurred in uninhabitable areas, suggesting that the main factor in their location was a good drawing surface,
and that the people went to these shelters with the intention of drawing:

... there exist a few individuals possessed of sufficient interest in visual expression to draw and paint, without any more specific reason, and we can well imagine that such an individual would be naturally attracted to the invitingly blank surfaces in and around the shelter in which his party chose to camp (Fomison 1963:2).

Similar work to Fomison's was also conducted by members of the North Otago Scientific and Historical Society under the direction of Michael Trotter. This group carried out an intensive survey of the Awamoko Valley, North Otago, recording all shelter sites (Peterson 1962, Trotter 1967a, Trotter and McCulloch 1969). From this research Trotter (1971) suggested that many of the drawings were found away from the major river valleys and overland routes rather than being concentrated along them as it was previously thought. The majority of suitable shelters in the area were occupied if not drawn in.

During this time B. McCulloch was surveying the Weka Pass area where only one rock art site had previously been recorded but ironically upon which many of the early theories on rock art were based. She located many more utilised shelters in the area
and suggested that in fact the drawings in the area were similar to those in the rest of the South Island (McCulloch 1968).

In 1971 Trotter and McCulloch published a much awaited synthesis of rock art in New Zealand. They dealt with the pigments and techniques used, the subject matter and suggested that the artists drew "... for that most human of all reasons, because they wanted to..." (Trotter and McCulloch 1981:81). The authors had also surveyed other areas in the South Island locating sites in Southland, Pukaki and Tekapo, Mt Somers, Castle Hill, Motunau and Kaikoura (Trotter and McCulloch 1981). However no detailed surveys have been carried out in the South Island since the work of Trotter and McCulloch but sites are still being recorded by interested individuals; the North Otago Scientific and Historical Society, and the Forest Service.

What conclusions can be drawn from this survey of interest in South Island rock shelter drawings? Clearly, many theories have emerged. Interpretation of the drawings themselves has been minimal and the results often contradictory. The question of age is still unsettled. Most of the work on dating has involved relative dating methods, for example, Trotter and
McCulloch (1981) who gave C14 dates of A.D. 1100-1500 for the settlement of the shelters. As far as the subject matter of the drawings themselves is concerned, some, for example the Craigmore moas, do suggest that they were drawn early in the period of New Zealand prehistory. Artefact assemblages from shelter floor excavations often indicate that the shelters were occupied early, but no real continuity can be shown between the drawings and the cave floors.

One other indication of the age of the drawings is the growth of silica over them.

After all dirt and plant growth had been scrubbed from the paintings, they were still very faint, largely because of a layer of silica on the surface, deposited over the paintings. This was a conclusive indication of their relatively great age. Unfortunately, geologists do not know the rate of formation of such deposits, beyond saying that it is a very lengthy process. So we know that the paintings are old, but not how old (Davis and Ambrose 1957:15).

Finally another indicator of relative age is suggested by Fomison (n.d.). He related aspects of subject matter found in some rock drawings to diagnostic pre-Classic and Classic period artefacts, such as chevoned amulets, and the early club type with the median ridge. He believed that the similarities between the drawings and diagnostic artefact types indicated that some of
the drawings belonged to an early period and others to a distinctively later period.

In the last ten years, since the work of Trotter and McCulloch (1981), the study of Maori rock art has not been extensive (Dunn 1972, Trotter 1972), nor has our knowledge of the subject advanced greatly. Large picturesque books such as Archey (1977) comment briefly on the rock drawings, but most texts on art in New Zealand and the Pacific ignore the drawings completely.

However, these shelter sites are now being recognised as an integral part of the development of the Archaic and Classic Maori cultures in the South Island, and although not accurately dated as yet, no cultural synthesis of South Canterbury or North Otago would be complete without a mention of these sites (Anderson 1982, Trotter 1982).

Thus over 100 years after the rock drawings were first recorded, our information is still sparse. No one except Fomison has made any detailed attempt to analyse the styles and superimpositions. This thesis attempts to test Fomison's model of development in particular and to study the subject of stylistic variation through time and space, within the cultural context of New Zealand Maori art styles.
CHAPTER THREE

METHODS AND MATERIALS

A substantial body of literature already exists on Maori rock art based on field survey, drawings and photography. In this work a computer programme was used to recover existing information from the New Zealand Register of Archaeological Sites. Output listed rock art sites by grid reference, site record number and date of recording. Site record forms were then consulted for more detailed information. Using this data an attempt was made to relocate every recorded site in North Otago. Some sites could no longer be located due to stock damage, heavy bush growth, or intensive weathering by the elements. The aim of this survey was to trace a small number of drawings using the method proposed by Davis and Ambrose (1957). This method involves using thin polythene sheeting and chinagraph pencils to accurately reproduce the rock art, particularly with respect to texture. In addition photographs were taken for comparison with earlier slides, photographs and tracings.
The deterioration rate of drawings may be usefully studied by considering only a small sample of sites. Accordingly the property of W. Stackhouse of Ngapara was selected at random for detailed consideration. Those drawings recorded from the property were relocated and traced. Some sites such as S127/66, were well covered by bush growth and this may in part be responsible for their generally good state of preservation. Those drawings on the roofs or higher on the walls of shelters tended to survive better than those lower down. Well defined drawings, for example, S127/66 (Figure 7), S127/33 and S127/101, appeared to be deteriorating at a slower rate than those already fragmented. This is clearly demonstrated when recent photographs (Plate 1, Plate 2) are compared to earlier tracings (Figure 8, Figure 9). The bird on the left hand side of the S127/33 drawing (Plate 1) is a typical example of this type of damage. If no conservation action is taken the rapid rate of deterioration in those drawings already poorly preserved will make further analysis difficult, if not impossible.
FIGURE 8: S127/33
FIGURE 9: SI27/101
PLATE 1: S127/33

PLATE 2: S127/101
OBSERVER BIAS

Another major problem associated with the analysis of rock art is observer bias. When the author's tracings were compared to others made of the same drawing a degree of personal interpretation in the replication was evident. Ideally to overcome this interpretative problem tracings from only one investigator would be used. This however was not possible. Consequently only those tracings of North Otago and South Canterbury drawings held in the Canterbury Museum were subsequently considered in this work (Appendix 1). The South Canterbury tracings were made almost entirely by Tony Fomison in the 1960's. In North Otago Michael Trotter recorded the majority of sites, with others being traced by Beverly McCulloch and members of the North Otago Scientific and Historical Society.

PHOTOGRAPHIC ANALYSIS

Initially a 'backing light' was used to photograph the tracings, but experiments using both colour and black and white film revealed that the tracings became 'flat' and lost essential contrast under these conditions. All the photographs analysed in this work therefore were taken with frontal light. A light coloured background was used for dark tracings and light tracings were
photographed using a dark background. Black and white film was used as it provided photographs of sharper detail and better contrast than the colour equivalent.

The photographs were first grouped according to subject matter into five categories; birds and associated drawings, fish, dogs, humans and canoes. Although a difficult and subjective classificatory task these motifs were easier to define than others such as mythical creatures and taniwha. Drawings of humans, birds and canoes were all easily distinguishable as were most dog drawings, however even with these, interpretation does vary (Brandl 1980, Trotter and McCulloch 1981:29). Fish drawings were less easily recognisable, and the material used for this analysis was limited to obvious examples.

The drawings in these five categories were then subdivided according to Pomison's (n.d.) proposed sequence. This scheme divided the prehistoric period into five artistic phases, two each associated with Classic and Archaic culture and a single Contact phase. However, due to lack of data in most cases (human drawings were the sole exception) only three phases were employed in this work. They correspond roughly to Archaic, Classic and Contact Maori culture. According
to Pomison's criteria, all the bird drawings, dog drawings and canoe drawings were completed during the "Early" period. Most of the human and fish drawings also belonged to this phase. A few represent the "Classic" and "Contact" styles.

After dividing the drawings chronologically the spatial distribution of each group was considered. A table was drawn up noting the site number for each drawing and points of stylistic variation such as colour differences. In addition a defined set of details specific to individual groups were recorded; in the case of dogs it was noted for example whether the animal was drawn with or without ears. Size was not considered as a variable since it is likely that this factor is related more to the constraints of drawing space than any stylistic preference. Sample size was good in the case of bird and dog drawings but the paucity of fish and canoe examples precluded any firm conclusions with regard to these groups (Figure 10).

The large number of human drawings made the use of some form of information processing device desirable. Accordingly all groups, bar the fish, were subjected to detailed statistical study using the "SPSS" (Statistical Package for the Social Sciences) package
<table>
<thead>
<tr>
<th>Site No.</th>
<th>Blanked Body</th>
<th>Head Blank</th>
<th>Upraised Tail</th>
<th>Curved Hindquarters</th>
<th>Genitals</th>
<th>Outlined</th>
<th>Facing Left</th>
<th>Facing Right</th>
<th>Ears</th>
<th>Muscular Forequarters</th>
<th>Black</th>
<th>Red</th>
<th>Black and Red</th>
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</thead>
<tbody>
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<td>x</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>x</td>
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<td>x</td>
<td></td>
</tr>
<tr>
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<td>x</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
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<td>x</td>
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<td>x</td>
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<td>x</td>
</tr>
<tr>
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<td>x</td>
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</tr>
<tr>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>x</td>
<td>1</td>
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</tr>
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<td>x</td>
<td>1</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
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<td>1</td>
<td>1</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>S127/35</td>
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<td>1</td>
<td>1</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
</tr>
<tr>
<td>S127/66</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

**FIGURE 10: Data on Dog Drawings**

✓ = present  
✗ = absent
provided on the VAX-11 computer at the University of Otago. In addition to the general descriptive statistics, "discriminant analysis" was employed to test intuitively derived regional style groupings.

DISCRIMINANT ANALYSIS

Discriminant analysis begins with the desire to statistically distinguish between two or more groups of cases (Klecka 1975:435).

Drawings were divided into two groups based on a subjective assessment of style, colour, form and motif. These groups corresponded roughly to the areas of South Canterbury (Group 1) and North Otago (Group 2). A discriminant function analysis programme was then run on each assemblage of drawings (Figure 11).

To distinguish between the groups the researcher selects a collection of discriminating variables that measure characteristics on which the groups are expected to differ... The mathematical objective of discriminant analysis is to weigh and linearly combine the discriminating variables in some fashion so that the groups are forced to be as statistically distinct as possible (Klecka 1975:435).

Discriminating analysis was chosen as the method of analysis as it is ideally suited to coping with presence or absence data, in this analysis presence was
RUN NAME
VARIABLE LIST
INPUT MEDIUM
INPUT FORMAT
SUBFILE LIST
DISCRIMINANT
OPTIONS
STATISTICS
FINISH

DISCRIMINANT ANALYSIS ON 'EARLY STYLE' HUMANS
ANALYSIS=A TO S5/METHOD=RAO
ALL

FIGURE 11: Discriminant Analysis Programme
represented by 1 and absence by 0. Discriminant analysis is designed to analyse the subjective groups presented and to confirm their uniformity but not to redefine the groups. The programme relates back to the operator information such as how correctly the two groups were arranged, how many cases within each of the groups had been incorrectly classified, and the percentage of cases correctly grouped (Figure 12). Group centroids are also compiled as an indication of how widely the two groups are separated and the statistical significance of the groupings is given.

The value of statistical significance, however, depends largely on the size of the sample, and in this thesis was based on the convention

... that results can be called "statistically significant" if the probability is ≤0.05. Similarly, results are "highly significant" if their probability is less than 0.01 (Thomas 1976:216).

The number of "Early Style" human variables to be studied had to be reduced before a discriminant analysis could be carried out.

The single most distinctive characteristic of factor analysis is its data-reduction capability. Given an array of correlation
DISCRIMINANT ANALYSIS ON DOGS

SYMBOLS USED IN PLOTS

<table>
<thead>
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<th>SYMBOL</th>
<th>GROUP</th>
<th>LABEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>G1</td>
<td>SOUTH</td>
</tr>
<tr>
<td>2</td>
<td>G2</td>
<td>NORTH</td>
</tr>
</tbody>
</table>

ALL-GROUPS STACKED HISTOGRAM

-- CANONICAL DISCRIMINANT FUNCTION 1 --

GROUP CENTROIDS

CLASSIFICATION RESULTS -

<table>
<thead>
<tr>
<th>ACTUAL GROUP</th>
<th>NO. OF CASES</th>
<th>PREDICTED GROUP MEMBERSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>GROUP 1</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>SOUTH</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>GROUP 2</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>NORTH</td>
<td></td>
<td>0.0%</td>
</tr>
</tbody>
</table>

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 100.00%

FIGURE 12: Discriminant Analysis of Dog Drawings
coefficients for a set of variables, factor-analytic techniques enable us to see whether some underlying pattern of relationships exists such that the data may be "rearranged" or "reduced" to a smaller set of *factors* or *components*... (Kim 1975:469).

An R-mode factor analysis was therefore carried out to determine the nature of correlations between variables.

For the R technique the intercorrelations of the attributes are analysed to discover which attributes vary most consistently in relation to each other. In this way the attributes which give the most efficient discrimination between artefacts can be recognised (Glover 1969:39).

After the factor analysis programme had been completed 14 variables were removed from the study and a discriminant analysis carried out on the remaining data.

To complete the study a discriminant analysis was also carried out to test Fomison's chronological sequence. The drawings were divided into the "Early Style" humans (Group 1) and the "Classic Style" humans (Group 2) to examine the relationship of these drawings to each other and to see if two distinct groups could be identified.
CHAPTER FOUR

ANALYSIS

THE CHRONOLOGICAL PROBLEM

The problem of analysing rock art to form a chronological sequence was faced as early as the first European rock paintings and engravings were discovered (Ucko and Rosenfeld 1967, Conkey 1981). Objective dating methods were not often available, as the art represented was not usually found in the same archaeological context as the tools by which the cultural stages presumed to be associated with the art were defined. However, in some cases engravings were found embedded with flints or bone debris in the deposits of a particular culture. In some rare cases fragments of a decorated wall had fallen onto the ground and been buried under accumulating deposits which gave a minimum date for the art. Another method used, although it was less objective, was by analogy of parietal art with engravings found on pebbles and bone in archaeological deposits (Ucko and Rosenfeld 1967). Absolute dates have also been obtained for rock art in Australia (Hale and Tindale 1930, MacIntosh 1965, Maynard and Edwards 1971, Mulvaney 1975, Rosenfeld 1975) in a few rare cases, but much of
the chronological work has been based on superimpositional analysis and the study of differential weathering (McCarthy 1962, 1974, 1976, Wright 1968, Trezise 1971).

The same chronological problem was faced in the study of Maori rock art but has largely been ignored to date. Drawings in a cave are not necessarily associated with the remains in a cave floor. Methods for objectively dating the black pigment do exist but only at the expense of the drawing (Brandl 1973:171). No non-destructive method for dating rock drawings is available yet in New Zealand, although it is hoped to have access to an accelerator to process carbon samples in the future. The size of the sample required for this analysis is extremely small, less than 100 mgs, rather than the large samples presently required for radiocarbon dates.

In New Zealand rock art superimpositional analysis and relative dating methods also became the basis of chronological studies. Clegg wrote on the subject of rock art:

Once upon a time pictures OF something-objects were represented - and pictures were FOR some reason or other; there was an object in making them, which coincided with the use to which they were put, and was directly relevant to their meaning. Pictures OF objects
for objectives were in styles, which varied through time and space. Through the study of superimpositions, it was possible to sort out relative ages of various styles, and hope to disentangle an order, a prehistory and pregeography of styles (Clegg 1977a:151).

But superimpositional analysis has also been widely criticised by European workers (Leroi-Gourhan 1967) and Australian analysts (Megaw 1967, Brandl 1977, Maynard 1979). Morwood states that "... a consistent pattern of superimposition may indicate relative chronology, but it could also be 'functional'" (Morwood 1980:98). Leroi-Gourhan (1967) criticised the use of superimposition as a means of dating because he believed that a group of drawings superimposed might in fact have been an attempt to group various representations together which were contemporaneous, rather than covering a wide time difference. However, if superimpositions do appear to represent a different style than the drawings beneath them, it can stand as a valuable relative dating method.

In Australia and Europe work is being carried out to analyse the drawings and engravings using experimental work, statistical methods and computer techniques (Clegg 1971, 1977b, 1978, 1979, Clegg et al. 1977, Stevens 1975, Morwood 1980, Rosenfeld 1982). This shows that an attempt
is being made to eliminate problems inherent in other
dating methods such as superimpositional analysis, and
also to act as an alternative and independent check
upon these methods. In the case of New Zealand we are
faced with various differences to Australia and Europe.
The time factor in New Zealand prehistory is much
shorter than that of either Europe or Australia, with
settlement only occurring in the last 1000 years
(Prickett 1982). During this period the culture of
the early Polynesian settlers developed into the Maori
culture encountered by Cook on his arrival in New Zealand
(Green 1974, Bellwood 1978, Davidson, 1979, 1981). With
this development in culture through time, there appeared
to be a parallel change in the style of Maori rock art
(Fomison n.d.). With the short time scale involved
various features remained unchanged through time such
as the basic flexed position of the human drawings.
In addition, superimpositions in New Zealand rock art
are few in number compared to Australian examples. This
makes the working base for superimpositional analysis
small and therefore the task of completing a relative
dating chronology based on superimpositions less precise.
Superimpositional analysis should be treated with
caution and if possible studied in association with
other methods. Regional style sequences must be
recognised as such and not applied to areas unassociated
with the style sequence.
Work on superimpositions in New Zealand rock art has been carried out by Ambrose (1970) and Fomison (n.d.) an artist and exponent on Maori rock art in New Zealand. Commissioned by the New Zealand Historic Places Trust Fomison studied and traced rock drawings in South Canterbury and North Otago, recording colour, pigment, subject matter, weathering and superimpositions (Fomison 1962, 1963, n.d.). From his work in the field, and his background knowledge of both archaeology in New Zealand and artistic techniques he produced a manuscript with the aim of countering

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

His work set out a relative chronology from an analysis of the superimpositions so that styles which consistently overlay others were relegated to a later stage in the development of Maori rock art than those under them. He found the colours used varied from yellows, drawn on to the walls with lumps of soft limestone, to reds which were pieces of haematite, and black which was presumed to have been drawn with a charcoal stick from a fire, or as a lump. It has been suggested by G. Mason (pers. comm. 1982) that the black pigment may possibly have been formed from a specially
prepared charcoal piece with a manganese base. He based this hypothesis on an analysis of the disintegration of the black pigment in some of the Shepherd's Creek and Waitaki shelters. Mason suggested that in these cases the pigment disintegrated to form a colour unlike that remaining from the disintegration of charcoal drawings. During excavations of floor deposits in shelters containing rock art, paua shells containing haematite (S127/33, S127/37) have been located, as have pieces of haematite shaped as a pencil (Edge-Partington and Heape 1898, Duff 1958: Postscript to Ambrose and Davis 1958). Although floor deposits cannot be directly related to the drawings, it is possible these pieces of haematite were used for the wall drawings and hence a relative date can be obtained from the floor deposits. The drawings occurred wherever limestone was found, except in the Nelson and Westland area where the limestone was too chalky and often coated with moss due to the humid climate (Fomison n.d.). Some drawings have also been located on greywacke and schist where a suitable drawing surface is present (S117/4, S117/7, S117/8, S133/259).

Fomison (n.d.) defined five stages in Maori rock art. The 'Early Style' was related to the Polynesian cultural origins of the New Zealand Maori. The First
Stage of this style was based on realism. The subjects were naturalistic and mainly executed in black pigment. Birds, seals, dogs, fish, lizards, birdmen, sealmen, lizardmen and humans were all common. The main features of this stage were the use of the internal blank and the flexed position of the human drawings.

The Second Stage was based on the same style as Stage One but with a greater use of local materials such as red and white pigments. These drawings were thicker limbed and often outlined in black. In the 'Early Style' Fomison compared the drawings to artefacts presumed to be early in date such as the pre-classic club with the median ridge, and chevroned amulets, as additional support for his hypothesis.

The Third and Fourth Stages of the analysis were placed under the title of the 'Classic Style'. In the Third Stage there was increased variation in colour combinations and also many style modifications. The round headed, often carefully articulated human figure had virtually gone and was replaced with a more generalised treatment of the body and less separation into respective parts. No longer were there many distinctly recognisable figures such as dogs and birds which were common in the 'Early Style'. In the Fourth Stage more drawings were in red. The style was a linear
version of Stage Three but with some rounded head and limb ends, and tri-terminal heads. These two stages were also compared to Classic Maori art styles. Fomison's Fifth Stage of the model was called the 'Contact Period' which could be documented historically. This period combined aspects of the 'Early Style' and the 'Classic Style'. The drawings were mainly in monochrome and the subjects were often horses, pigs, sailing ships and houses.

Fomison's work still stands as the only attempt in New Zealand to form a relative chronology from an analysis of style and superimposition. To test this hypothesis fully would require as many years in the field as Fomison spent, and a detailed background knowledge into the prehistory of New Zealand. From the author's fieldwork carried out in the North Otago region, where all sites were studied for style, pigment, deterioration and superimpositions, no fault could be found with his analysis. This thesis is based therefore on the assumption that Fomison's chronological model is complete, and that New Zealand rock art can be divided into groups based on differences in style through time.

However, for the sake of this analysis the rock drawings and paintings were divided into Fomison's.
three periods rather than his five stages. This resulted in the sample base for each period being greater and eliminated the problem of atypical art being defined to a specific stage. Therefore the relative chronology used was less specific than Fomison's model and it is possible that some of the stylistic variations in relation to colour may be chronological variations rather than stylistic differences.

STYLISTIC ANALYSIS VERSUS THE DESCRIPTIVE APPROACH

Interpretation of Maori rock art has been in the forefront of discussions on the subject of art since the first written record about the drawings in 1852. Work on rock art in New Zealand in the next century revolved around avid discussions on interpretation of the drawings, their subject matter, purpose and age. Since the 1950's the emphasis has been on the locating and recording of sites, culminating in Trotter and McCulloch's work summing up previous investigations and analysing the place of Maori rock art in New Zealand (Trotter 1971, Trotter and McCulloch 1981). Since then the subject has largely been ignored apart from sites being added to the New Zealand Site Record File.

This wealth of work on Maori rock art in New Zealand has added greatly to our knowledge of the subject matter
of the drawings. Not only does the type of rock art vary between the South Island and the North Island, but so does the subject matter. The engravings and drawings of the North Island commonly depict, for example, canoes, spirals and facial features (Dunn 1972, Trotter and McCulloch 1981). The range of subjects depicted in the South Island is much greater than that in the North Island, with human figures drawn in many styles the most common motif. Naturalistic animals are also common, for example, dogs and birds, and mythical creatures and design motifs also occur but less frequently. Little is yet known, however, as to why the drawings were executed or about the differing styles through time and space as mentioned by Clegg (1977a). These aspects, although recognised (Ambrose 1970, Trotter and McCulloch 1969, 1981) have not been studied in detail. The descriptive approach was important for the collating of sites and subject matter but is in itself non-analytical. It provides the initial information needed for the analytical approach but apart from the basic description of the sites no further analysis is undertaken. This type of study gives the "... impression that nothing is known about the economic, social and ideological conditions which produced the art..." (Lewis-Williams 1982).
To study Maori rock art in some depth and analyse the question of geographical and chronological variation through a study of style was the next approach to the subject to be taken. Therefore the question the author wants to examine is whether there is geographical variation between South Canterbury and North Otago based on the assumption that the chronological model hypothesised by Pomison (n.d.) is correct.

VARIABLES

The two areas of North Otago and South Canterbury (S102, S101, S111, S110, S126, S136) were chosen as they have been widely surveyed and therefore had a large base of tracings with which to work. Also South Canterbury and North Otago are separated geographically and provided two complete units for study. The study of stylistic variation was not limited to an analysis between the two areas but also within the groups.

It must be stressed here that this work was based entirely on the tracings available (Appendix 1). Analysis had to be limited to these tracings to remove the problem of observer bias present in reproductions of such art (see Chapter 3). Although the list is therefore far from complete, notebooks of individual surveyors and
drawings such as Schoon's reproductions were not used in the final analysis. To cover a greater range of drawings would have been desirable but only at the expense of control over the subjective element introduced into the tracings. Limiting the number of tracings to be photographed to those drawn by as few people as possible meant some control over stylistic variation between the original and the tracing was possible. It was felt that in a stylistic analysis this was of more importance than sheer numbers of examples.

The subjects studied were drawings of birds, dogs, fish, humans and canoes. These subjects made up the bulk of the drawings and canoes introduced into the analysis an element of the culture of the artists. Not many man-made cultural aspects were depicted in the drawings and canoes were more frequent than, for example, drawings of clubs. Each drawing was placed chronologically into the framework established by Fomison (n.d.), and then studied geographically within each chronological period. Variables covering all aspects of the individual drawings, except size, were analysed for each drawing in an attempt to study stylistic variation between North Otago and South Canterbury.
PHOTOGRAPHIC ANALYSIS

An hypothesis was then drawn up to be tested. It read that 'within the framework of Fomison's chronological sequence, and from a study of the tracings of drawings and paintings in the areas of North Otago and South Canterbury outlined, it is hypothesised that stylistic variations occur within, and between these two geographical areas'. From a study of the photographic material, various stylistic differences were noted.

'Early Style' Dog Drawings (Figure 13)

All the drawings of dogs studied belonged to Fomison's 'Early Style' grouping based on the use of black pigment, realism and the internal blank. A feature of this stage was the deliberate joining of men and animals, many of which were dogs (S101/52), possibly indicating a close relationship in hunting or companionship. Anderson (1981) suggested that a special dog may have been bred by the Maoris with massive neck development, especially as a hunting animal. In Maori rock art this feature of muscular forequarters does not appear to be restricted to any one area, so may in fact support his theory for a special breed of dog being represented rather than this difference being a stylistic feature (Figure 14).

There was great variation between North Otago and
FIGURE 13: Distribution of Dog Drawings

- Early style
FIGURE 14: S102/41
South Canterbury in the style of the dog drawings. Dogs in North Otago nearly always faced right and had a body blank. A special feature was the curved hindquarters and genitals (Figure 7) compared to the upraised tail common in South Canterbury (Figure 15). The upraised tail and standing stance of the South Canterbury dog drawings were similar in style to the small wooden dog recovered from the Moncks Cave site (Skinner 1924) (Figure 16).

'Early Style' Bird Drawings (Figure 17)

Birds and birdmen were also assigned to Pomison's 'Early Style'. The birds were nearly all drawn in profile and the birdmen were distinguished by the addition of a profile head, and often a tail and wings, to a human form.

Once again North Otago bird drawings appeared, stylistically, to be a separate unit to the South Canterbury drawings. In the North Otago area the majority of birds were quite naturalistic and an attempt was therefore made to speciate them from an analysis of Oliver (1955) and Falla, Sibson and Turbott (1981). Stevenson (1947) suggested that the birds in the drawings at S127/33 (Figure 8) represented a stilt, a kiwi or moa, a shag, a rail and an extinct swan.
FIGURE 16: Monck's Cave toy dog
FIGURE 17: Distribution of Bird Drawings
General agreement was reached over Stevenson's identification of the stilt, swan and shag, but his "kiwi or moa" appeared more likely to be a goose. Two probable moas S127/40 (Figure 18) and S127/57 (Figure 19) and a goose (Figure 7) were also identified. Within North Otago, bird drawings in the same physical area were often more closely related, stylistically, to each other than to those within the area as a whole (S127/33, S127/40, S127/101). So stylistic variation appeared to be present between North Otago and South Canterbury and within North Otago.

In South Canterbury the bird drawings were non-naturalistic and mainly birdmen. In this context the Craigmore moas must also be mentioned although they were not amongst the tracings photographed. These birds are naturalistic representations of the moa and the drawings in that area formed a distinctive subgroup within South Canterbury, as did the birdmen drawings at Frenchmans Gully (Fomison n.d.) (Figure 20).

'Early Style' Fish Drawings (Figure 21)

Not all fish drawings fitted into Fomison's 'Early Style' group. Tracings of fish drawings were rare compared to the other animals and humans. The working base was in fact too small to form any conclusions with
FIGURE 18: S127/40
FIGURE 20: S111/6
FIGURE 21: Distribution of Fish Drawings
regard to stylistic variation. Both naturalistic fish drawings and fishermen were depicted (Figures 20 and 22).

'Early Style' Canoe Drawings (Figure 23)

No distinctive canoe drawings were traced south of the Waitaki although Shortland (1851) commented upon the use of the mokihī in the area. The drawings of canoes in South Canterbury seemed to be centered on two areas - S110, and in the area of the Tengawai and Opihi Rivers. All depictions appeared to represent the mokihī, a raft commonly used in river travel (Figure 24).

'Early Style' Human Drawings (Figures 25 and 26)

Drawings of humans were the largest subject matter group studied. Distinctive differences were found between the drawings in the two areas of study, with stylistic variations also occurring within each of the areas. Profile humans were present only in North Otago (Figure 27). Colour was also a factor which varied between the two areas, with little use of red and no white drawings in North Otago, and extensive use of both red and white in South Canterbury. Also in North Otago there was a common occurrence of a human drawing with the head as an extension of the body (Figure 28), or no head at all (Figure 29) as shown on a carved
FIGURE 23: Distribution of Canoe Drawings
FIGURE 25: Human Drawings in North Otago
FIGURE 26: Human Drawings in South Canterbury
FIGURE 27: S127/27
FIGURE 28: S136/25
FIGURE 29: S127/17
pebble found near the Waitaki River (Skinner 1974:55).

Within North Otago there was also stylistic variation. For example, in the Ngapara district, a distinctive type of human figure was common. These drawings had a small flat head, a neck, wide shoulders, long body and wide hips (Figure 30) and only occurred in the same area (S127/76, S127/75, S127/78, S127/80, S127/98).

Colour variation appeared to be an important variable. Associated with the greater use of red and white in South Canterbury than North Otago, was a change in the style of the human drawn. Features such as arms and legs were no longer sharp and distinctive as in the monochrome drawings. Partially due to the related fact that many of the drawings were outlined in black, the body and limbs of the humans were thicker and lacked elegance. This however was a feature of Fomison's Stage Two of the 'Early Style' and may in fact represent a time difference rather than a stylistic feature (Figure 31).

Individual sites also had distinct stylistic variations such as S102/39 (Figure 32) where additions of fingers and toes were common and S102/41 (Figure 33)
FIGURE 30: S127/76
FIGURE 31: S102/93
FIGURE 33: S102/41
where the humans were still flexed but very linear. Also in the area of S102 double ended figures were a common feature (Figure 34).

'Classic Style' Fish Drawings

'Classic Style' drawings of fish were uncommon and therefore no stylistic variation could be defined. In South Canterbury the drawings were more stylised than North Otago drawings, and utilized black, red and white. The only example in North Otago was drawn in red.

'Classic Style' Human Drawings

Human drawings in the 'Classic Style' were not very common either when compared to the vast number of 'Early Style' drawings. Once again the sample base was small and so no conclusions could be formed. The lack of 'Classic Style' drawings in North Otago was an interesting point worthy of study in the future.

'Contact Style' Drawings

Drawings in this style were varied, with individual sites such as S127/11 containing a unit of 'Contact Period' drawings. House drawings were only found in South Canterbury and ship drawings only in North Otago. The
style of writing also varied between these two areas.

Discussion

Within the total group of human drawings a general theme showing the flexed position ran throughout all the drawings. Many showed a human holding a club or spear (Figure 35) and these narrative scenes occurred in both areas. No apparent relationship could be found to link subject matter and physical area. In North Otago sites with only humans depicted and no birds, dogs, fish or canoes were limited to S127/80, S127/78, S127/76, S127/75, S127/70, S127/98. Elsewhere animals and humans were all intermixed.

Based on the subjective analysis of the photographic record of the drawings it was clear that the hypothesis presented could be tested and that there were geographical stylistic variations between, and within, North Otago and South Canterbury.

NUMERICAL ANALYSIS

Using S.P.S.S. a discriminant analysis programme was run on the dog, canoe, bird, 'Early Style' human, and 'Classic Style' human drawings. The fish drawings were not analysed due to lack of material.
FIGURE 35: S111/12
Dog Drawings

The information studied in the photographic analysis section was then processed by the computer. A total of 13 variables (Appendix 2) were studied and four South Canterbury dog drawings compared to seven North Otago dog drawings (Appendix 3). The variables selected by the computer to define the two groups were the same as those noted in the photographic analysis such as an upraised tail, facing right and blanked head and body. The cases were found to be 100% correctly grouped, with a significance level of 0.0027 (Figure 12) which showed that there was a clear stylistic difference in dog drawings between North Otago and South Canterbury.

Bird Drawings

The information on the bird drawings was then processed by the computer. Twenty-five variables were analysed (Appendix 4) with 16 drawings occurring in South Canterbury and 21 occurring in North Otago (Appendix 5). The variables selected by the computer as being those which distinguished between the two groups were naturally drawn birds, outstretched arms, a blanked head and a double head. Two drawings grouped with South Canterbury were more closely aligned to the North Otago group, and one North Otago drawing was more
closely aligned to the South Canterbury group. However, 91.89% of the cases were grouped correctly, with a significance of 0.0000 (Figure 36).

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 see if they differed significantly from the rest of the drawings in the area as they appeared to do in the photographic analysis. Eight variables were selected by the computer for distinguishing between the two groups; outstretched wings, facing right, filled in, long neck, blanked, blanked head, peaked tail and outlined. There were 12 drawings in the mixed North Otago group and nine in the Awamoko group (Appendix 6). All cases were grouped 100% correctly with a significance of 0.0001 (Figure 37) showing that there was stylistic variation within North Otago. These three sites may have varied from the others because they represented the work of one artist. Other such variations probably occurred within the group of mixed North Otago drawings.

Canoe Drawings

As all canoe drawings recorded in this analysis occurred in South Canterbury a stylistic analysis could only be carried out within the area. Three cases, each
DISCRIMINANT ANALYSIS ON BIRDS

SYMBOLS USED IN PLOTS

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<tr>
<td>2</td>
<td>2</td>
<td>SUBFILE NORTH</td>
</tr>
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ALL-GROUPS STACKED HISTOGRAM

--- CANONICAL DISCRIMINANT FUNCTION 1 ---

GROUP CENTROIDS

CLASSIFICATION RESULTS

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<th>ACTUAL GROUP</th>
<th>NO. OF CASES</th>
<th>PREDICTED GROUP MEMBERSHIP</th>
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<tr>
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<td>4.6%  95.2%</td>
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PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 91.89%

FIGURE 36: Discriminant Analysis of Bird Drawings
DISCRIMINANT ANALYSIS ON NORTH OTAGO BIRDS

SYMBOLS USED IN PLOTS

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ALL-GROUPS STACKED HISTOGRAM

-- CANONICAL DISCRIMINANT FUNCTION 1 --

GROUP CENTROIDS

CLASSIFICATION RESULTS:

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<td>SUBFILE AWAMOKO</td>
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<td></td>
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PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 100.00%

FIGURE 37: Discriminant Analysis of North Otago Bird Drawings
in the areas S110 and S101, and S102 were grouped together. Sixteen variables were studied (Appendix 7). With the discriminant analysis completed the groups were 100% correctly grouped but with a significance of 0.1092. Therefore the distinction between the two groups was not found to be statistically significant (Figure 38). With only six cases (Appendix 8) the data base was too small to make any distinctions between the drawings.

'Classic Style' Human Drawings

'Classic Style' human drawings used in this analysis were all from South Canterbury with the exception of one drawing south of the Waitaki River. To look at internal variation a discriminant analysis was carried out between the drawings in S102 and S101. Thirty-two variables were used in the analysis (Appendix 9) with five cases in the S101 group and 27 cases in S102 group (Appendix 10). The computer selected the following variables as distinguishing between the two groups; red, red and black, white, white and black, outlined in black, linear outline, shapeless outline, arms up, arms down, legs down, long even body, no arms and no head. The groups were found to be widely separated (Figure 39) with all cases correctly grouped and a significance of 0.0000.
DISCRIMINANT ANALYSIS ON CANOES

SYMBOLS USED IN PLOTS

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ALL-GROUPS STACKED HISTOGRAM

-- CANONICAL DISCRIMINANT FUNCTION 1 --

GROUP CENTROIDS

CLASSIFICATION RESULTS

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PERCENT OF 'GROUPED' CASES CORRECTLY CLASSIFIED: 100.00%

FIGURE 38: Discriminant Analysis of Canoe Drawings
DISCRIMINANT ANALYSIS ON CLASSIC HUMANS

SYMBOLS USED IN PLOTS

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ALL-GROUPS STACKED HISTOGRAM

-- CANONICAL DISCRIMINANT FUNCTION 1 --

GROUP CENTROIDS

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<tr>
<td>SUBFILE S101</td>
<td>27</td>
<td>0.0% 100.0%</td>
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PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 100.00\%

FIGURE 39: Discriminant Analysis of "Classic Style" Human Drawings
'Early Style' Human Drawings

The group of 'Early Style' human drawings was the largest data base studied with a total of 45 variables (Appendix 11) and 230 cases divided into 172 for South Canterbury and 58 for North Otago. Twenty-two of the 45 variables were selected as important in distinguishing between the two groups (Appendix 12). Of the 230 cases analysed (Appendix 13), 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 (Figure 40). However, an overall total of 89.13% of cases were grouped correctly with a significance of 0.0000. This demonstrates that there were two distinctive stylistic groups, North Otago and South Canterbury, with an overlap between the two areas to allow for internal variation and communication.

Discussion

The statistical computer analysis therefore supported the information presented from the photographic analysis. From a study of the dog, bird and human drawings, it was found that there was a distinct stylistic variation between the two geographical units of North Otago and South Canterbury, which supported the hypothesis presented.
DISCRIMINANT ANALYSIS ON 'EARLY STYLE' HUMANS

SYMBOLS USED IN PLOTS

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ALL-GROUPS STACKED HISTOGRAM

-- CANONICAL DISCRIMINANT FUNCTION 1 --

GROUP CENTROIDS

CLASSIFICATION RESULTS

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<td>GROUP SOUTH</td>
<td>172</td>
<td>141 93.6%</td>
<td>11 6.4%</td>
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<tr>
<td>GROUP SOUTH</td>
<td>58</td>
<td>14 24.1%</td>
<td>44 75.9%</td>
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PERCENT OF 'GROUPED' CASES CORRECTLY CLASSIFIED: 97.13%

FIGURE 40: Discriminant Analysis of "Early Style" Human Drawings
This stylistic analysis however was based entirely within the framework of Fomison's model. His sequence was therefore tested using a discriminant analysis on all the human drawings. The same 45 variables used in the 'Early Style' analysis were studied (Appendix 11) and a total of 262 cases analysed (Appendix 14). These cases were divided into 230 'Early Style' drawings and 32 'Classic Style' drawings. Only four 'Early Style' drawings were incorrectly grouped. With 97.33% of the cases correctly grouped and a significance of 0.0000 (Figure 41) Fomison's temporal sequence appeared to be quite a realistic assessment of the drawings. It showed that there were two distinct groups which he had studied through time and named 'Early Style' and 'Classic Style' and that within these groups the various drawings studied varied stylistically between North Otago and South Canterbury.
DISCRIMINANT ANALYSIS ON ALL HUMANS

SYMBOLS USED IN PLOTS

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<td>2</td>
<td>SUBFILE CLASSIC</td>
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ALL-GROUPS STACKED HISTOGRAM

-- CANONICAL DISCRIMINANT FUNCTION 1 --

GROUP CENTROIDS

CLASSIFICATION RESULTS

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<tr>
<td>GROUP 2 SUBFILE CLASSIC</td>
<td>32</td>
<td>9.4%  90.6%</td>
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PERCENT OF 'GROUPED' CASES CORRECTLY CLASSIFIED: 97.33%

FIGURE 41: Discriminant Analysis of Human Drawings
 CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

Relative dating techniques have been widely used in the study of rock art throughout Europe, Australia and New Zealand. Absolute dates have also been established for such sites in Europe and Australia but not yet in New Zealand. This makes our reliance upon relative dating methods vitally important as a standard with which to work when studying rock art in New Zealand, later to be refuted or substantiated by further analysis with differing methods as they become available.

TEMPORAL STYLISTIC VARIATION

Superimpositional analysis is one method commonly used in chronological style sequences although it has been widely criticised. Ambrose (1970) studied the Waitaki Gorge and suggested the following sequence on the slender evidence of superimposition at Shepherd's Creek:

1. most recent scratched figures;
2. single line red designs;
3. solid infilled red or black designs

Fomison (n.d.) studied sites in North Otago and South Canterbury in order to establish a chronological
style sequence also based on superimposition (see Chapter Four). His detailed work advocated three periods and five stages. The initial period of drawings called the "Early Style" was the earliest in the sequence, drawn by the early Polynesian settlers who still had strong cultural links with their East Polynesian homeland. The "Classic Style" was a style of drawings executed later in time and which had links with the Classic culture of A.D. 1650-1850 and the Ngai Tahu people. Fomison noted that:

The only traditional information capable of implicating the Ngai Tahu tribe at all, is the association of the two most certain traditional Maori place names of shelter sites, with sites only containing 3rd to 5th stages rock-art, and which are, in particular, two of the main locations of the Classic style in South Canterbury and North Otago: "Takiroa" for S127/2; and "Parihaka" for S102/19 (Fomison n.d.:40).

Fomison's fifth stage of the superimpositions was named the "Contact Period" which was made up of Maori drawings of the European settlement period which depicted a new range of water craft, animals and buildings.

Europe and Australia have long been using statistical methods to ratify or question these relative chronologies. Thus Fomison's chronological sequence, now established as a means of relative dating, was
statistically tested. A discriminant function analysis was run on all the human drawings using 45 variables. Group One contained "Early Style" drawings and Group Two the "Classic Style" drawings. Only four were incorrectly grouped which showed clearly that from the study of superimpositions there was a distinct stylistic difference between the "Early Style" drawings and the "Classic Style" drawings. This analysis could not however confirm their position in a temporal sequence and this must still be inferred from their situation in the superimpositions.

These chronological phases represented distinctive styles as described by Fomisor (n.d.) from his work in North Otago and South Canterbury and substantiated by Ambrose (1970) from his study in the Waitaki Gorge. Colour played an important role in this stylistic variation, especially red and black.

Another important distinction between the use of the two colours is to be found in the subject matter. A disproportionately large number of black drawings can be referred to natural objects compared to those in red (Ambrose 1970:431).

This distinction between the two colours was an important part of the chronological sequence.

Once this relative dating sequence was established, an attempt was made to relate the relevant periods to
diagnostic artefacts of the same period (Fomison n.d.). Fomison attempted to relate his first and second stage drawings to early Maori artefacts and ornaments such as chevroned amulets and disc breast pendants which would have caused no surprise if found in early Archaic period sites. A pre-classic club with median ridge and differentiated grip was also represented in the rock drawings (Figure 35) as were chevrons (Figure 28) (Trotter and McCulloch 1981).

Classic Maori art was also compared to Fomison's third and fourth stages of the superimpositions. A characteristic of both the Classic Maori culture and the "Classic Style" drawings was the greater use of red and painted red (Fomison n.d., Anderson 1982). Relationships between rafter patterns and tattooing with Maori rock art have also been considered (Duff 1950, Fomison n.d., 1962, Ambrose 1970, Trotter and McCulloch 1981).

These stylistic correlations with artefact types would not stand on their own for the antiquity of the Stage One and Two drawings as Cl4 dates from North Otago moa hunting sites ranged up to the 15th century A.D. (McCulloch and Trotter 1975, Trotter 1967b, 1967c, 1970, 1979). Early dates with implications for the "Early
Style" were provided by Ambrose (1970) in the Waitaki Gorge. He recorded the Gooseneck Bend shelter (S117/8) to have two periods of drawing 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 Cl4 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 Cl4 date of A.D. 1325±65 (ANU-47). In this occupation layer an ivory pendant was located which would not have been out of place in the Archaic period. Shelter S117/7, Junction Point, where a solitary first stage drawing was recorded, revealed a fossil Dentalium unit during excavation which could have been deposited in an early occupation. The Cl4 date for the Junction Point site was A.D. 1255±135 (ANU-49) which set it early in the Archaic period (Fomison n.d.). Trotter and McCulloch (1981) have radiocarbon dates from the North Otago and South Canterbury shelters of B.P. 850-450. A date of B.P. 1190±40 obtained from a fresh water shell at S127/40 and the "Early Style" drawings at the site (Figure 18) also appeared to correlate well (Trotter and McCulloch 1973).

All these methods of dating, however, are only relative and no firm association can be established
between the rock drawings and the floor deposits. No non-destructive method for dating the drawings is yet available in New Zealand, so our reliance upon these relative dating methods is considerable. An ordered sequence for New Zealand rock art based on Fomison's superimpositional work is suggested, and substantiated by a comparison with diagnostic artefact types and relative dates from floor deposits.

SPATIAL STYLISTIC VARIATIONS

Once a relative dating chronology had been established, a geographical study of stylistic variations could be attempted. From a study of the dog drawings diversity in style between South Canterbury and North Otago was evident. Dogs were more common in North Otago than in South Canterbury and were often associated with humans suggesting some form of companionship. All the dog drawings were included in Fomison's "Early Style" group. This raised an interesting point when it was considered how similar in style some of the South Canterbury dog drawings were to a small wooden dog from Moncks Cave. This toy has also been attributed to an early period. The importance of the dog to the Maori people is also emphasised by the presence of carved dogs on bowls restricted to the Rotorua – Bay of Plenty area (Simmons 1982:181).
In a geographical stylistic analysis of the bird drawings it was found that they were also more common in North Otago than in South Canterbury. In North Otago the birds were usually very naturalistic and allowed for speciation. They all belonged to Fomison's "Early Style" sequence.

One cannot avoid the conclusion that when this style was introduced into New Zealand, it may have produced many drawings of wild life as to be expected from the art of a people nomadically hunting the larger range of wildlife, particularly ground birds, to be found in their new homeland... (Fomison n.d.:14).

The drawings of moas were interesting as they were often represented in such detail that even the flesh on the legs was depicted (Figure 18). Naturalistic birds were not found in association with birdmen. Birdmen were more common in South Canterbury although they had also been located in North Otago (Fomison 1969: Appendix to Trotter and McCulloch), and Notornis Valley (Duff 1952). They were found in association with fish (S111/6), birds and dogs (S127/66) which may have indicated that the drawings represented a hunting cult idea transferred to New Zealand from the artist's Polynesian homeland. It may however just reflect the fact that the early Maori appreciated the importance of these animals within their culture.
Human drawings also differed stylistically between North Otago and South Canterbury. Drawings of humans were more common in South Canterbury than North Otago in the "Early Style". The paucity of "Classic Style" drawings in North Otago could not be explained. The results of the analysis showed that there was a large number of "Early Style" drawings in North Otago and few "Classic Style" drawings. The "Classic Style" drawings in South Canterbury became more elaborate through time, with a greater use of white, red and black in bichrome form. Drawings rarely depicted recognisable subjects in the later period and more mythical creatures such as *taniwha* and stylised fish and humans became common.

Drawings of scenes, or narrative depictions are common in Maori rock art, be it a drawing of poling a *mokihi* (S102/70) or fighting a monster (Figure 35). Humans were grouped together, and with animals, to portray some purpose to the viewer. However, despite these drawings there were no detailed descriptions of the customs of the Archaic people such as drawings of encampments or moa feasts.

Fomison emphasised the possible presence of ancestor veneration in these narrative scenes, which he believed
was sufficient to support his theory for the serious intention of rock art. He believed that:

In terms of the importance in Polynesia of ancestor veneration and family genealogies, it is possible that the deliberate linking or joining of human figures expressed family or ancestral relationships... Groups of figures adjoined, some with clubs, could represent incidents in the history of the ancestral line (Fomison n.d.:19).

As evidence for this hypothesis he cited data from the Oldman Collection (1953) where Cook Island artefacts showed a series of figures or generations below a larger head of a primal ancestor or god. He suggested that the presence of human ancestor commemoration in a style of rock art otherwise noted for its realistic treatment of birds, animals and animalmen did not appear to be inconsistent. This hypothesis was also supported by the wooden human figure carvings from Easter Island where carved in relief on the sacred head of the ancestors were such subjects as birds, birdmen and lizardmen (Fomison n.d.). This feature of narrative drawings depicting ancestor veneration continued from the "Early Style" through into the "Classic Style" where it could be compared to the work of the Classic Maori wood carvings.
COLOUR

Part of the basis of Fomison's style sequence was the use of colour variations through time (Fomison n.d.). Ambrose (1970) also recognised this variation in colour and style in the Waitaki Gorge.

Grouped arrangements of more than one element are more common in black than red. Black drawings are generally smaller than those in red. No red drawings are as small as several in black... Black figures are more carefully drawn and built up in a series of finer lines than drawings in red which more generally consist of a single broad line (Ambrose 1970:430).

When the Polynesian settlers arrived in New Zealand they had words in their vocabulary for black, red and white (S. Holdaway 1982 pers. comm.). Fomison's first stage of the "Early Style" was however based almost exclusively on black drawings. A feature of the second stage was a greater use of black, red, and white, with white and red often outlined in black. Monochrome figures in red, and smaller figures in black were still a feature of that period. During the third stage of the superimpositions, the "Classic Style", there was increased variation of colour combinations. The fourth stage of the superimpositions was recognised by a greater use of red and more painted red as would be expected.
when considering the use of red in the Classic period (Cook 1955, 1967, Phillipps 1966, Best 1976, 1982). Thus colour was an important diagnostic feature for Fomison's chronological study. He noted that red almost always overlayed black, and often early black drawings had red lines or marks over them for no apparent reason.

If colour can be accepted as a chronological marker in association with different styles, then it is also important for geographical variations. As would be expected due to their association with the first stage of Fomison's "Early Style" sequence, all bird drawings and most dog drawings were in black. Two dog drawings from South Canterbury were in red, and red and black, but all North Otago dogs were in black. Human drawings, probably due to the larger sample size, exhibited the most variation. Of the "Early Style" human drawings nearly all North Otago drawings were in black, with the exception of some red, and black and red drawings. White was not used in the North Otago drawings. In South Canterbury more drawings were in bichrome than monochrome. Black and red drawings, and white drawings outlined in black were the most common variations used in the depictions. The colours red and white appeared to be mutually exclusive, and no single drawing had both these colours, although combinations of red and black, and
white and black were common.

"Classic Style" human drawings were represented by only one example in North Otago and it was drawn in black. In South Canterbury the combination of colours was great with an increase in the use of red, and black and red. "Classic Style" sites in North Otago such as S127/2, were recognised not only by the subject matter depicted, but also by the extensive use of red and painted red.

TERRITORIALITY

These regional stylistic variations correlated well with the information coming to hand from regional archaeological programmes throughout New Zealand (Prickett 1982). Local innovation was present in most aspects of the culture.

The first settlers arrived with a fully Archaic material culture, but while retaining strong links with the north, they soon began to impress a local stamp upon their artefact assemblages with the development of a large-blade industry and the grinding of slate knives and large, finned lure shanks... There was growing regionalism as well in the development of a distinctive Archaic fishing kit which incorporated numerous barracouta points, unperforated lure-hook points and barbed composite-hook points (Anderson 1982:126).
It is to be expected therefore that regional stylistic variations would also occur within the rock art in southern New Zealand. The distinct variations in rock art styles between South Canterbury and North Otago may indicate territoriality.

The jealous preservation of rights (Firth 1959:379) leaves absolutely no doubt in my mind but that the Maori were territorial. The extent to which simple "trespass" was punished is not clear, but any interference with, or use of, someone else's resources frequently resulted in death (Cassells n.d.:6).

Skinner (1921) considered the question of culture areas in New Zealand. Based on material culture differences, he divided southern New Zealand into the "Murihiku Culture Area" and the "Kaiapoi Culture Area", with the division at the Rangitata River. Although the differences between these areas are not as exclusive as was once thought, some do exist. The relevant question here, however, is whether the boundary between Skinner's culture areas might more realistically be drawn further south, possibly as far south as the Waitaki River. Certainly the stylistic differences in the rock art, especially in the "Early Style" might suggest a more southerly division.
These stylistic differences in the drawings of North Otago and South Canterbury become less obvious in the "Classic Style" with more drawings of mythical creatures and a greater use of the red pigment. It is possible this may have been a reflection of changes in social organisation in the South Island as the Ngai-Tahu people were "... closely related and strongly inter-dependent both economically and socially" (Anderson 1980:17). Stylistic diversity in the "Early Style" and a closer relationship between styles in the "Classic Style" was possibly a reflection of changes in the social structure of the inhabitants of southern New Zealand. An earlier system where the hapu was a coherent social unit and corresponded to a discrete and defended territory was possibly altered through time to form a system where hapu were interrelated and transected territorial boundaries (Anderson 1980: Figure 2).

The data base for "Classic Style" drawings was very small which also limited comparisons between North Otago and South Canterbury. Although definite stylistic variations occurred in the "Early Style" single motifs were shared such as the flexed position of the human, emphasising the inter-relationships between the two groups. Hodder (1979) stated:
... it is doubtful whether human societies or individuals... are ever so isolated from immediate neighbours that artefacts and styles do not have the chance to move or be copied from one to another (Hodder 1979:446).

He hypothesised that individuality expressed in artefact types may have had an important role in expressing group corporateness when tensions existed between groups for economic or social reasons. Interaction between the groups still existed but as tensions and strains built up within a particular social and economic framework discrete variations and individuality in styles may have developed. This hypothesis did not however stand up to archaeological testing with regard to the economic framework. The greatest variation in style between North Otago and South Canterbury drawings appeared to have been early in the cultural sequence. At this stage there should have been no economic stress between the two groups who would still have had an abundant supply of food resources. The variations may therefore have reflected some political stress between the two areas.

DISCUSSION

This indication of possible territoriality present in the stylistic variations, is a topic still open to future research. This discussion could further
be supported in the future by Cl4 dates for the black pigment using an accelerator (see Chapter Four). Modern scientific methods also lend themselves to the study of the chemical components of the black pigment, for example, to test for the presence of a manganese base.

The classification of terminology within the field of Maori rock art sorely needs attention (Maynard 1977), so the distinction between "drawings" and "paintings" can be entered on the site record forms.

No separation into female and male human drawings was obvious from an analysis of the style, yet it is possible this distinction is inherent in some form in the drawings. The possible relationship with colour in this problem and others deserves attention in the future. Colour within the rock drawings played a major part. It is interesting that red and white did not occur on the same drawing. Often "Early Style" black drawings had red lines scratched across them for no apparent reason.

The whole question of rock drawings and "tapu" has not been studied in detail. W. Hart-Smith in a letter to the Listener wrote that:
... it is fairly well known in South Canterbury... that the cave-shelters with drawings were tapu to the Maori until a tohunga, Te Maiharoa, travelled around removing this tapu so that modern Maoris could use them... With the tapu removed, the shelters were freely used by the last parties to hunt the wekas. Members of these parties wrote their names in mission-style script. This makes possible a gap between obviously modern additions and the drawings themselves (Hart-Smith 1952:5).

We know little yet of the value and place of these drawings in the culture of the Maori people and theories are still varied. Dunn (1972) believed

It is possible there may have been a connection between some of the rock shelter art and religious ritual of the kind used to placate the spirits and make them well disposed to travellers (Dunn 1972:6),

and Stevenson was told by an old chief that the drawings related to landmarks or boundaries (Skinner n.d.).

In this thesis I hope to have rekindled an interest in the Maori rock drawings, to show that although no progress in analysis has been made in the last ten years, information on the subject is far from complete and many questions wait to be answered by future research.
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APPENDIX 1: Sites photographed from Tracings in Canterbury Museum

**S136 OAMARU**

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APPENDIX 2: 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 3: Dog Drawings Data

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APPENDIX 4: 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 5: Bird Drawings Data

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### APPENDIX 6: North Otago Bird Drawings Data

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APPENDIX 7: Variables Studied in Analysis of Canoe Drawings

1. Humans present
2. Outlined
3. Filled in
4. Right end of canoe curved inwards
5. Left end of canoe curved inwards
6. Both ends of canoe curved inwards
7. Flat even shape
8. Shaped middle
9. High end
10. Partially filled in
11. Left end curved out
12. Right end curved out
13. Ends curved opposite directions
14. Ends curved same direction
15. Red
16. Black
APPENDIX 8: Canoe Drawings Data

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APPENDIX 9: Variables Studied in the Analysis of the "Classic Style" Humans

1. Black
2. Red
3. Red and black
4. White
5. White and black
6. Outlined in black
7. Partially outlined in black
8. Filled in
9. Linear style outlined
10. Linear style filled in
11. Bi-terminal head - head has two extensions to it
12. No separate head - head is an extension of the body with no indentation for a neck
13. Shapeless outline - style of the human is not sharp but very general
14. Legs up
15. Arms up
16. Legs down
17. Arms down
18. Arms and legs filled in
19. Fingers or toes
20. Long thin even body shape
21. Wide square body shape
22. Triangular body shape
23. Wider hips than shoulders
Appendix 9 cont.

24. Uneven base
25. Flat base
26. Small thin head shape
27. Wide head
28. No legs
29. No arms
30. No head
31. Filled in head
32. Outlined in white
### APPENDIX 10: "Classic Style" Human Drawings Data

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APPENDIX 11: 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
Appendix II cont.

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
APPENDIX 12: Variables selected by computer to distinguish between North Otago and South Canterbury "Early Style" human motifs

1. White
2. Profile, sitting position
3. Double ended
4. Chevrons
5. Evenly shaped body
6. Flat even base
7. Holding some object
8. Wide base
9. Long neck filled in
10. No separate head
11. Outstretched arms
12. Filled in arms and/or legs
13. Outlined arms
14. Wider shoulder than hip
15. Circles on head
16. Narrative scene
17. Long body
18. Two-piece
19. Flat head
20. Stick body
APPENDIX 13: "Early Style" Human Drawings Data
### Appendix 13 Cont.

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APPENDIX 14: "Early Style" and "Classic Style" Human Drawings Data