THE YAHGAN AND ALACALUF: AN ECOLOGICAL DESCRIPTION

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Western observers have habitually shown a profound inability to understand simple or primitive societies. Indeed, the word "primitive" is not much more than a convenient label applied indiscriminately to cultures that differ very greatly from our own. We consistently allow our preconceptions about the nature of man to greatly distort what observations we do have of simple societies. Sometimes this distortion interferes with the process of data collecting itself while at other times it is apparent because the observations of a particular people do not have any obvious relationship to the interpretations of their culture. Ethnographic description and ethnological theory can become almost totally divorced from each other so that the worst theorist may be an extremely gifted and accurate observer. Nowhere is this more apparent than in the literature concerning the Yahgan and Alacaluf Indians of South America.

When the first Europeans made contact with these inhabitants of the cold, rainy coast of southern Chile they were convinced that they had discovered savages who were more animal-like than human. In a land where the wind blows unceasingly and all days are alike--dark, dismal, and rainy--these simple primitives went about stark naked and dove in the icy sea for barnacles, mussels, sea urchins, and other creatures unfit for human consumption. It was accepted without question that these Indians lived in a state of perpetual misery: their lack of elaborate dwellings or tools, their nakedness, and in general, the crude, almost moronic simplicity of their way of life, was clear evidence that they were woefully maladapted to the hostile environment in which they lived.

The stark simplicity of Yahgan and Alacaluf culture, then, had a rather simple historical explanation. These were survivors from prehistory, paleolithic men who had been driven long ago into a harsh, marginal environment from which they were never able to escape. The bitter struggle for survival preyed upon them, sapping them of their inherent potentialities for higher culture, and they remained in a state of ancestral primitivism.

This romantic explanation for the simplicity of these two cultures is nothing but a crude blend of environmental determinism and cultural evolution and what is more, can be thoroughly disproved by the ethnographic data of the very people who proposed it.

For example: the Yahgan and Alacaluf are traditionally described as friendly, sociable people given to a great deal of horseplay and joking. The men are usually pictured as being extremely slothful and seem to have spent most of their time doing absolutely nothing at all. Normal food gathering was the task of women but even they spent but a few hours a day at this activity. Most accounts describe these people as short and spindly legged with exceptionally powerful arms and shoulders and photographs reveal that they were liberally endowed with body fat.

Certainly none of these common observations are consistent with the picture of the miserable, maladapted savage. It is difficult to imagine fat people as living on a bare sustenance level. Add to this the fact that they were able to become fat on the food gathered during a few hours of each day and the picture becomes almost absurd. Finally, humor and a pleasant disposition are not usually associated with the naked struggle for survival.

The ecological information has also been grossly misrepresented. The cold, rainy, depressing climate of the south Chilean coast in no way implies that this was an unproductive environment. Much like the northwest coast of North America or, better still, the Aleutian Islands, there was a superabundance of easily available food for those who could cope with the unpleasant climate. It is true that the Yahgan and Alacaluf did little more than tolerate a climate that to us would be completely intolerable but this is only one small aspect of their relationship to their environment.

There is now enough ethnographic information available (see relevant bibliographies in Steward 1946) to reconstruct the aboriginal cultures of these Indians with reasonable accuracy and there have been a number of recent studies of the geography, climate, and ecology of the area in which they lived (Auer 1960, Butland 1957, Godley 1960, Holdgate 1961, Knox 1960, Kuschel 1960). Given this information, it is impossible to explain the simplicity of these cultures in terms of any simple, deterministic relationship to the environment. In fact, the real problem they present has never been stated properly. It was not, as most people thought, that these Indians could barely eke out a miserable existence from a hostile environment but rather, that they had developed a marvellously productive relationship with their environment based only on an extremely crude material culture. In order to understand much about the Yahgan and Alacaluf, we shall have to discover how such a productive relationship was possible.

On the following pages I shall attempt to treat the Yahgan and Alacaluf as populations closely regulated by, and adapted to, a very specific ecological niche. Looked upon in this light, much of what has been described as crude or primitive becomes part of a beautifully organized, highly adaptive form of behavior. This is not to say that these Indians did not have extremely simple cultures for there is no question that they did. All that I hope to show is that this simplicity was no more maladaptive than most aspects of our own behavior.

In talking about adaptation we must always remember that we are dealing with a compromise. No population is perfectly adapted and cultural patterns persist only because they manage to produce new generations of viable offspring. Perhaps this compromise as seen among the Yahgan and Alacaluf or, indeed, among all primitive cultures, strikes us as totally unsatisfactory but this is only because we are used to something different. Certainly the lack of precise control over the environment was the source of death, suffering, and just plain discomfort among all simple hunter-gatherers but many of these cultures, like the Yahgan and Alacaluf, persisted for hundreds or even thousands of years and allowed men to survive in extremely difficult environments. And from an ecological and evolutionary standpoint this is a measure of their success.

Although the Yahgan and Alacaluf spoke unrelated languages there seems to have been little more than this that separated them culturally. Together, they occupied the rainy archipelago that stretches along the southwestern coast of South America from approximately 42°S to the tip of Tierra del Fuego. This entire long stretch of coastline is characterized by extremely similar terrain, climate, and rainfall along its entire extent. Within this area, the Yahgan roamed the coast of Tierra del Fuego while the Alacaluf lived north of the Straits of Magellan, but there was some overlap in their ranges.

The entire archipelagic area is characterized by a mean annual temperature that hovers somewhere between 48°-50°F. There is very little variation in temperature so that extremes of below freezing or above 65°F. are very rare. Rainfall varies from place to place depending on the topography but it is uniformly high everywhere, ranging from 80 to over 200 inches per year, and is distributed uniformly throughout the year. Violent storms and high winds occur daily and in the extreme south snow falls occasionally. The cloud cover is very low and is seldom broken so that sunny days are exceptionally rare. As a general rule the climate of the area has been correctly characterized as cold, wet, dark, and exceedingly dismal.

The Andes rise almost vertically from the sea along the coast of southern Chile so that the shoreline rises precipitously to 10,000-14,000 feet and is broken only by steep canyons with small, rocky beaches at their mouths. There are countless islands packed closely together along the coast which are really nothing more than the tops of mountains rising out of the Pacific.

From Chiloé Island to just south of the Taitao Peninsula most of the land that is not vertical is covered with dense temperate rain forests with a bewildering variety of plant species; but south of this, most of the species reach the southern limits of their distributions. The forests become dense stands of the Magellanic beech (Nothofagus betuloides) associated with only a few other plant species. Much of the more exposed and level coastline is covered with bog-like communities called Magellanic Moorland characterized by an almost complete absence of trees.

In both the forests and moorland there is an extreme scarcity of mammals. Deer occur from the Taitao Peninsula to Chiloé Island but the terrain is so rugged that hunting was almost impossible. Far to the south along the great inland channels of Tierra del Fuego the Yahgan extended their range out upon the edge of the great plains. Here hunting was fairly important and there was considerable cultural borrowing from the neighboring plains hunters, the Ona. Over most of the long coastline, however, the Indians were simply not land hunters.

At certain times of the year edible berries, herbaceous plants, and fungi were available and eaten by the Indians but vegetable material formed only a minor portion of their diet. In general, the land was exceedingly sterile and the Indians devoted their undivided attention to the sea.

In sharp contrast to the land, the sea along the southern coast of Chile abounds in life. There is an enormous invertebrate fauna in the litto-

ral zone, most of which was eaten by the Indians. Mussels are particularly abundant, occurring in dense beds in the middle intertidal. Limpets and snails also abound as do crabs, and from the low intertidal to a depth of over 30 feet, there are enormous beds of sea urchins. There are large kelp beds offshore which support a rich variety of fish, seals and sea lions are common along the shores as well as numerous species of birds, and porpoises and whales often enter the narrow channels between islands.

The general picture then, as far as man is concerned, is a hostile, unproductive land mass and an extraordinarily productive marine environment. It is the littoral zone, the edge of the sea uncovered twice a day, that is most available to a people with a simple technology and it is to this zone that Yahgan and Alacaluf culture was oriented.

These Indians ate nearly everything that they could gather off the ocean floor. Most of this was gathered from the rocks at low tide but sea urchins and crabs were speared from canoes with long poles and the women dove in shallow water gathering invertebrates from the bottom. Mussels are the most abundant large invertebrates in the intertidal and formed the major item in the Indian's diet. Occasionally they would hunt birds, seals, or sea lions but these were not routine events. Now and then a whale was washed ashore and this, too, was duly consumed. But looming above everything else was the ubiquitous mussel, the staple food par excellence.

Beaches where the Indians could camp were small and large numbers of people would have rapidly exhausted the shellfish supply at any one of them. However, the Indians were organized into small, nomadic extended families of six to eight persons and one such unit could occupy a beach for a number of days before the food supply would be exhausted. Apparently families moved every two or three days so that beaches were probably deserted before they had been completely decimated.

The littoral zone was a superb source of food for the Indians. A few hours of collecting would supply most of the day's needs and if anyone became really hungry, he had only to walk to the beach, gather some mussels or whatever else he could find, and return to the hut to cook his meal. The only pressing necessity was to keep an abundant source of food within easy reach and this was insured by never remaining in one place for very long and by collecting in shallow water as well as in the intertidal. Aboriginal populations were probably exceedingly small, for reasons which we do not understand, and there was little danger of exhausting the food supply. An extremely nourishing high protein diet was, for all practical purposes, available in limitless quantities.

The extreme ruggedness of the land necessitated travel by sea. For this purpose the Yahgan and Alacaluf used large bark canoes which were absurdly leaky and fragile by our standards. However, the Indians kept to the small channels between islands and seldom had to venture far into open water. The large kelp beds kept the sea close to shore fairly calm so that the stormy conditions out at sea did not hold for the area through which the Indians wandered. Canoes were usually anchored offshore to kelp beds instead of being beached and this added greatly to their life span. They were easy to build with very simple tools and families sometimes kept reserve supplies of beech

bark weighted down in streams with stones so that the bark remained flexible and could be used at once. The bark canoe was an adequate, though inelegant, form of transportation made from readily available materials and probably carried a family for many hundreds of miles.

The necessity for frequent travel by canoe had an enormous effect on Yahgan and Alacaluf technology. Everything from tools to dwellings had to be either carried by canoe with the family or discarded during moving and possessions that had to be transported were kept to a bare minimum. The Indians were experts at utilizing what was immediately at hand and made most of their tools only when they were needed.

Dwellings were small, dome-shaped structures composed of a framework of saplings covered with bark, sealskins, and ferns. Skins or slabs of bark were carried in the canoe but the dwelling itself was built anew at each campsite and abandoned when the family moved.

The only permanent utensils were baskets and skin or bark buckets--pottery was unknown. The number of tools necessary for this simple economy were very few indeed. Awls and wedges used for sewing skins and removing bark from trees were made of bone. The cutting and scraping tool par excellence was the shell of the chorro, a very large mussel (species unclear). These were often hafted to a stone and could be ground to a razor-sharp edge on a wet rock. Shell is soft and dulls easily but sharpening was no problem and when the shell became too worn, it was simply discarded.

The Yahgan and Alacaluf made little use of stone tools. These were, for the most part, unnecessary although very crude percussion-flaked axes were occasionally produced. Only the southernmost Yahgan who hunted and had contacts with the Ona made pressure-flaked projectile points. The only stone implement found in every Indian campsite was a large, flat, worn stone used for cracking shellfish and bones.

Tools used for hunting and gathering were the most elaborate items produced by the Indians. The bow and arrow was used by some of the Yahgan who hunted but spears of various types were found everywhere. Those with barbed bone points were used for hunting seals and a very long type, with a stellate wooden point, was used for spearing crabs and sea urchins on the sea floor from canoes. Long wooden clubs were used in hunting and fighting, pole snares were constructed for hunting birds, and wide-meshed nets were sometimes used for seal hunting. The fishhook was unknown and fish were sometimes netted, sometimes trapped in tide pools, and occasionally lured to the surface with a baited line and grabbed with the hands.

These Indians, then, traveled with little baggage and what they had took little in the way of skill or craftsmanship to produce.

With waterproof, disposable dwellings, efficient canoes, and a simple tool kit, the only remaining necessity for these nomadic hunter-gatherers was fire. This could have proven to be a problem in such an excessively wet environment. However, the tepú tree (Tepualia stipularis), which grows abundantly in the areas of highest rainfall, possesses the unusual property of igniting easily when it is damp and green and producing a bed of long lasting coals.

The Indians exploited this tree extensively and actual techniques of fire making were very crude. Most families carried in their possession a waterproof bag of sealskin or seal intestine containing some pieces of flint, pyrite, and a bit of dried fungus which was used as tinder. However, concerted efforts were made to keep fires burning continuously; they were never allowed to go out inside of the dwellings and were transported on sod hearths from camp to camp.

I have already mentioned that these Indians were crude and ineffective fishermen. Fish were seldom eaten and the Indians showed little interest in them. This has bothered people a great deal although it should not for fishing is a complex activity and there was a superabundance of food available for gathering in the intertidal. Fish were an extremely inaccessible source of food considering the Indian's simple technology and were totally unnecessary in a simple hunting and gathering economy.

The Yahgan and Alacaluf also went about stark naked regardless of what the weather was like and yet anything but elaborate waterproof clothing would have been worse than useless in constant rain. There is some evidence that they were physiologically adapted to withstand cold (Holdgate 1961) and they showed little evidence of discomfort in weather that was capable of killing most Europeans. Remember that they were also well endowed with body fat and had the habit of smearing their bodies with oil, a practice well-known to modern swimmers.

The preceding synopsis of Yahgan and Alacaluf culture, although brief and somewhat biased, reveals that the stark simplicity of their way of life can be related to at least two factors: the enormous productivity of the littoral zone, and the demands that utilization of this placed upon them in terms of tools and in terms of mobility. The effective exploitation of the littoral required little in the way of complex tools and the pressures of extreme nomadism, which always tend to minimize tool complexes, effectively prevented this simple technology from expanding. The nomadism of these Indians is clearly a highly adaptive form of behavior as long as we consider them as exploiters of the large invertebrate fauna found between the high tide mark and the ocean floor out to about 30 feet in depth. This was a highly specialized, not a primitive, economy and the Indian's relationship to this narrow zone was immensely productive. They seem to have rarely, if ever, suffered from hunger and this alone sets them apart from most primitive cultures.

I have mentioned that one measure of the success of a cultural pattern is the length of time during which it persists. There is some evidence (Bird 1938, Lothrop 1928) that the shellfish gathering tradition is extremely old in southern Chile. Both Bird and Lothrop have attempted to estimate the age of shell heaps along Beagle Channel in southern Tierra del Fuego using entirely different methods and both arrived at a figure of 1,800-2,000 years. Although neither author places any great faith in his estimate, it is certainly probable that a shellfish gathering tradition has existed in the area for a very long time. This tradition is already present with the first inhabitants of the shores of Beagle Channel and artifacts found in the lowest levels of these shell middens differ only slightly from those left by the historic Alacaluf. The Yahgan were very late arrivals (Bird 1938) and even they show

almost no change in tool types up to the time when their way of life was totally disrupted by contacts with the western world.

There is no evidence that the coast between the Straits of Magellan and Chiloé Island was ever inhabited by anyone but simple gatherers similar, if not identical, to the historic Alacaluf (Bird 1938). Unfortunately, there are not even estimates for the antiquity of man in this area.

The homogeneity and stability of the cultural tradition in southern Chile is an impressive phenomenon. The culture of the historic Yahgan and Alacaluf seems to stretch back in an unbroken continuum to the earliest inhabitants of the rainy archipelago that stretches from Chiloé to the tip of Tierra del Fuego. Certainly this sort of stability and age indicates that we are dealing with a highly adaptive way of life. However, another factor influencing stability must have been extreme isolation.

There is little or no evidence of cultural contacts with peoples north of Chiloé until shortly before the arrival of the Europeans (Bird 1938) and the Andes form an impenetrable barrier to contacts with people to the east except along the great inland channels in the extreme south. Here, the only contacts would have been with nomadic, plains-living hunters such as the historic Ona, Tehuelche, and Puelche, people with a level of technology scarcely higher than that of the Yahgan or Alacaluf. This plains complex has a history of over 8,000 years just north of the Straits of Magellan (Bird 1951, Emperaire et al 1963) and had little to offer shellfish gatherers. There is no question that there were contacts between these two groups of Indians (Barth 1948). The point is that the Yahgan and Alacaluf had no knowledge of technologies geared to the sea any more complex than their own.

It is highly probable that the ancestors of the Yahgan and Alacaluf were themselves very primitive people. If this is true then we can say that the environment influenced this cultural pattern in that it placed only certain resources at the Indian's disposal. A settled, fishing society might have evolved but it did not. Instead, the people took to shellfish gathering because this was within their capabilities while fishing was not. It may have been the level of technology of these early people, as much as anything else, that determined what resources would be utilized. If this is so, then the simplicity and stability of Yahgan and Alacaluf culture is as much an historical as an ecological problem.

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