

4 The Origins of Ethnographic Subsistence Patterns in Fuego-Patagonia

Luis Alberto Borrero

Fig 37 The approximate distribution of indigenous groups at the time of first contact in the early sixteenth century.

Introduction

Our present understanding of the cultural antecedents of ethnographic groups recognised in Patagonia and Tierra del Fuego during the early years of European contact begs many questions. How old are the cultural configurations which came to be known as Aónikenk, Selk'nam, Kawéskar and Yámana? Were the natives observed by the first European sailors the direct descendants of the very first prehistoric colonisers of the region? Did the earliest attempts at colonisation succeed or fail over the long term? Is there evidence in the archaeological record of later attempts at colonisation, and did these prove viable? Is there anything to suggest that latecomers may have displaced, or even eliminated, earlier populations? And if descendants of both have survived, is there any means of telling them apart? In attempting to answer these questions the most recent archaeological research is revealing a level of variation at odds with the oversimplified characterisation traditionally applied to these cultures. The new data does not fit comfortably into the standard evolutionary scheme used to account for the ethnographic distribution of the different groups in Patagonia (fig. 37).

To assess the origins of ethnographic subsistence patterns recorded at contact, both archaeological and linguistic data, as well as molecular evidence, provide independent lines of argument which must be compared. These in turn have a bearing on our attempts to understand how the different groups came to occupy the territories observed in historical times. The issue of the continuity or discontinuity of the human populations themselves (biological change) must be carefully distinguished from questions of continuity and modification of their material culture (cultural change). While the information available on the biological characteristics of prehistoric populations in Patagonia is still very limited, there is a growing body of archaeological evidence recovered by survey and excavation which is filling in the picture of cultural variation. Archaeologists rely heavily on stone tools such as scrapers and projectile points to indicate changing patterns of exploitation and adaptation since, with the exception of bone and shell, almost all other perishable organic materials have disappeared. Subtle differences in tool forms can offer adaptive advantages in securing,



then processing, vital subsistence resources. Particular styles of projectile points, such as arrowheads, may have enduring usefulness, so that they become recognised archaeologically as typical culture 'traits'. Nevertheless, the ingenious use of scarce resources to survive in demanding environments introduces a wide range of variability in material culture.

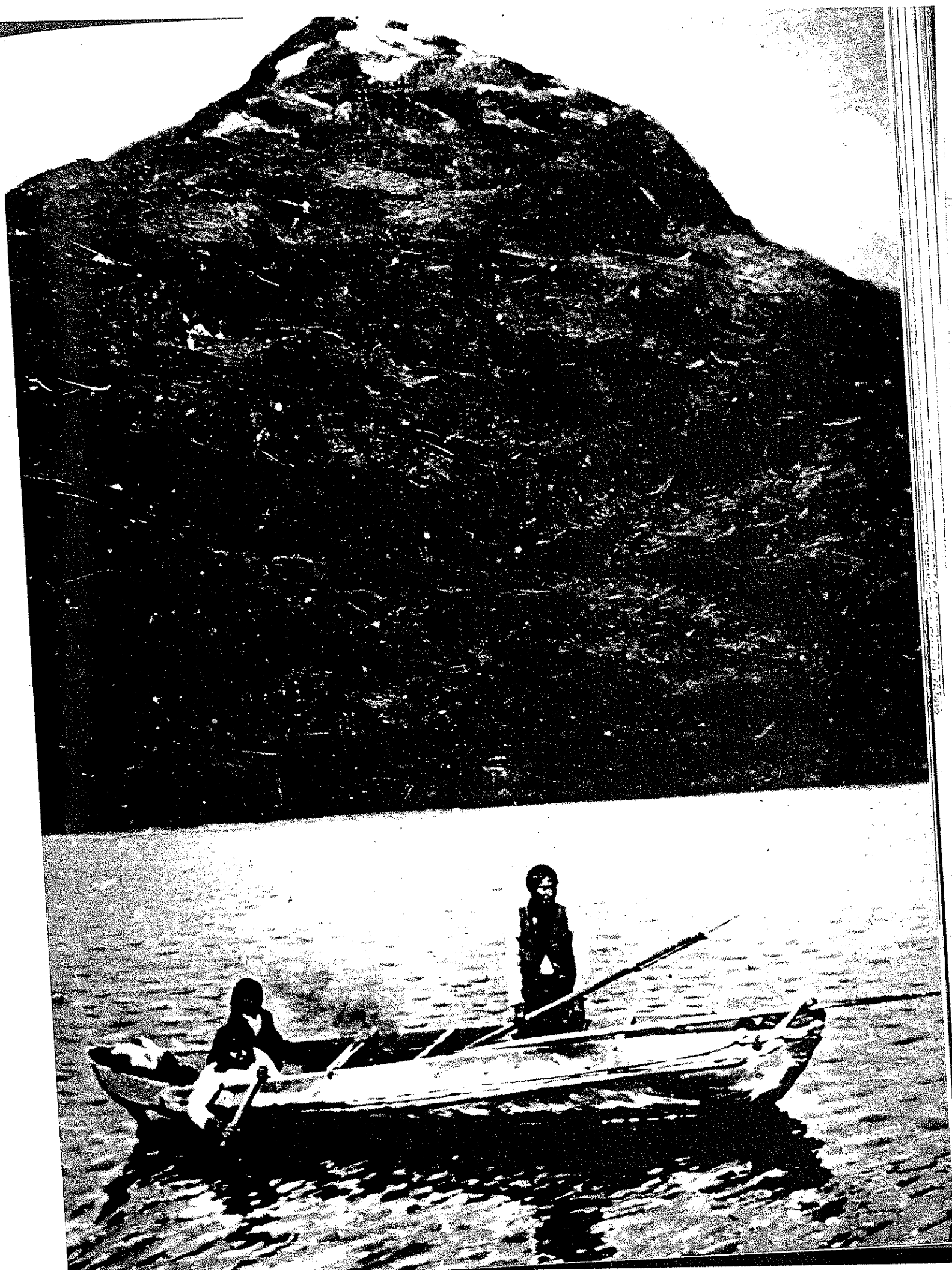
Migration, dispersion or local development?

Fig 38 Yámana canoe with smoke issuing from the fire burning within it, c. 1907-8. The standing figure holds a harpoon while another rests on the prow.

The differentiation of Fuego-Patagonian populations may go back as far as 12,000 BP, for by this time humans were already widely distributed in southern South America. We have shown that around 11,000 BP there is good archaeological evidence to indicate that human populations crossed by land from the continent to what is now the Isla Grande de Tierra del Fuego. It is likely that this was the result of a gradual process of dispersion rather than intentional migration (see chapter 2). The earliest settlers were broad spectrum hunter-gatherers who probably survived as small mobile bands foraging for varied resources in an extremely cold and forbidding environment. The final inundation of the Estrecho de Magallanes by the sea around 8,000 BP would have created a formidable barrier isolating human populations on the newly formed island. Perhaps the small sub-populations that were cut off represented only part of the genetic and cultural make-up of the original population.¹ This is known as the 'founder effect' and results in the creation of a large pool of variation for natural selection to act upon.² Indeed, differences between the phenotype of human populations from the island compared with those from the continent have been noted.³ Human remains from the early Holocene have yet to be recovered and so comparative morphological studies are not yet possible. Nevertheless, sufficient independent evidence exists to suggest that the scenario outlined above provided the basis for subsequent divergent evolution.

The alternative is that the early late Pleistocene populations on the island became extinct. Perhaps the resources in the newly formed ecosystems on the island were simply insufficient to support even a sparse human population, especially after the formation of the Strait, when they would effectively have been cut off. This possibility is supported by the paucity of sites dated between 9,000 and 2,500 BP in the north of Tierra del Fuego. After 2,500 BP a striking proliferation of radiocarbon dates attests to the presence of humans almost everywhere in the north of the main island. This contrast supports the hypothesis proposing an initial but ultimately unsuccessful colonisation, followed by a later colonisation and sustained human occupation of the island. In this case the natives that the Europeans met during the contact period would not have been the direct descendants of the earliest colonisers, but rather descendants of the later populations.

If an island population did become isolated on Tierra del Fuego the effect of geographical separation through time would be to create variation in material culture between the two sub-populations north and south of the Strait.⁴ For example,



differences in the distribution of key resources, such as mammals, plants and raw materials for making tools and dwellings, would probably have led to divergent patterns in the use of space on the island compared to the southern margins of the continent. Another possible result of isolation might have been to prompt the intensification in the use of traditional subsistence resources, and the exploitation of new ones, with corresponding changes in the material culture. However, even when changes may have taken place in the stature and proportions of humans and in their material culture, a case for population continuity can still be made.

In theory it is possible that the 'rescue effect'⁵ was operative for an early population reaching extinction thresholds on the island of Tierra del Fuego, since it was still possible to cross by land between the continental mainland and Tierra del Fuego until 8,000 BP (see chapter 1). If this was the case then the archaeological gap between the early occupations of Tres Arroyos and Marazzi (see chapter 2) and later settlement may simply reflect the lack of archaeological fieldwork. For the time being it seems justified to hypothesise some sort of population continuity.

Later opportunities for colonisation developed as the islands became more thickly forested and the network of channels became navigable in the post-glacial period. About seven thousand years ago the first indications of systematic maritime exploitation are found, which must have entailed the initial experimentation with, and use of, canoes (see fig. 38 and chapter 3). Most scholars interpret these new maritime adaptations entirely as a product of local evolution.⁶ An alternative hypothesis posits the long-distance migration of maritime populations down the Pacific archipelago.⁷ These peoples would then have superimposed themselves over previous cultural configurations, but as things stand there is little hard archaeological evidence to support such a scenario.

Whether the time depth of the populations on Tierra del Fuego extends directly back as far as 11,000 years BP, or is in fact much younger, the fact remains that the ancestors of the historically known peoples must be sought in the local prehistory rather than in invoking the idea of long-distance migrations of incoming populations.

Historical adaptations

When the first sailors arrived in the Magellanic region they found two fundamentally contrasting adaptations which can be characterised as the 'terrestrial' and 'canoe' cultures. The terrestrial peoples encompassed the Aónikenk of southern Patagonia, the Selk'nam of northern Tierra del Fuego (who focused on the exploitation of guanaco) and the Haush of south-eastern Tierra del Fuego (who complemented guanaco-hunting with the exploitation of coastal resources). According to historical sources, the 'canoe peoples' included the Yámana of the Canal Beagle and Cabo de Hornos, the Kawéskar of the western channels, and the Chonos of the Chonos and Guaitecas archipelagos. Their subsistence was based on maritime resources, relying primarily on marine mammals. This

encapsulates the key impressions recorded in the first chronicles and ethnographies. Nevertheless, it is possible that subtle cultural variations went unrecognised during the early years of contact.⁸ This is supported by recent archaeological research which highlights discrepancies with the ethnographic picture. These discrepancies include the facts that:

- (1) Although birds are not ascribed a central role in the subsistence of the Selk'nam by some ethnographers,⁹ abundant bird-remains show up at archaeological sites in what is considered traditional Selk'nam territory.¹⁰
- (2) According to many historical sources, rodents were the critical resource for hunter-gatherers in the north of the island;¹¹ however, archaeological research indicates that rodent remains resulting from human exploitation are very sparse.
- (3) The distribution of shell middens in the Canal Messier in the western archipelagos suggests a greater degree of social interaction for the canoe people than that indicated by historical sources.¹²
- (4) There is little detectable difference in the technology of projectile point production between the Selk'nam and the Yámana.¹³
- (5) Perhaps surprisingly, the same can be said for Selk'nam and Yámana basket-weaving.¹⁴

Archaeological research also confirms that there is an underlying similarity in the range of material culture throughout the western and southern channels.¹⁵ To take one example, the so-called 'large Haush harpoon' is not really that different from those produced by the Yámana, as Gusinde readily admits, and this can also be said of other, smaller, harpoons which display a striking morphological similarity.¹⁶

There are significant differences, then, between the ethnographic descriptions for those groups and what has actually been recovered by archaeological excavation. This points to the need critically to re-evaluate the published ethnographies, for it may well have been the case that the ethnographers were simply dealing with a limited sample of a much broader pattern of human activities. For example, male ethnographers working in Patagonia at the beginning of the twentieth century rarely had access to the female world.¹⁷ Also, the subsistence practices witnessed by ethnographers often occurred within the context of constant encroachment of sheep ranches into traditional indigenous territories.¹⁸ Both factors distort the ethnographical record, which can hardly lay claim to being objective.

When trying to characterise the historical groups in Patagonia and Tierra del Fuego two important factors must be taken into account. One is the fact that indigenous adaptive strategies were changing rapidly at the time of contact. The second is that the recording of ethnographic information has been very uneven. If we were to look at the range of archaeological data as distinct from what is observable ethnographically, we would have to conclude on the basis of present evidence that there were no clear-cut limits between 'cultures'. Instead, we see a continuum ranging from strongly



Fig 39 Yámanas launching a canoe at Rio Douglas, Bahía Ponsonby, c. 1907–8.

maritime cultures in the islands and channels to the west and the far south, to strongly terrestrial cultures in the steppes in the east and far north.

The linguistic evidence offers an additional independent body of information, for just as we noted a fundamental distinction between the terrestrial and canoe cultures, so, too, the languages spoken by each are very different. Furthermore, dialectical differences can be detected in the Yámana spoken in the Canal Beagle area compared with that spoken on some of the more isolated southern islands. A systematic study of historical linguistics has yet to be attempted but, insofar as the complex dynamics of language differentiation can be reconstructed with limited information, they will undoubtedly invite comparison with the archaeological data.

The distribution of the maritime cultures is essentially co-terminous with that of the southern beech forest, upon which they relied heavily.¹⁹ This explains why their terri-

tory extended only as far as Isla Isabel on the Estrecho de Magallanes,²⁰ and down to the southern part of the Peninsula Mitre on the Canal Beagle.²¹ Their territory extended as far along the eastern end of Tierra del Fuego as the distribution of forest permitted. This fact underlines the fundamental role of wood and tree bark for these cultures, which they used to fashion items ranging from canoes to buckets (fig. 40).

Canoes were the mainstay of their maritime adaptation. They were not only an indispensable means of transportation, but also formed the focus of family life. Families moved everywhere by canoe, some even carrying fires burning inside them almost per-

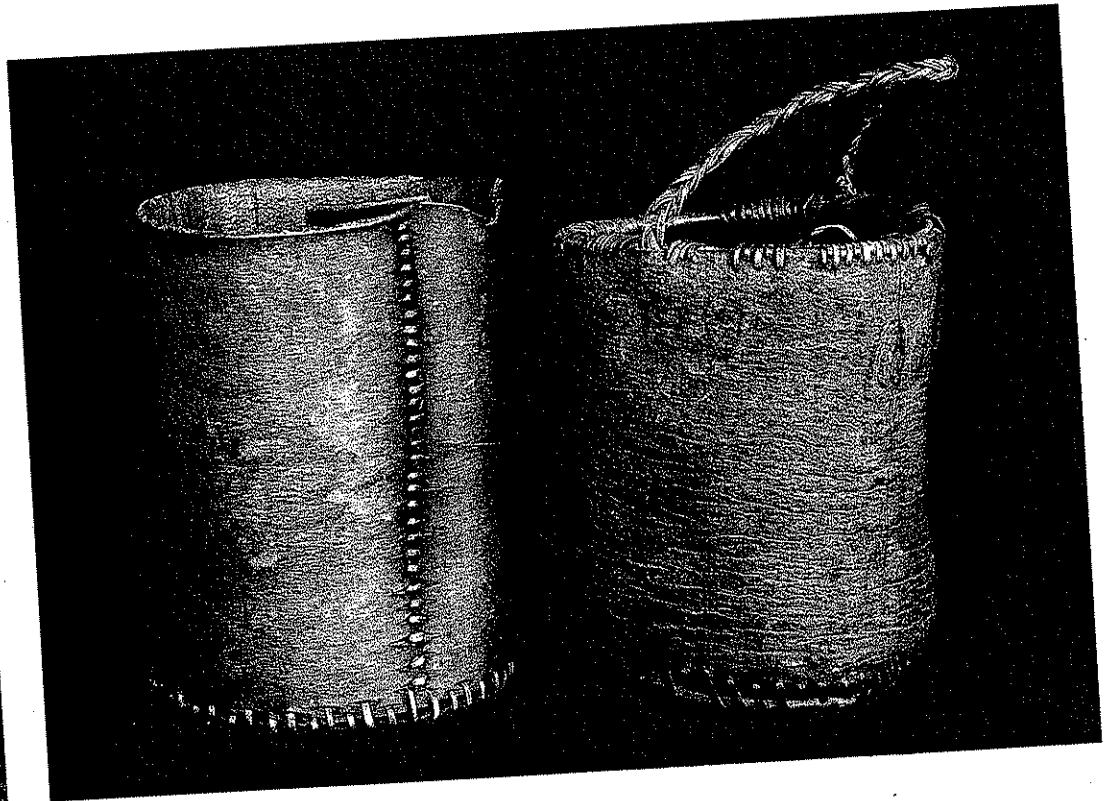


Fig 40 right Yámana bark buckets. Height 19.7 cm. See fig. 82 for use of bark buckets as boilers.

manently (see fig. 38), and they have been observed consuming mussels on board,²² although the empty shells were not always thrown back into the sea. As the eighteenth-century traveller John Byron noted, they were sometimes taken back to the shoreline and discarded there,²³ perhaps forming heaps like the one that can be observed beside the canoe in Bahía Ponsonby (fig. 39).

Human mobility in the labyrinthine channel system was problematic because the convoluted topography made direct journeys almost impossible and the weather was often ferocious and unpredictable. Portages made of logs were constructed in places. These cut across islands, giving the groups direct ways of moving through the maze of intricate channels, much to the astonishment of early explorers (fig. 41).²⁴

Despite spending a lot of time on the water, the 'canoe people' also constructed huts on land. These were usually confined to a narrow coastal strip and the frames were



Fig 41 *above* View of part of a portage some 350 m in overall length, Estrecho de Magallanes, 1879.

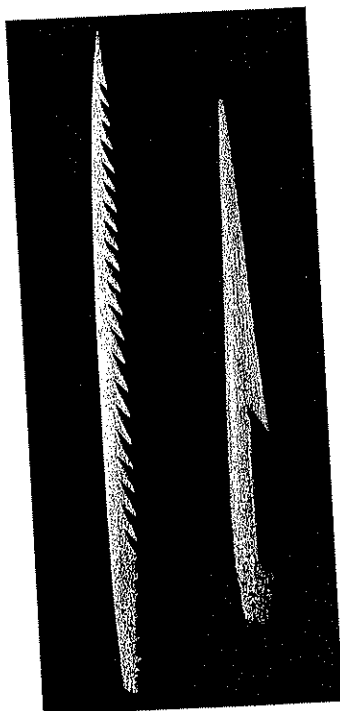


Fig 42 *far left* Multi-barbed whalebone harpoon and single-barbed harpoon from Tierra del Fuego. Lengths 43.3 cm and 35.7 cm.

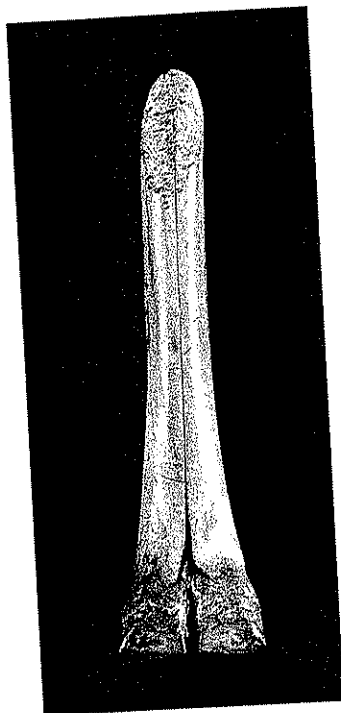
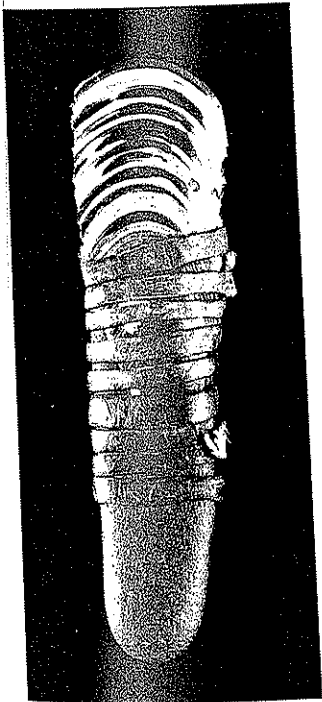


Fig 43 *left* Bone wedge used for working wood and bark. The implement is fashioned from the long bone of a guanaco. Probably Selk'nam. Length 16 cm.

Fig 44 *opposite above* Group of Yámana in front of their hut.

Fig 45 *opposite below* Shell scraper bound by a leather thong to a large pebble. Length 19.5 cm.



sometimes left to be used again (fig. 44).²⁵ Tools and weapons made of bone were key elements in this maritime adaptation. Harpoons of different shapes and sizes were fashioned from sea-mammal bone (fig. 42) and used to hunt sea lions and occasionally dolphins (figs 46 and 48). Bone is a logical choice in the channels, where the availability of alternative materials is limited.²⁶ Bone wedges were also used to extract bark from trees and a variety of cutting tools were made from sea-mammal bone as well as guanaco bone (fig. 43). The lack of other suitable raw materials likewise helps explain the widespread use of shell-knives as cutting tools, made of the larger and more resistant mussels (fig. 45).

Subsistence was heavily dependent on the consumption of sea mammals, supplemented by marine birds, especially shags.²⁷ Their meat was consumed as well as their eggs. When the opportunity presented itself they hunted otters or pursued huemul or guanaco. The otter was an important prey in the southern channels and together with birds may have been part of the reason for the seasonal exploitation of the more remote archipelagos.²⁸

Mussels were regularly gathered at low tide (fig. 50) and the discarded shells formed large and very visible accumulations. Sailors were impressed by these great mussel

Fig 46 right Athlinata, a Yámana Indian, making a spear with a hafted, multi-barbed harpoon.

Fig 47 opposite above left Athlinata demonstrating how a sling was used. Although slings were simple weapons they were extremely effective for both hunting and combat.

Fig 48 opposite above right Athlinata demonstrating how a spear with a hafted, multi-barbed harpoon was used.

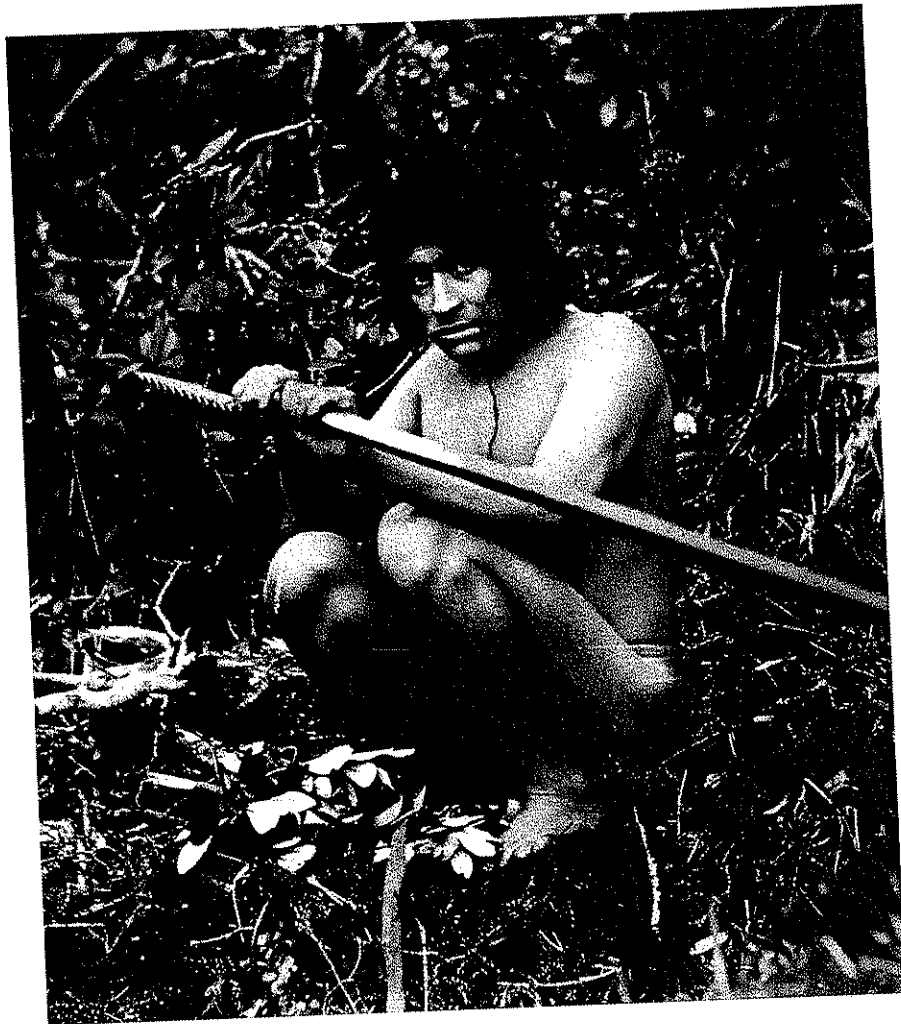


Fig 49 far right Yámana man kindling a fire.

Fig 50 right Yámana women gathering mussels, Bahía Tekenika, Isla Hoste.







Fig 51 Selk'nam group
at the eastern end of Lago
Fagnano (Lago Kami),
Tierra del Fuego.

heaps and thought that mussels were the principal dietary staple, which was not actually the case. A range of wild plants and herbs helped supplement the diet, especially berries (*Berberis buxifolia*) and wild celery (*Apium australe*).²⁹

In striking contrast, the terrestrial hunters occupied the extensive interior hinterlands, forested or not. They invariably moved on foot (fig. 51), horses playing a role only in historical times among the Aónikenk.³⁰ Minor variations of foot-hunting adaptations are apparent in historical times among different regions of Patagonia and Tierra del

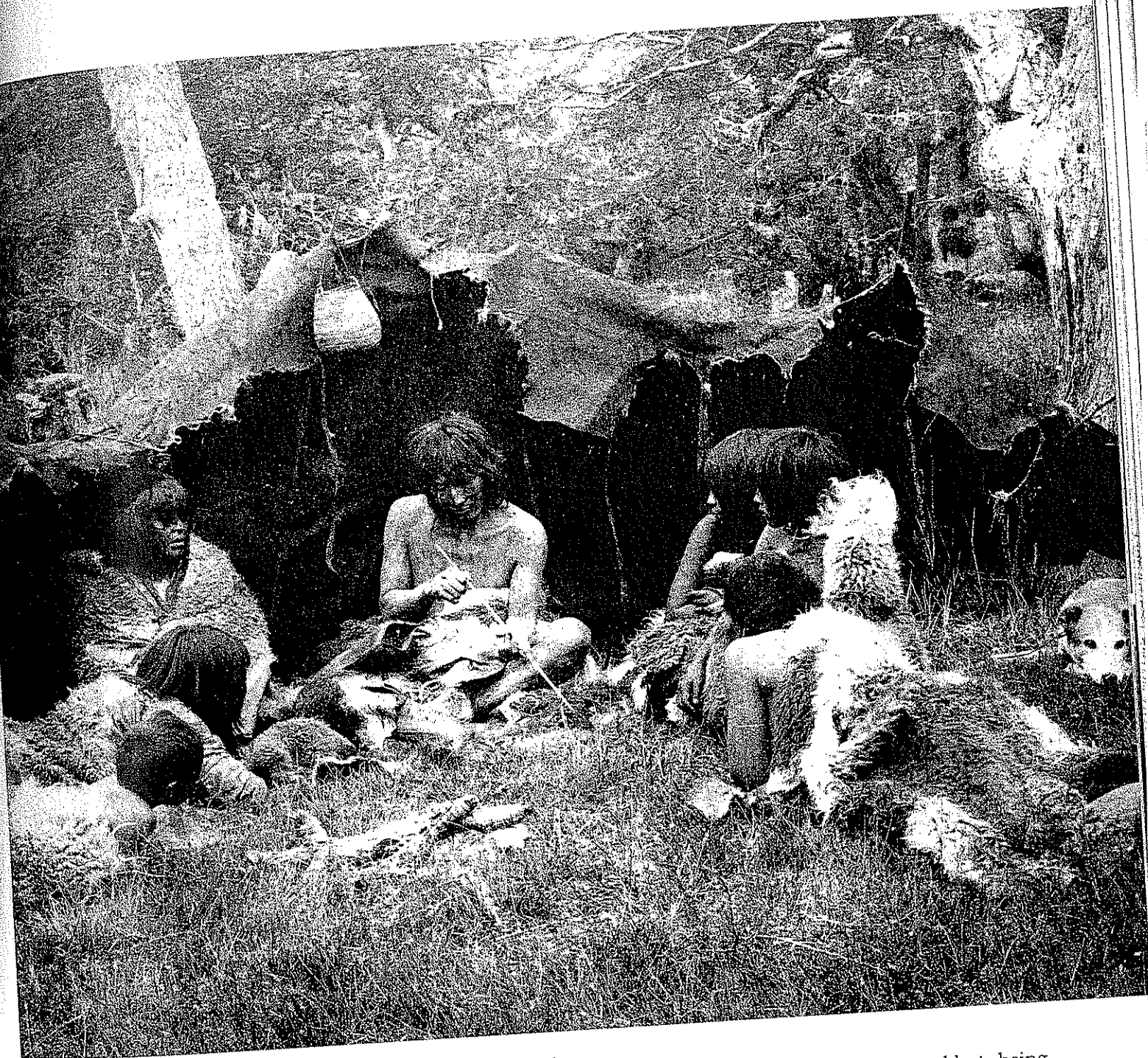


Fig 52 Selk'nam group in front of a guanaco-skin shelter watches intently as a hunter makes an arrow, c. 1907-8.

Fuego. The shape and size of their dwellings also varied, with dome-shaped huts being used in Peninsula Mitre,³¹ vertical windbreaks in northern Tierra del Fuego (fig. 52) and larger, more elaborate tents in the pampas of the continent (see fig. 80). By historical times conical huts made of large logs seem to have been an important type of dwelling among the Selk'nam, but these probably only developed very late when remnant groups gained access to iron tools and sought refuge in the forest (fig. 53). Their tools and weapons were made of raw materials obtained from rock outcrops



Fig 53 Tenenésk and his wife in front of a Selk'nam hut.

and the inland forests. Bows and arrows comprised the basic weapons for war and for hunting guanaco (fig. 55). Projectile points were made of stone, a material that, following outside contact, was swiftly replaced by glass (fig. 54). Sometimes these objects were hafted in ways which suggest that they were used as cutting tools.

Bolas were used in the continental pampas to hunt guanaco and ñandú (the flightless bird). This weapon appears in Patagonia at least as early as 4,500 BP, and probably much earlier (see chapter 2) and its importance seems to have increased with time (see chapter 3). When the Aónikenk adopted the horse bolas must have become even more effective when deployed from horseback (see fig. 108).

Rodents were not the important resource that some authors have suggested, but must surely have been consumed.³² They were trapped in their burrows with the help of

Fig 55 Selk'nam hunter
poised to despatch an arrow.
He holds the quiver between
his teeth.

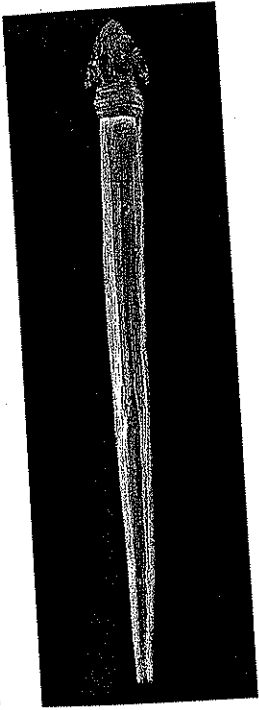
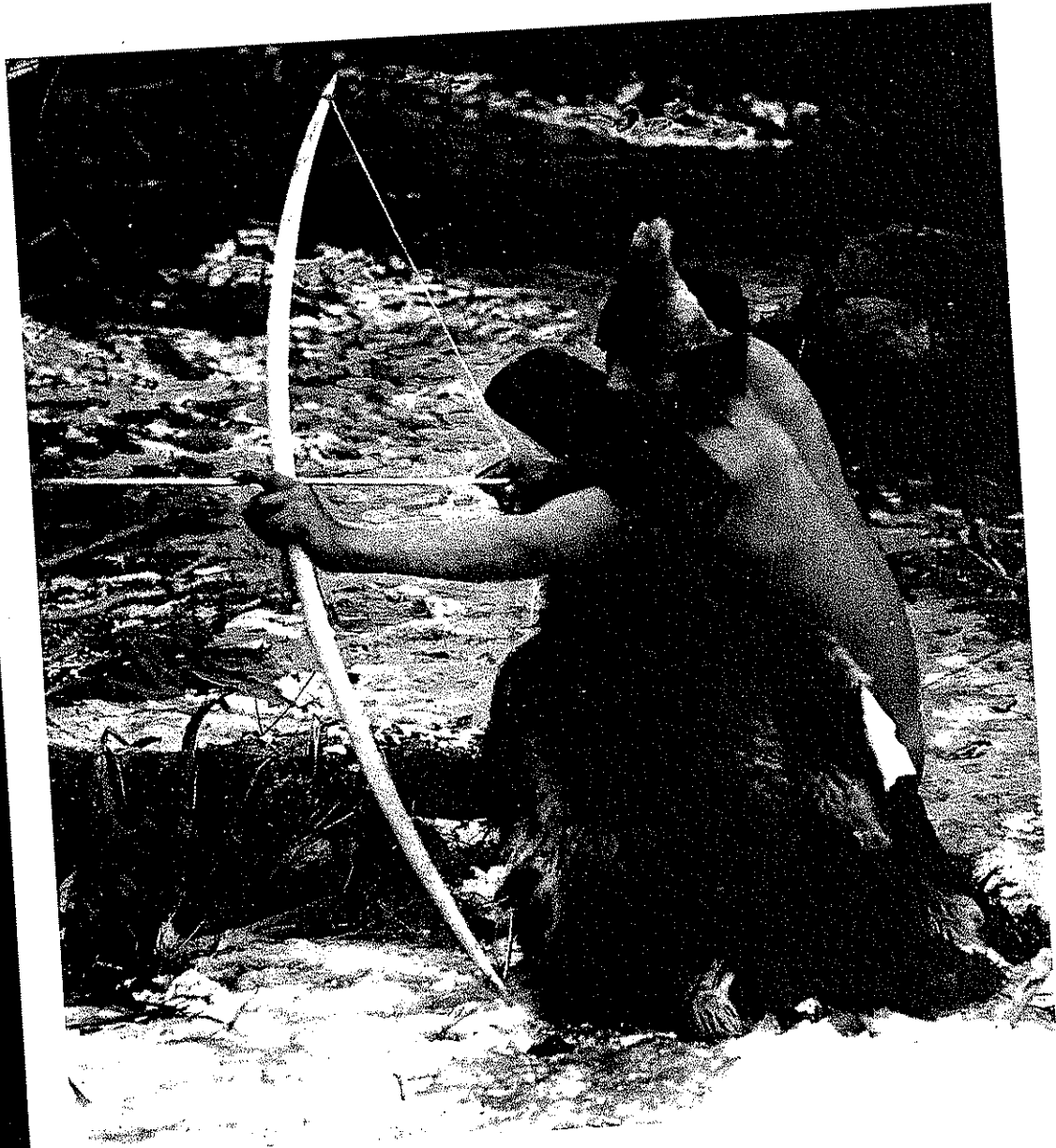


Fig 54 Hafted projectile
point. Length 31.9 cm.

wooden sticks. In Tierra del Fuego a variety of traps and snares were used to capture birds, and collective hunting also took place. Birds were apparently less important in Aónikenk subsistence.

Plants played an important role for the Haush and Selk'nam, especially mushrooms (*Cytaria darwini*) and seeds (*Descurainia antarctica*). The preparation of the latter – called *tay* by the Selk'nam – demanded a grinding technology. Well-worn rock mortars are commonly found at sites located in places that were visited repeatedly. The role of plants among the Aónikenk is not well known, although they are reported to have collected a variety of fruits and mushrooms.³³

The seasonal movement of guanaco herds was crucial in determining the hunting patterns of the Selk'nam on the island, as well as the Aónikenk on the continent.

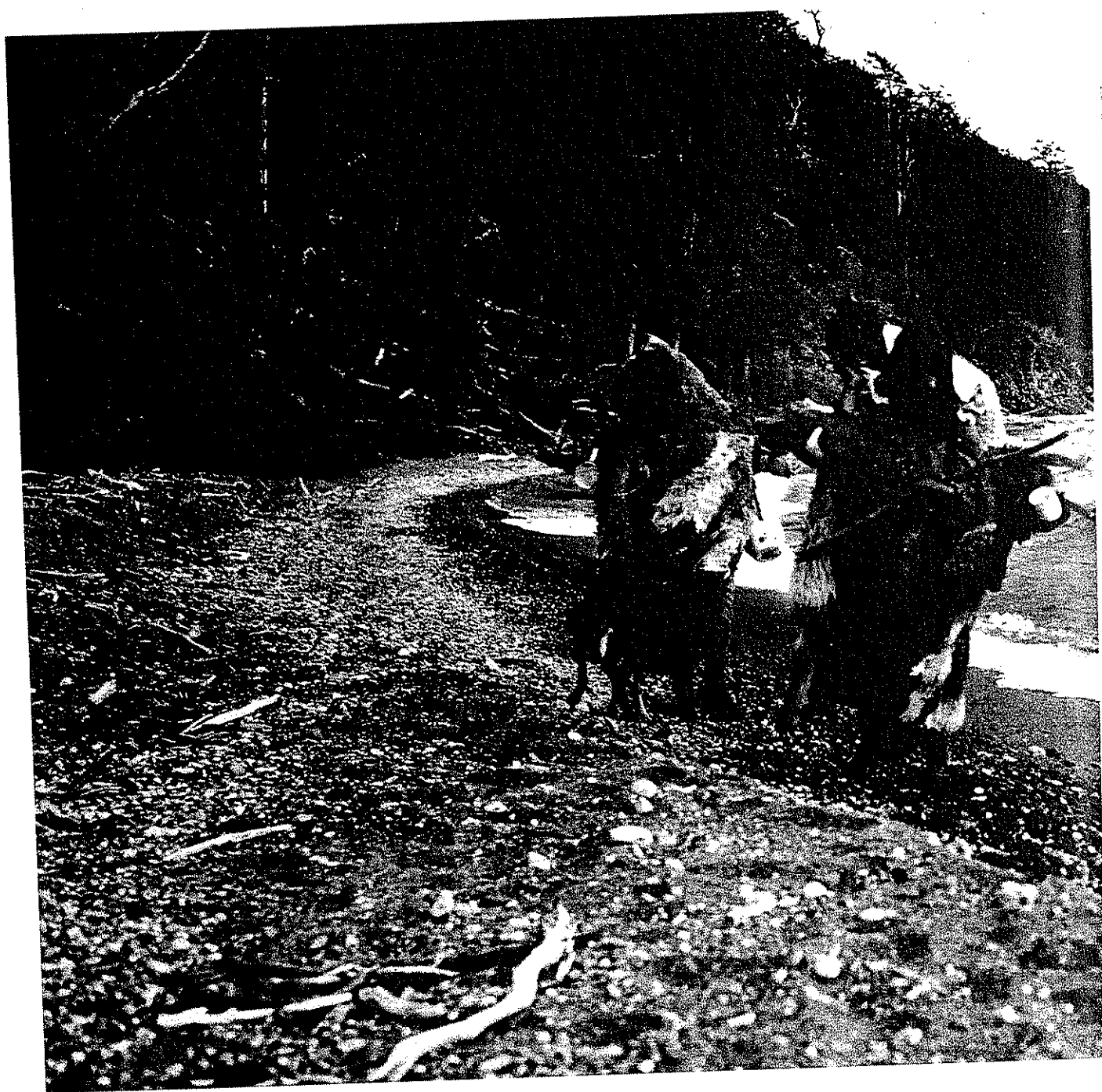


Fig 56 Selk'nam women on the march, rounding the south-eastern shore of Lago Fagnano (Lago Kami), Tierra del Fuego, c. 1907–8.

Guanaco display marked territorial behaviour and use the same general area all year long. In rugged terrain they migrate within a limited annual range that is rarely larger than 20 km.³⁴ Thus human groups focusing on guanaco could easily predict the locations where family groups, whether sedentary or migratory, were to be found. They pursued them by trekking to places where they could take full advantage of the topography to ambush the herds.

Just like the canoe people, the terrestrial hunters were never exclusively dependent

on either terrestrial or maritime resources. Even when their economy was centred mostly on terrestrial fauna, maritime resources still played a role (fig. 56). Shellfish were intensively collected, fish speared with barbed harpoons in tidal pools,³⁵ and beached whales exploited whenever the opportunity presented itself. This happened more frequently than might be imagined.³⁶

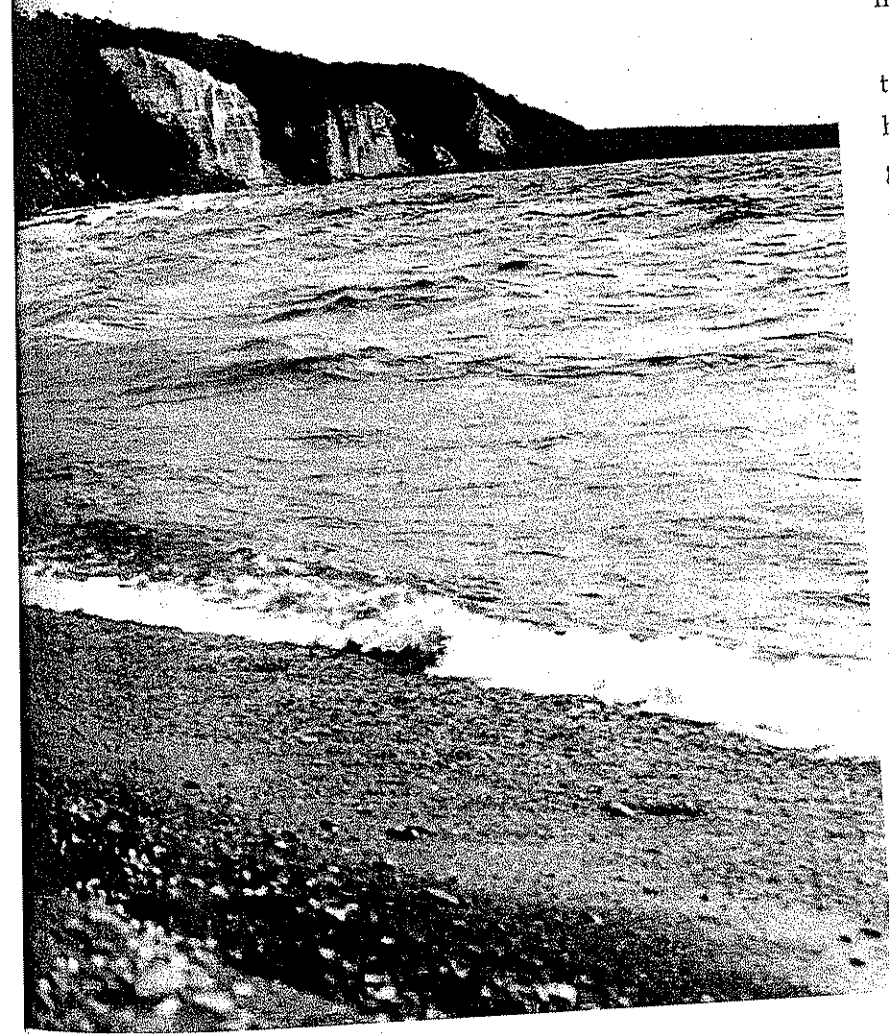
One consequence of this is that the terrestrial hunters, who repeatedly used favoured haunts near rookeries to hunt sea lions and gather mussels, created archaeological sites consisting predominantly of maritime fauna. The maritime and terrestrial worlds were therefore never completely separated. The best example is that of the Haush, discussed at the end of this chapter. In fact, nowhere was there an immutable boundary between these contrasting cultural adaptations. In places like Admiralty Sound in western Tierra del Fuego, or in the interior seas on the continent, there is clear evidence of contact zones³⁷ marked by a varied range of archaeological sites.³⁸

The antiquity of the ethnographic cultural configurations

European contact brought about important changes to native societies, forcibly modifying many traditional subsistence practices.³⁹ We must therefore ask whether some historically observed practices are the result of

recent contact with Europeans, or whether they accurately reflect long-standing patterns. To solve this puzzle the archaeological, linguistic and ethnographic data available for historical times must be compared carefully with the archaeological evidence for the prehistoric period.

If we accept that historical adaptations were considerably modified in response to changing historical circumstances during the contact period, we can now consider what happened before the arrival of the Europeans. The archaeological record reveals several



distinct ways of life, each of them centred on a different suite of resources. Technological studies have identified marked differences in the techniques used in the production of bifacial artefacts on either side of the Strait for approximately the last two thousand years.⁴⁰ Other lines of evidence support this pattern of variability. Studies of faunal remains show great diversity in the range of food resources that were exploited, with sea mammals playing a more prominent role in Tierra del Fuego after 6,000 BP.⁴¹ Scant but consistent evidence for hunting ñandú as a source of fat is recorded on the mainland during the same time period.⁴² Since ñandú do not appear to have reached the island it is possible that sea mammals instead were hunted in Tierra del Fuego for their fat, among other things, and were important even for terrestrial hunter-gatherers.⁴³ This increasing emphasis on hunting sea mammals meant that traditional territories grew to encompass the regular exploitation of coastal sites. The sequence of superimposed occupations which can be up to three thousand years long in some places, has produced some quite large sites.

Around 4,000 to 3,000 BP the cultures of Fuego-Patagonia formed a very heterogeneous mixture. More than one multi-generational population was surely involved, since people were distributed almost everywhere, from the outer islands of Cabo de Hornos⁴⁴ to the Atlantic coast⁴⁵ and the inland waterways and seas on the Pacific side.⁴⁶ Nevertheless, there was still much unoccupied territory between these regions. Most of the Patagonian plateaux were apparently used only seasonally, probably for the hunting of young guanaco,⁴⁷ and several islands of the western channels were visited only sporadically.⁴⁸ In fact, isolation of the canoe people from terrestrial hunters has been proposed as the main explanation for stability in their adaptation and may also account for the divergence in the languages spoken by each.⁴⁹

In continental Patagonia the evidence ranges from sites suggesting a more intensive adaptation to the coast⁵⁰ to the incidental use of marine resources by terrestrial hunters,⁵¹ and locations which are clearly the product of a fully terrestrial adaptation. Examples of the latter include the use of land above 1,000 m in the Paso Verlika site in the Sierra Baguales,⁵² evidence for exploitation of the huemul in the Río Ibañez region,⁵³ and the generalised use of lacustrine environments at several sites.⁵⁴

Recent archaeology for the last four thousand years in northern Tierra del Fuego comprises sites with large quantities of guanaco bones, but also includes sea lions at coastal locations. The sites are small, five to ten metres in diameter, except near the coast where huge shell middens have built up close to locations rich in immobile resources, principally mussels. Originally these sites may have begun simply as small heaps (see fig. 39) and grown incrementally in the course of hundreds or even thousands of years. But such impressive shell accumulations are not always long-term habitation sites, for these may or may not have been located close to the coast. In many senses the archaeological record is not a simple and direct product of the ethnographic context in which it was created and we must bear in mind that the formation of a given site could be the result

of repeated occupations by different groups for different motives. This is one of many reasons why the archaeological record may not always match what is anyhow an incomplete ethnographic picture.

Differences in the range of prey and hunting technology have in time led to cultural distinctions, some of which have been used to characterise ethnographic groups. But whatever the impressions formed by explorers and sailors in the centuries following contact, we must recognise that these reflect only 'snapshots' amid what was in reality an immensely varied and highly dynamic cultural configuration. By way of example we can offer the long-standing issue of the Haush, foot hunters who nevertheless took systematic advantage of the populous sea lion rookeries of the north of Peninsula Mitre. This group has been referred to by many names, including Haus and Mannekenk,⁵⁵ but the application of this label serves merely to gloss over significant ambiguities. Some ethnographic sources⁵⁶ suggest that there were few differences between the Haush and the Yámana, while other descriptions⁵⁷ clearly suggest Selk'nam affiliations.⁵⁸ Human remains recovered in the area can be compared with both the Selk'nam and the Yámana.⁵⁹ The archaeological record shows many similarities to that of the Selk'nam, suggesting a comparable adaptation, but with an added emphasis on sea mammals.⁶⁰

These ambiguities make it difficult to classify the inhabitants of south-eastern Tierra del Fuego and it is not really clear at what point in time the label Haush or Mannekenk can be applied. The so-called Haush cultural configuration may in fact be relatively recent, although still pre-dating contact. The more distinctive characteristics, like the dome-shaped hut,⁶¹ or the use of sea lion cloaks,⁶² are in place by the time of initial contact in the eighteenth century.⁶³

In dealing with this problem, the case of Isla de los Estados, lying across the Estrecho de le Maire that separates it from Peninsula Mitre, immediately comes to mind. Archaeological remains dated to around 2,500 BP have been found on this island which has always been separated by the sea from Tierra del Fuego.⁶⁴ Canoes must undoubtedly have been used to cross the Strait and reach the island. Canoe people from the southern channels were surely involved, but no remains have been found that can be unequivocally attributed to them. Instead, the lithic technology is reminiscent of the artefacts commonly attributed to terrestrial peoples from northern Tierra del Fuego.⁶⁵

The observations given above on the ancestors of the Haush also hold true for the ancestors of the other groups encountered in historical times. The elusive image of the ancestors of the Haush, or the affiliation of the inhabitants of Isla de los Estados, merely serve to emphasise the complex dynamics involved in both terrestrial and maritime adaptations. The degree of change implied by the material culture of the inhabitants of Fuego-Patagonia may appear to be great, but it is probably within the normal bounds of material variation for hunting and gathering societies living on islands. It has been suggested that hunter-gatherer adaptations on islands may be more susceptible to external

influences due to the reduced range of habitats compared with continents.⁶⁶ Recent evidence from the Chonos archipelago illustrates this point.⁶⁷ Island populations have few options available in response to direct usurpation of their traditional territories by outsiders and density-dependent adaptations tend to appear faster. Moreover, better opportunities for cultural change arise for smaller populations occupying a new niche⁶⁸ and, contrary to much that has been claimed,⁶⁹ stability is the exception rather than the rule on islands.

Conclusions

The key theme developed in this chapter is the dynamic relationship between natural and cultural variation. A number of discrepancies have emerged between the archaeological record and ethnographic information recorded in historical times and these paint a more complex picture than that traditionally proposed.

It is clear there were significant variations in subsistence strategies on either side of the Strait after 4,000 BP, each closely tailored to the local distribution of key subsistence resources and their relative importance. Moreover, technological changes beyond those linked to subsistence activities have also been identified. These also indicate that different terrestrial adaptations evolved in late times on either side of the Strait.

Many of the differences in subsistence, settlement strategies and language observed on Isla Grande de Tierra del Fuego and the outlying islands may be a product of isolation. In addition, a completely new maritime way of life makes its appearance around six thousand years ago, or earlier, and this adaptation also exhibits significant variation.⁷⁰ This pattern of multi-divergent evolution helps to explain the cultural mosaic found by Europeans in Tierra del Fuego in the sixteenth century. It is not, however, the final word.

NOTES

- 1 Cocilovo and Guichón 1991.
- 2 Vayda and Rappaport 1963; see also Rouse 1986: 10.
- 3 Study of mitochondrial DNA has revealed a lack of the 9 bp COII/tRNA^{Lys} Region V deletion in thirty bone and teeth human samples from the period after 4,000 BP from Patagonia and Tierra del Fuego. Since this deletion is of Asian origin and has been detected in different American groups, its absence suggests either that the original colonising populations might have lacked it, or that it was lost by genetic drift (see Lalueza *et al.* 1993/94). See also Cocilovo 1981; Guichón 1995.
- 4 See Hammel and Howell 1987: 142.
- 5 Keegan and Diamond 1987: 58.
- 6 Ortiz-Troncoso 1975; Orquera and Piana 1983; Hernández 1992; Guichón 1995.
- 7 Vignati 1927; Chapman 1982.

- 8 See discussion in Cooper 1917: 5ff.; Mena 1988: 151, and chapter 3, this volume.
- 9 Gusinde 1982.
- 10 Lefevre 1989; Savanti 1994.
- 11 Cooper 1917: 190.
- 12 Curry 1991.
- 13 Nami 1985/86.
- 14 Bird 1946: 68.
- 15 Legoupil 1985/86; see also Cooper 1917: 29.
- 16 Gusinde 1982: 227.
- 17 See, for example, Chapman 1982 and chapter 5, this volume.
- 18 Borrero 1994.
- 19 Orquera and Piana 1983.
- 20 Bird 1980.
- 21 Vidal 1987.
- 22 See, for example, Laming-Emperaire 1972b: fig. 8.
- 23 Byron (1768) records having witnessed this in the Chonos archipelago.
- 24 See Cooper 1917: 118.

- 25 Legoupil 1985/86.
 26 Herbst *et al.* 1994.
 27 Lefevre 1989.
 28 See, for example, Legoupil 1993/94.
 29 Legoupil 1985/86.
 30 Martinic 1995.
 31 See Joppien and Smith 1985.
 32 Popper 1887.
 33 Martinic 1995.
 34 Franklin 1982.
 35 Gallardo 1910: 203.
 36 Borella *et al.* 1996.
 37 Gallardo 1910; Casamiquela 1973.
 38 Ocampo and Rivas 1996.
 39 Dunnell 1991.
 40 H.G. Nami, pers. comm. 1988; see Nami 1986 for information on the mainland case, and Kligmann 1991 for a discussion focused on the Canal Beagle.
 41 Orquera and Piana 1983; Piana 1984; see also Mena, chapter 3, this volume.
 42 See, for example, Caviglia and Figuerero Torres 1976; Massone 1981; Mengoni Gofalons and Silveira 1976.
 43 Borrero 1986; Lanata 1996.
 44 Legoupil 1993/94.
 45 Gómez-Otero 1994.
 46 Legoupil 1983.
 47 Franco and Borrero 1995.
 48 Legoupil 1993/94.
 49 Legoupil 1985/86.
 50 Prieto 1988.
 51 Massone 1979; Bird 1988.
 52 Franco 1997.
 53 Mena 1991.
 54 Goñi 1988; Belardi *et al.* 1992.
 55 Cooper 1917.
 56 For example, Skottsberg 1913.
 57 For example, Lista 1887.
 58 Cooper 1917:51.
 59 Cocilovo and Guichón 1985/86.
 60 Lanata 1996.
 61 Joppien and Smith 1985.
 62 Purísima Concepción 1765.
 63 Lanata 1997.
 64 Horwitz 1993.
 65 Horwitz 1990.
 66 *Ibid.*
 67 Constantinescu and Aspillaga 1990; Ocampo and Aspillaga 1991.
 68 Hammel and Howell 1987: 146.
 69 MacArthur and Wilson 1967.
 70 Ortíz-Troncoso 1975; Orquera and Piana 1983; Piana 1984; Legoupil 1989; Figuerero Torres and Mengoni Gofalons 1986; Yesner 1991; Horwitz 1993.