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Advances in the Archaeology of the Pampa and Patagonia

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Archaeological data reveal two distinctive cultural adaptations on the Pampa and Patagonia of Argentina: terrestrial hunter-gatherers in the former and most of the latter region and maritime hunter-gatherers along the southern extreme. Both adaptations were achieved by the end of the fifth millennium B.C. Thereafter, a stable equilibrium was maintained, with a slow drift toward greater emphasis on resources providing the maximum return for the least effort. The high productivity of the Fuegian environment sustained a population 30 times greater than occupied the Pampa and continental Patagonia prior to Araucanian penetration in the sixteenth century A.D. The long-term stability is attributable to the absence of environmental or demographic pressures or encroachments by neighboring groups, which might have made more intensive exploitation of the environment necessary.

KEY WORDS: Pampa–Patagonia prehistory; lithic traditions; Pleistocene megafauna; rock art; adaptation.

INTRODUCTION

This article deals with two geographical areas and two cultural areas whose extents do not coincide. The geographical areas, Pampa and Patagonia, were exploited differently by indigenous groups, which can be classified into two distinctive cultural-adaptive traditions: the terrestrial hunter-gatherers and the maritime hunter-gatherers. The former occupied all of the Pampa and most of Patagonia; the latter, only the southern edge of the latter region.

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There is a general consensus that the Pampean plains extended from the base of the Andean cordillera on the west to the Paraná–Plata river system and the Atlantic Ocean on the east and from about 34°S latitude southward to the Río Colorado (Fig. 1). In its geographical definition, Patagonia lies between the Río Colorado and Cape Horn, squeezed between the Andes and the sea. Together, Pampa and Patagonia occupy 1,400,000 km^2. The former is dominated by plains and varies greatly in humidity; the latter is dominated by arid mesetas, except on the Pacific border west and southwest of the cordillera (Fig. 2).

These limits and geographical contrasts do not correlate well with aboriginal cultural patterns. The northeastern margin of the Pampa, between the Paraná–Plata and the Salado drainages, must be split off because it was occupied by groups that exploited different kinds of resources. From here to the bifurcation of Tierra del Fuego by the mountains, the environmental diversity contrasts with a cultural continuity in the form of hunter-gatherers whose way of life bears the hallmark of foot nomadism. Their technology was simple. Pottery was adopted relatively late and was rarely more than rudimentary. Agriculture and pastoralism were even more recent and more restricted. Artistic styles varied through time, but during the final epoch their homogeneity and conceptional simplicity were notable. There is no archaeological evidence of organized religion and it is probable that prior to the eighteenth-century sociopolitical organization did not develop beyond the level of very small bands.

The distinctiveness of the Pampa–Patagonia culture area derives from the stability and persistence of this configuration. The agriculture-based sedentism, refined ceramics and metallurgy, and (late) embryonic state formations that characterize the indigenous cultures of northwest Argentina did not develop. Nor was there intensified exploitation of the fluvial environment with incipient semisedentarism and greater use of pottery, as occurred in the northeast, or maritime and canoe nomadism such as emerged in the extreme south. Horticulture was introduced on the northwest margin of the region only at a very late time. The posthispanic transformation, characterized by adoption of the horse, greater mobility, reduced cultural heterogeneity, and interethnic mixture, affected most of the Pampa and Patagonia similarly, increasing the contrast between this area and its surroundings.

Although the populations of the Pampa subarea north of the Colorado and the Patagonia subarea south of that river interacted sufficiently to maintain a generic unity, the physiographic differences are reflected in different combinations of archaeological features. The division between the Humid and the Dry Pampa (marked by the 500-mm isohyt) was a less significant cultural boundary than the Salado Valley (which has minor

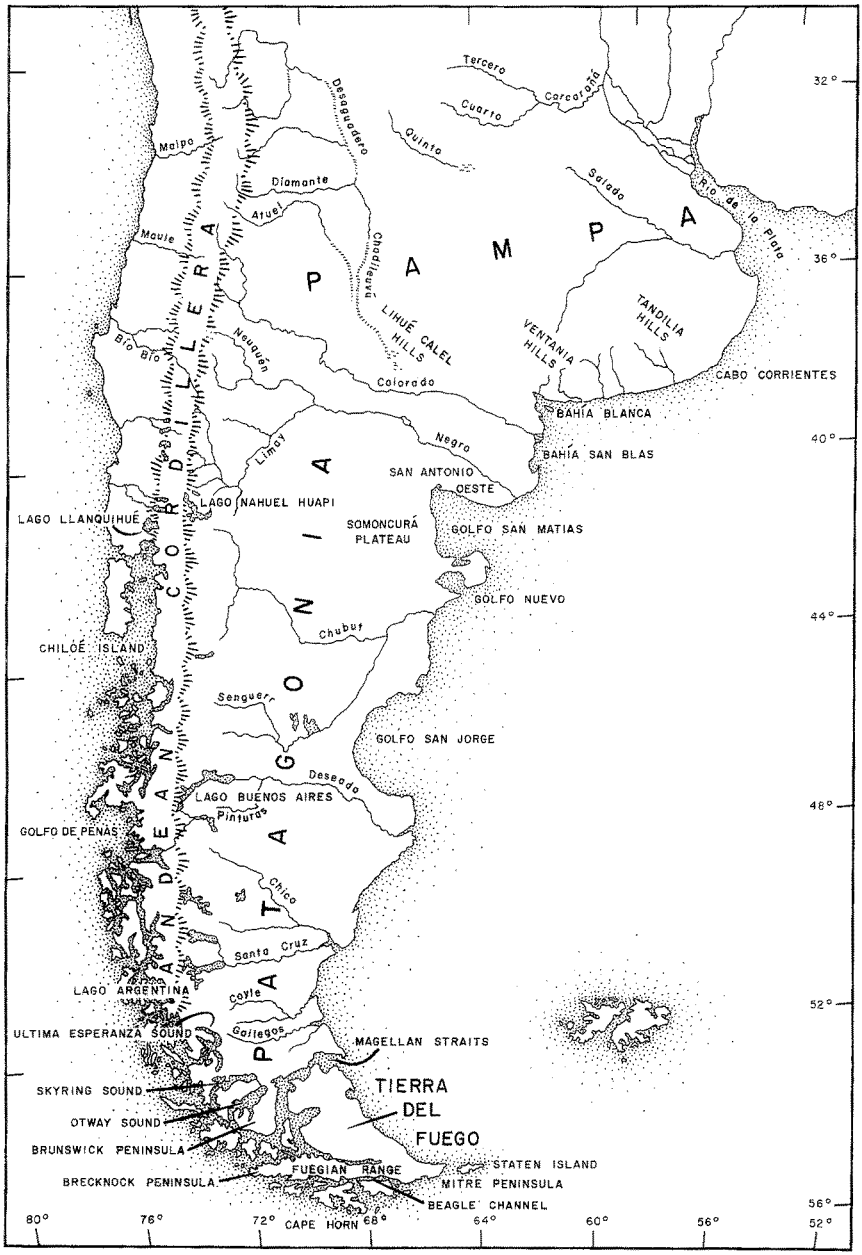

Fig. 1. Major geographical features of the Pampa and Patagonia.

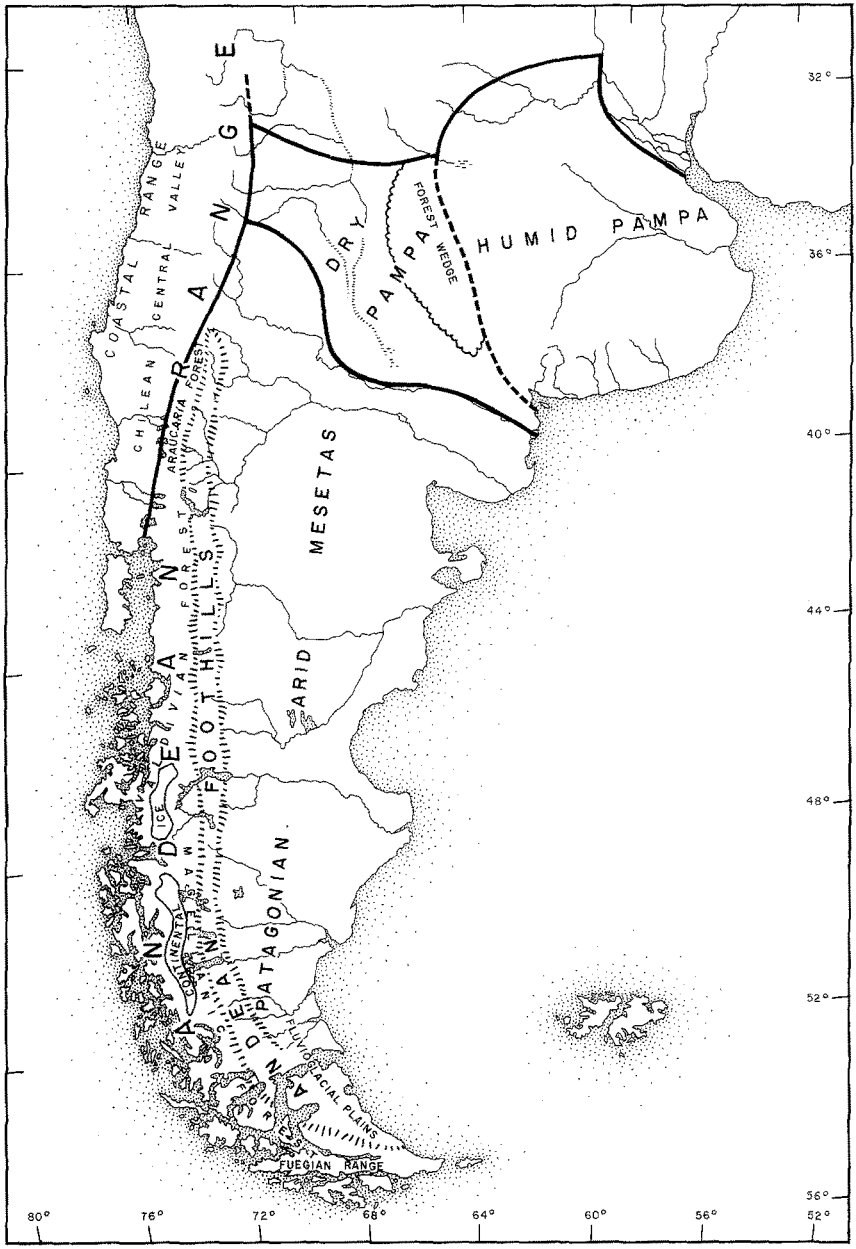

Fig. 2. Principal environmental zones.

importance for geographers). Differences in altitude, precipitation, and vegetation between the Patagonian Andes and the meseta led to economic complementarity rather than the development of a frontier. The variations in soil types in Patagonia (ashy sands, layers of pebbles, fluvioglacial plains, and undulations caused by moraines) appear to have had no impact on human utilization of the habitat, although in this case there has been little investigation.

Smaller subdivisions have been suggested, corresponding to regional interaction spheres. Gradin (1982a, pp. 178–179) proposed three—(1) Patagonia proper, (2) Andean–Patagonian transition, and (3) Pampa–Patagonian transition—and divided the first into four regions based more on geographical than on cultural criteria (Fig. 3). Other archaeologists have observed that (1) the Pampa interior differs from the south Bonaerean coast, between Cabo Corrientes and Bahía Blanca (Fig. 1); (2) the north Patagonian coast between Bahía San Blas and San Antonio Oeste, together with the lower valley of the Río Negro, displays a strong cultural individuality (which cannot be attributed solely to investigational bias); (3) central Patagonia (Chubut and Deseado drainages) has features distinguishing it from regions 1 and 2 and from the Gallegos valley to the south; and (4) northern Tierra del Fuego possesses a degree of distinctiveness (Fig. 4). It is premature to attempt precise delineation of subregions because data are still few and the possibility that some archaeological differences reflect seasonal displacements needs further exploration. Hence, although the regional divisions in Fig. 4 will be employed for convenience in the course of this discussion, the reader should keep in mind that their definitions are tentative.

Geographically, the Magellan–Fuegian channels and islands of the extreme south constitute merely a somewhat atypical border of Patagonia. Environmentally, however, they possess distinctive resources that made them culturally unique. This coastal fringe west and south of the Andean chain is notched by numerous fiords and bordered by a chain of contiguous islands. In the region of the Skyring, Otway, and Ultima Esperanza sounds and the Brunswick Peninsula, it extends inland east of the mountain chain (Fig. 1). Rain and snow are abundant (800 to 5000 mm annually) and the shore is very rich in marine mammals and mollusks. [A good description is provided by Bird (1938, pp. 251–253).] The human inhabitants developed a canoe-based way of life for exploiting the marine foods and forest products. In some places, climatic conditions are excessively hostile, but two regions possess slightly more benign conditions: (i) the western sector of the Strait of Magellan and the neighboring Otway and Skiring sounds and (ii) the Beagle Channel and associated islands. This distinction is relevant for interpreting the archaeological evidence.

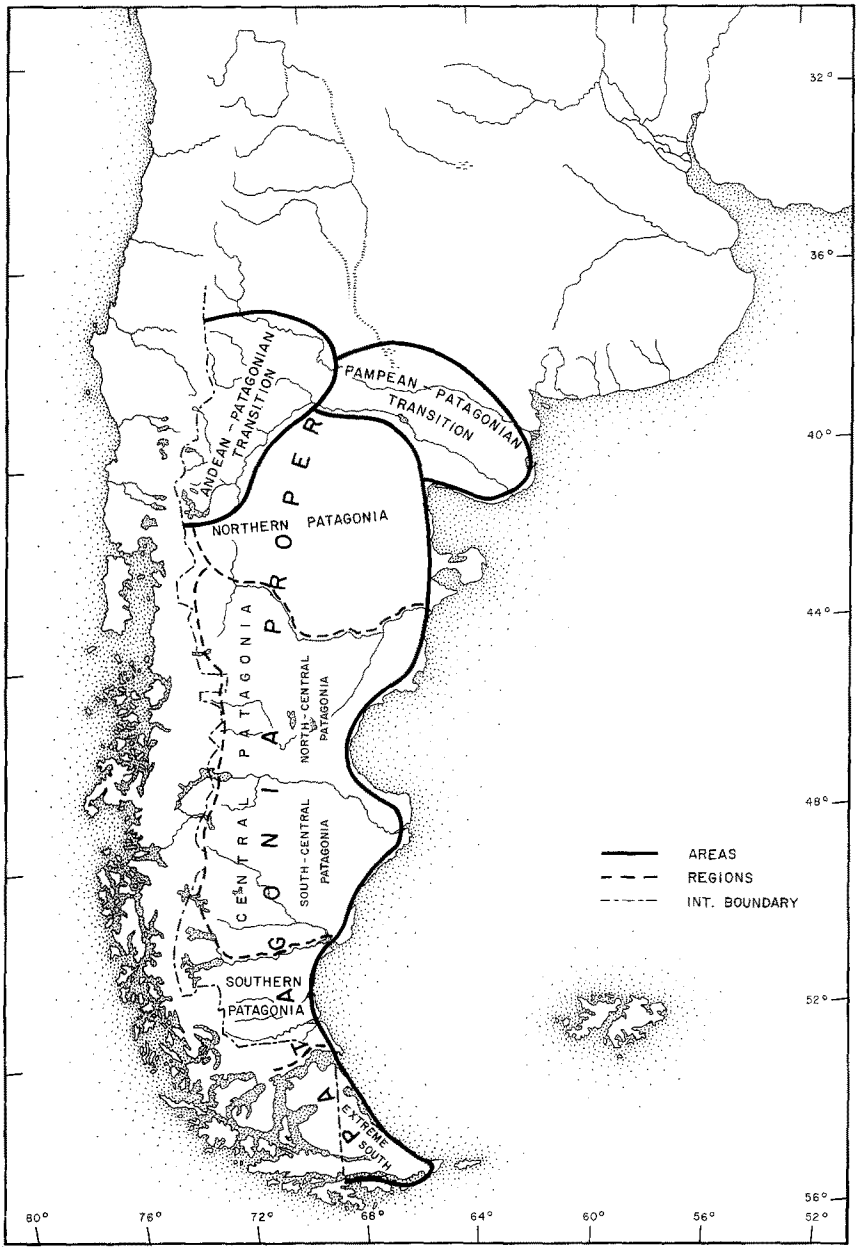

Fig. 3. Archaeological areas and regions proposed by Gradin (1982a).

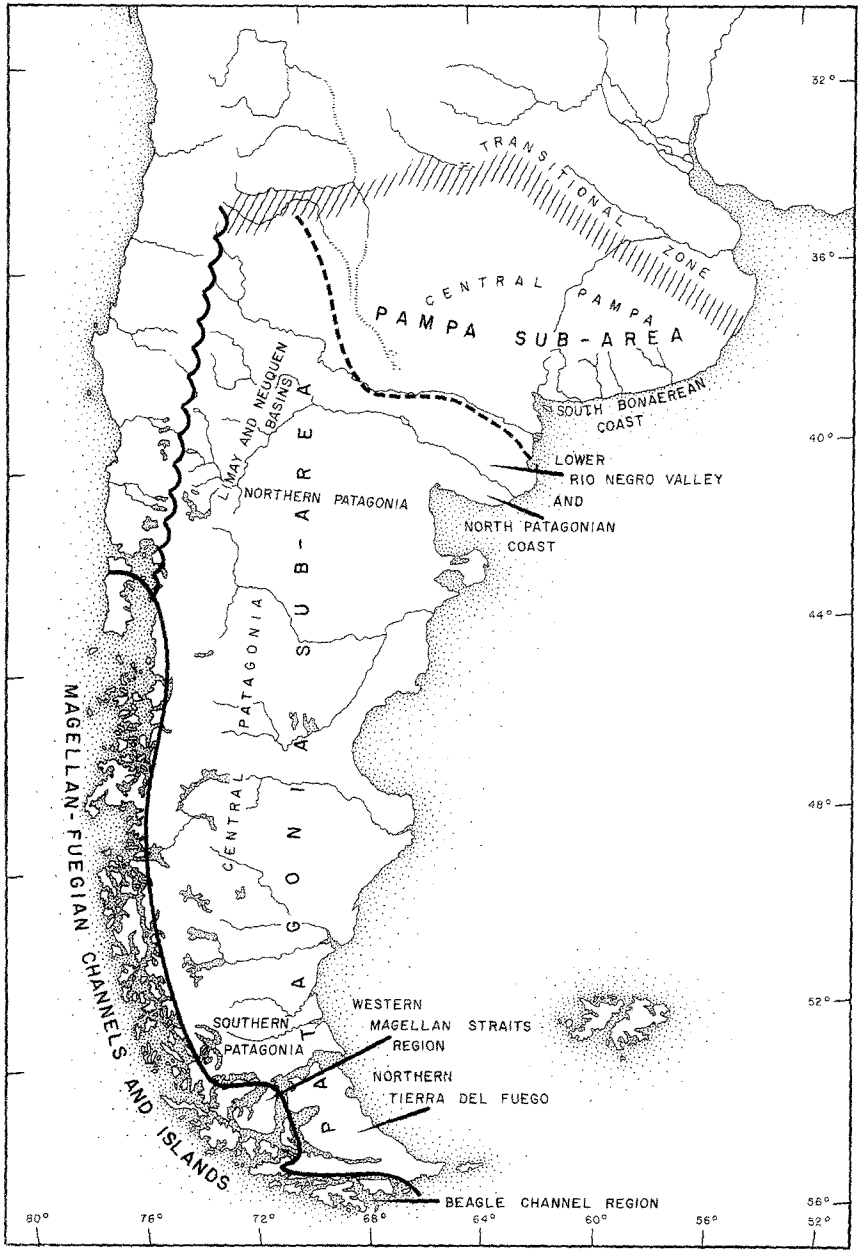

Fig. 4. Major archaeological areas and subdivisions employed in this discussion. The hatched band marks the poorly defined northern border.

ENVIRONMENTAL CHARACTERISTICS

The Pampa

The Pampa is a gently sloping plain interrupted by low hills (Tandilia, Ventania, Lihué Calel). The elevation does not exceed 500 m over most of its extent but rises gradually to 1000 m in the west. The climate is typically temperate with winter frost and becomes increasingly continental toward the interior. Winds are moderate and variable in direction. Rainfall is moderate in the east (800 mm) and deficient in the west (200–400 mm), with resulting desertification. Although there is seasonal variation, there is no dry season.

The surface of the Pampa is covered with a thick layer of loess-like slits and has extensive sandy zones of relatively recent formation. The soil and climatic conditions foster a vegetation oscillating between grassy treeless steppe in the east and xerophytic scrub in the west. A wedge of forest penetrates the center from the north (Fig. 5). Three species of the genus *Prosopis* (calden, white algarrobo, and black algarrobo) were important sources of plant food. Guanacos (*Lama guanicoe*) abounded in the dry west, whereas smaller and less gregarious deer (*Ozotocerus bezoarticus*) preferred the open grasslands to the east. The American ostrich (*Rhea americana*) and smaller game were also available.

Nevertheless, the Pampa was not a very favorable environment for nomadic hunter-gatherers. Surface water was scarce and often brackish, the

Fig. 5. The Pampa landscape, characterized by extensive plains covered with coarse grass.

faunal density was probably not very high, and good raw materials for manufacturing stone tools were rare. The most favorable sector would probably have been between the Tandilia and Ventania hills and their extensions westward south of the wedge of forest (Figs. 1 and 2). Elsewhere, the availability of resources would have been unreliable and conditions on the extensive sandy, salt-impregnated soils of the south and west would have been adverse.

Patagonia

Patagonia, in contrast, is characterized by rugged relief. The Andes, the piedmont, and the mesetas extend from west to east. Crossing from the Atlantic to the Pacific slopes is relatively easy, both in the north (Río Negro) and along the Straits of Magellan, but impossible or impractical in the intervening sector (Fig. 1). The climate is continental, very windy and generally cold except on the northern margin, where the summers are warm. The cordillera obstructs the humid winds from the Pacific and the annual precipitation on most of the mesetas varies between 100 and 300 mm. Conditions favorable for vegetation are restricted to the Andean slopes, sheltered basins, and the vicinity of the Straits of Magellan. Dense stands of tall trees grow on the flanks of the cordillera. Between 37°30′ and 40°S latitude, the Araucanian pine provides an abundant seasonal harvest of nuts, but the "Valdivian" and "Magellanic" forests farther south are unproductive and passable with difficulty.

The most favorable conditions for human habitation were in the piedmont, a strip 50 to 100 km wide running north–south from the Río Neuquén to Tierra del Fuego. Here, the mountains unite with the uplands and the forests with the steppe; water is provided by a multitude of streams and lakes of glacial origin, and wood is abundant (Fig. 6). The gentle relief facilitated movement and hunting. Animals favoring open spaces, such as guanacos and rheas, and those preferring forest, such as cervids (*Hippocamelus bisulcus*), were available, along with others desired for meat or hides. Plant foods, in contrast, were scarce.

Moving eastward, conditions change rapidly. Streams are fewer and interfluvial regions more extensive. The forest thins, fragments, and disappears, giving way to arid steppe dominated by leathery grasses and spiny shrubs (Fig. 7). The harshness of the pasture does not diminish the abundance of guanacos and rheas, but the former sought protection during winter in more sheltered places than the open mesetas. During the past century, their numbers appear to have been enormous. Drought was not a problem for guanacos, but it is for humans. Moving out from the fluvial valleys on the

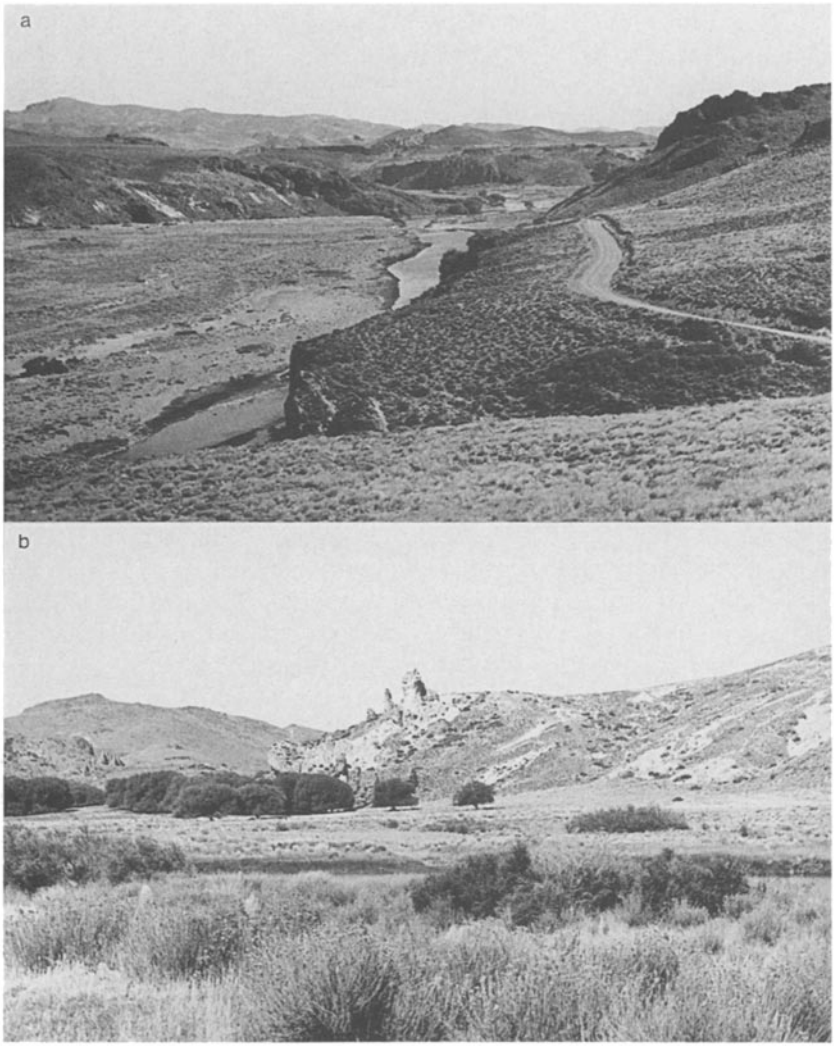

Fig. 6. Two views of the Andean foothill landscape near Cuyín Manzano Cave, Neuquén Province (courtesy R. Ceballos).

border of the mesetas meant confronting zones extending 100 to 200 km where water is available only in sporadic springs, whose locations must be known to avoid dying from thirst.

The situation is no better along the coast. The proximity of the cold Malvinas Current impedes penetration of humidity from the ocean, with the result that fresh water and firewood are almost nonexistent. The situation is aggravated by the abundance of salt flats. The coast was the first part of

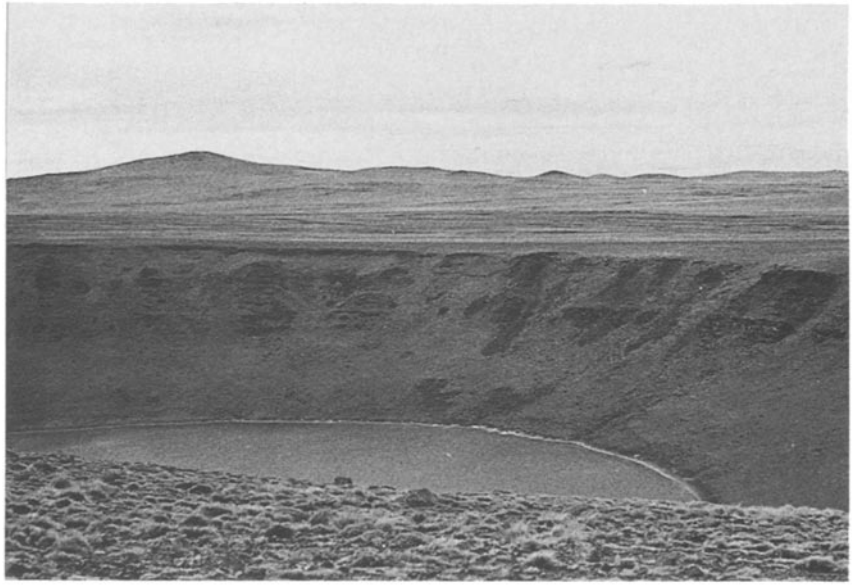

Fig. 7. Central Patagonian meseta landscape around Lago Strobel, Santa Cruz Province (courtesy C. Gradin).

Patagonia encountered by Europeans, and its desolate character probably inspired the tales of gloom. For guanacos and rheas, however, the coast was inviting. In addition, birds, shellfish, and in some places large colonies of seals provided potential subsistence resources.

If the latter resources were little exploited by humans, the explanation must be sought in the context of costs and benefits. Guanacos were very abundant, were easy to find and to capture, provided sufficient food for small bands, and offered other advantages, especially warm and flexible hides. Consequently, it is not surprising that there was increasing specialization and dependence on them in Patagonia. On the Pampa, in contrast, where guanacos were less numerous and opportunities for gathering were somewhat greater, the economy remained more generalized. (This adaptation may have been fostered by an influence or cultural tradition with a different origin and slightly more advanced technology than that prevailing in Patagonia and northern Tierra del Fuego).

HISTORY OF INVESTIGATION

Four stages can be identified in the study of the prehistory of the Pampa–Patagonia region [for more details and a somewhat different periodization, see Fernández (1982)].

Stage 1

Characterized by preoccupation with archaeological objects as relics of interest for themselves, with no attention to their contexts, this stage was dominated by Félix F. Outes, Luis M. Torres, Francisco de Aparicio, and M. A. Vignati. Publications consist mainly of tedious descriptions. Not only was there no excavation, but sites were seldom even visited. Reacting against the outrageous speculations formulated by Florentino Ameghino, there was a general strong reluctance to attribute any antiquity to the artifacts. Junius Bird (1938, 1946) was the only exception, but his excavations in Patagonia and Tierra del Fuego were neither followed up nor published in detail.

Stage 2

The second stage began about 1948. It is transitional in being dominated by an obsession for identifying diagnostic or "index specimens" but characterized by the growing recognition that archaeological remains derive their value from their chronological and cultural contexts. A fashion developed for defining "cultures" and assigning them temporal–spatial coordinates. Concomitantly, fieldwork became increasingly respectable (both surface collection and excavation). Laboratory analysis, however, remained rudimentary. This stage is exemplified by the work of Menghin and his followers: Bórmida, Sanguinetti de Bórmida, Austral, Cardich, Gradin, and Casamiquela. The parallel activities of Emperaire and Laming-Emperaire in southern Patagonia must also be mentioned.

In 1950, the excavations at Gruta del Oro by Menghin and Bórmida provided the first stratigraphic evidence for the relative antiquity of human occupation of the Pampa, attributed to the middle Holocene. Two years later, Menghin (1952b) published a brief but significant work on the sequence in the caves of Los Toldos. In 1960, he postulated the existence of a very different industry, which he called "Riogalleguense," and in 1962, he published a description of archaeological materials presumed to be Araucanian. Finally, he produced and refined the first systematic overview of Patagonian rock art (Menghin, 1952a, 1957a).

Based on this work, Menghin (1957b) proposed a scheme for the prehistory of the Pampa and Patagonia that recognized two coexisting groups of industries, which he characterized as "epiprotolithic" and "mio-epimiolithic." In North American terminology, they would constitute traditions. By these designations, Menghin implied that the first group was similar morphologically to industries of the Euroasiatic Lower and Middle Paleolithic and thus

denoted the cultural simplicity of "lower" hunter-gatherers. The second group incorporated archaeological manifestations indicating a technological level similar to that of the Upper Paleolithic hunters. Menghin was careful to specify that these morphological similarities did not imply chronological contemporaneity with the Old World complexes but, rather, represented marginal survivals. He postulated an antiquity of some 12,000 years for the earliest epiprotolithic remains in Patagonia, which included the Riogalleguense and other lesser-known complexes. the Toldense, Casapedrense, and Patagoniense industries were assigned to the mio-epimiolithic. The bearers of the latter tradition and the inhabitants of the Pampa were influenced during late pre-Columbian times by more advanced sedentary populations living farther north. More recently, they were subjected to Araucanian and European influences (the latter including the horse, which caused a fundamental transformation of the aboriginal way of life).

Menghin's framework guided the efforts of his followers. The names of industries proliferated, some of them valid and others questionable. The majority was assigned to the epiprotolithic, including the Blancagrandense, Bolivarense (Bórmida, 1961, 1963–1966) Sanmatiense, Puntarrubiense, Jabaliense (Bórmida, 1962, 1964, 1969), Jacobaccense (Casamiquela, 1961), Protosanmatiense and Neuquense (Sanguinetti de Bórmida and Schlegel, 1972; Sanguinetti de Bórmida, 1974).

Stage 3

The third stage began during the mid-1970s. The method developed in France by Bordes began to be applied systematically to define industries, replacing the index specimen approach with statistical analyses and typological ratios. "Cultures" continued to play the role of protagonists and the principal vector of analysis remained tracing their transformations, but more emphasis was placed on achieving a better understanding of the configurations already identified than on discovering new ones. In addition, there was a growing conviction that fieldwork must be complemented by intensive analysis, especially morphological and technological. The excavations conducted by Gradin, Aschero, and Aguerre in the Alero de las Manos Pintadas, Cueva de las Manos, Cueva de Arroyo Feo, La Martita, etc., are important landmarks in the advancement of knowledge of the archaeology of continental Patagonia (cf. Gradin *et al.*, 1977, 1981; Aschero, 1975). Simultaneously, Orquera, Sala, Piana, and Tapia began applying similar approaches to the investigation of the Beagle Channel region at the sites of Lancha Packewaia and Túnel (Orquera *et al.*, 1977).

Stage 4

Since 1980, a fourth stage has begun to emerge, in which the archaeology of the Pampa and Patagonia will finally achieve a solid scientific foundation. The orthodox Menghinian ideas are being increasingly disputed, the historical–cultural framework is giving way to ecological perspectives, the search for occupational surfaces is replacing the recovery of objects as the goal of excavation, and typological and morphological studies are increasingly being amplified by data from other disciplines (especially faunal analyses). Interests and methods do not always coincide, but differences at least offer the basis for comparisons. Aschero, Aguerre, and Gradin are concentrating on the effects of distinct topographic contexts on the archaeological complexes in central Patagonia. Orquera and Piana are refining procedures of excavation and examining the interrelationship between technology and environment along the Beagle Channel. Borrero is formulating models of adaptation to northern Tierra del Fuego and southern continental Patagonia, centering on use of the fauna. Politis is forcing reexamination of the prehistory of the Pampean subarea by his excavations in southern Buenos Aires Province. Interest in high-magnification microwear studies is growing (Mansur-Franchomme, ms.). These and many other investigations in progress illustrate the dynamic nature of present research in the Pampa–Patagonia area, which should produce significant results in the coming years.

TRADITIONS AND SUBTRADITIONS

Although Menghin's scheme of two parallel traditions received considerable elaboration by his followers, especially Bórmida and Sanguinetti de Bórmida, it rested on many assumptions that were never examined critically. Consequently, it was distrusted by investigators in other regions, although none except Bate (1982) challenged it seriously. For those working in Pampa–Patagonia, the weight of Menghin's authority was such that his ideas were accepted without question. Madrazo (1968, 1973) was an exception, but his objections were not soundly formulated (Orquera and Piana, 1982).

Toward the end of the 1970s, covert dissatisfaction began to develop, along with alarm at the elaboration that the scheme had achieved. In 1982, Orquera pointed out that the postulated Neuquense and Riogallense industries, on which the belief in an ancient epiprotolithic tradition rested, do not necessarily represent total inventories of self-sufficient groups but are more likely to constitute workshop debris: furthermore, their antiquity is less secure than commonly believed (cf. Bate, 1982). Orquera also showed that other supposedly epiprotolithic industries of northern Patagonia were given

this identification by arbitrarily separating their components. All technologically more advanced elements (projectile points, pottery, grinding stones, lip and ear ornaments, engraved plaques, rubbing stones, intentional cranial deformation, and certain art styles) were attributed to late influences on a substratum consisting only of rudimentary forms of stone working. If these traits are viewed instead as an integrated complex, it seems plausible to interpret them as denoting expansions by archaic-level hunter-gatherer groups that had long inhabited northwestern Argentina.

These considerations led Orquera to recognize two subareas, the Pampa and Patagonia, the latter including three cultural lineages (to which must be added the late Araucanian penetration from the west). The underlying conception differs from Menghin's in attempting to incorporate the idea of progressive adaptation to the environment. With the exception of the distinctive Magellan–Fuegian Channels and Islands tradition, these lineages have not been given names (Fig. 4). The paucity of relevant data makes this classification exploratory and tentative; its theoretical foundation has been more fully developed elsewhere (Orquera, 1984).

In Orquera's reconstruction, the backbone of prehistory in the Patagonian subarea is provided by an initially undifferentiated cultural–adaptive tradition [in the sense used by Willey (1966, p. 4)] that soon separated into three divergent branches. The earliest evidence of human presence suggests an incipient adaptation to the potentialities of the environment. A slight degree of technological specialization becomes discernible in the Toldense phase of central Patagonia (Menghin, 1952b; Aguerre, 1979); unfortunately, little is known about the approximately contemporary Magellan III phase (Bird, 1938).

More efficient means of exploitation began to develop between 7200 and 6000 B.P., if the dates for the Casapedrense (Cardich *et al.*, 1973, p. 97) and Magellan IV phases (Bird, personal communication) of central and southern Patagonia are reliable. Similar indications of experimentation are observable in the contemporary remains from Bahía Buena, Punta Santa Ana (Ortiz Troncoso, 1980), and Túnel (Orquera *et al.*, 1977, 1982) in the extreme south. These culminated in three distinct patterns of resource utilization. It is premature to suggest causes for this diversification because there appear to have been no important climatic alterations; the status of archaeological investigations prevents recognizing possible demographic changes, and the assumption that it represents the "maturation" of culture or adaptation is an unsatisfactory and inadequate explanation.

In the Patagonia subarea, the least innovative solution was adopted in the south by populations associated with the Magellan IV phase (Bird, 1938; Massone, 1981). Technological changes were more marked in the Casapedrense phase of central Patagonia (Chubat and Deseado basins), which

developed a refined blade technology and a high level of standardization (Menghin, 1952b; Cardich *et al.*, 1973). During the succeeding Patagoniense phase (Aschero, 1975; Gradin *et al.*, 1977, pp. 234–244, 1981, pp. 214–220; Aschero *et al.*, 1983), blades were less elaborated but other indices of specialization are discernible.

What little is known about northern Patagonia suggests a similar but slower process. Although this branch exhibits greater technological refinements than the one represented by the Magellan IV phase, both concentrated on terrestrial resources. The primary emphasis was on guanacos, which were intensively exploited for meat and hides (rarely for bones).

The third branch, labeled the Magellan–Fuegian Channel and Island tradition (Orquera *et al.*, 1984), specialized on coastal resources. In the absence of other evidence, Orquera and Piana prefer to consider "least improbable" the possibility that this tradition evolved from the little-known Magellan III phase. Although the high natural productivity of this habitat provided an inducement, the immediate causes of the changes in the way of life and technology are unknown.

After crystallizing, these three evolutionary lines persisted for millennia essentially unchanged. At present, there is reason to believe that by about 6000 B.P. an equilibrium with the environment had been achieved, which was not subject to serious internal or external pressures. As a consequence, there was no incentive to develop more intensive methods of exploitation. Of course, there were some changes. The artifacts of the Casapedrense phase are not the same as those of the Patagoniense, and differences can be observed between the materials from Túnel, Bahía Buena, and Punta Santa Ana and those of the Recent phase of the Beagle Channel. Nevertheless, over and above such technological changes and stylistic drifts, the general impression produced by the archaeological evidence is one of stability in the way of life and the intensity with which the environment was exploited during the past six millennia. Only the arrival of Europeans brought this situation to an end.

The trajectories were different in the Pampa subarea and adjacent parts of northern Patagonia. Orquera has reserved judgment concerning the earliest archaeological manifestations, discounting the Protosanmatiense industry (Aguerre, 1975) because of inadequate information. Although the later complexes are also poorly defined, they suggest an adaptation less focused on guanacos than to the south and associated with a lithic technology including more pecking and/or polishing. The way of life implied by the archaeological remains is similar to that of archaic or preformative groups to the north (for comparison, see González, 1962) and may have involved seasonal long-distance displacements to the coast. Here too, the indigenous way of life was disrupted by pressure from Europeans on the margins of the area and the propagation of cattle and

horses. A related source of innovations was provided by Araucanian influences from the west at the beginning of the eighteenth century, which spread like an oil slick over most of the Pampa and northern Patagonia (Fig. 21).

For central Patagonia, Gradin (1982a) has developed a synthesis based on the Toldense–Casapedrense–Patagoniense continuum proposed by Menghin. He sketched two subtraditions that partly overlap chronologically: (1) the Toldense, which includes the phase with this name and its continuations to 3000 B.P., which are referred to later in this article as "Río Pinturas IIa," and (2) the Casapedrense, which embraces the phase of the same name, the Patagoniense, and the transitional Río Pinturas III level. The Magellan IV phase to the south was considered distinct.

Gradin's scheme has been refined by Aschero (1984), who postulated two "regional traditions": (1) Río Pinturas, composed of the Toldense phase and the Río Pinturas IIa level, and (2) Central Patagonian, incorporating two successive complexes, the Blade Industry Complex (Complejo de las Industrias Laminares) embracing the Casapedrense and Protopatagoniense phases, and the Patagoniense Complex.

Both Orquera and Aschero assume that technological and stylistic peculiarities reflect distinctive adaptive strategies. Criteria necessary for demonstrating functional and adaptive contrasts are still too scarce, however, to verify this correlation. Consequently, our regional divisions should be considered primarily a model for organizing the available data [for a critical comment, see Borrero (1984c)].

EARLY COMPLEXES OF CENTRAL AND SOUTHERN PATAGONIA

Los Toldos, Level 11

The earliest documented presence of humans is at Los Toldos, Cave 3, Level 11, which has a carbon-14 date of 12,600 B.P. ± 600 years (Table I) (Cardich *et al.*, 1973, pp. 116–121; Cardich, 1977). The site is in central Patagonia, in the band of mesetas halfway between the Andes and the Atlantic, and about 40 km from the nearest river valley (Fig. 8). The lithic inventory includes end scrapers, side scrapers, and unretouched flakes with edge damage. Neither bifaces nor projectile points have been reported (Fig. 9). A thorough technomorphological study conducted by Flegenheimer (Cardich and Flegenheimer, 1979) reveals slight technological refinement: little preparation of striking platforms, a predominance of short and broad flakes, generally large dimensions, etc. Nevertheless, pressure

Table I. Radiocarbon Dates Related to the Early Inhabitants of the Pampa and Patagonia and to the Toldense Subtradition

Lab. No.	Site	Bed or level	Phase or industry	Material analyzed	Age B.P.	Reference	Evaluation
BVA-Arsenal	Los Toldos Cave 3	11	Not named	Charcoal	12,600 ± 600	Cardich *et al.* (1973, p. 97)	
I-3988	Fell's Cave	20	Magellan I	Unknown	11,000 ± 170	Bird (1969, 1970)	
W-915	Fell's Cave	19	Magellan I	Charcoal	10,720 ± 300	Bird (1969, 1970)	
I-11741	*Cerro La China, site 1*	ppal	Not named	Charcoal	10,720 ± 150	Flegenheimer (1982, p. 175)	
Dic-2733	Tres Arroyos	Vb	Not named	Bone	10,420 ± 100	Massone (1983)	
Dic-2732	Tres Arroyos	Va	Not named	Bone	10,280 ± 110	Massone (1983)	
I-5146	Fell's Cave	18	Magellan I/II	Unknown	10,080 ± 160	Bird (pers. comm.)	
Kn-1432	Cuyin Manzano	VII	Not named	Charcoal	9,920 ± 85	Ceballos (1982, p. 31)	
Gif-1023	*Marazzi rockshelter*	inf.	Not named	Charcoal	9,590 ± 210	Laming-Emperaire (1968, p. 67)	
CSIC-514	Arroyo Feo Great Cave	11	Toldense	Charcoal	9,410 ± 70	Alonso *et al.* (1986)	
CSIC-396	Arroyo Feo Great Cave	11 base	Toldense	Charcoal	9,330 ± 80	Gradin *et al.* (1981, p. 204)	
CSIC-138	Cueva de las Manos	6 middle	Toldense	Charcoal–wood	9,320 ± 90	Gradin *et al.* (1976, p. 221)	
CSIC-385	Cueva de las Manos	6 base	Toldense	Charcoal	9,300 ± 90	Aguerre (1978, p. 131)	
LP-62	Traful I Cave	13	Not named	Charcoal	9,285 ± 313	Curzio *et al.* (1980)	Dubious
I-5144	Fell's Cae	13	Magellan II	Unknown	9,100 ± 150	Bird (pers. comm.)	
I-5145	Fell's Cave	17	Magellan II	Unknown	9,030 ± 230	Bird (pers. comm.)	
BVA-Arsenal	Los Toldos Cave 3	9	Toldense	Charcoal	8,750 ± 480	Cardich *et al.* (1973, p. 97)	
C-485	Palli Aike I Cave	–	Magellan I? II?	Charred bone	8,639 ± 450	Bird (1952, p. 23)	Dubious
I-12067	Casa de Piedra 1	2.10 m	Early Components	Charcoal	8,620 ± 190	Gradin (1984, p. 42)	
CSIC-6660	Arroyo Feo Great Cave	11 middle	Toldense	Charcoal	8,610 ± 70	Alonso *et al.* (1986)	
LP-55	Arroyo Seco 2	Z	Lower Component	Collagen	8,558 ± 316	Politis (unpubl. thesis, p. 204)	
CSIC-516	Arroyo Feo Great Cave	11	Toldense	Charcoal	8,410 ± 70	Alonso *et al.* (1986)	
LP-53	Arroyo Seco 2	Z	Lower Component	Collagen	8,390 ± 240	Tonni *et al.* (1980)	
I-5142	Fell's Cave	10	Magellan III	Unknown	8,180 ± 135	Bird (pers. comm.)	
CSIC-506	La Martita Cave 4	7b	Toldense	Charcoal	8,050 ± 50	Aguerre (1982)	
I-11903	La Martita Cave 4	7b	Toldense	Charcoal	7,940 ± 260	Aguerre (1982)	
LJ-5133	Traful I Cave	13	Not named	Charcoal	7,850 ± 70	Crivelli and Silveira (1983)	
BM-1207 A	Eberhardt Cave	8	Not identified	Bone	7,785 ± 747	Saxon (1978, Fig. 2b)	
AC-497	Cárdenas rockshelter	7 base	Toldense		7,750 ± 125	Alonso *et al.* (1986)	
CSIC-372	Las Buitreras Cave	V base	Not named	Unknown	7,670 ± 70	Sanguinetti de Bórmida and Borrero (1978)	
I-12159	Casa de Piedra 1	2.07 m	Early Components	Charcoal	7,560 ± 230	Gradin (1984, p. 42)	
AC-499	Cárdenas rockshelter	7 base	Toldense	Charcoal	7,300 ± 200	Alonso *et al.* (1986)	
NOVA-117	Cueva de las Manos	6 top	Toldense	Charcoal	7,280 ± 60	Gradin and Tamers (1975)	
Beta-2517	Túnel I	Lower F	First Component	Charcoal	6,980 ± 110	Orquera *et al.* (1982)	

I-12153	Traful I Cave	15	Not named		6,870 ± 250	Crivelli and Silveira (1983)	Minimum age
AC-563	Cerro Casa de Piedra I Cave	6 top	Not identifiable		6,780 ± 110	Alonso *et al.* (1986)	
I-5138	Fell's Cave	No inf.	Magellan III	Unknown	6,740 ± 130	Bird (cited by Ortiz Troncoso, 1977–1978)	
AC-674	Túnel I	Lower F	First Component	Sediment	6,680 ± 210	Orquera and Piana (unpublished)	
I-5141	Fell's Cave	8	Magellan III? IV?	Unknown	6,560 ± 115	Bird (pers. comm.)	
Beta-7824	Ea. La Moderna	A′	Not named	Collagen	6,550 ± ?	Politis (unpubl. thesis, p. 173)	Rejected
I-5140	Fell's Cave	8	Magellan III? IV?	Unknown	6,485 ± 115	Bird (pers. comm.)	
Gif-1048	Ponsonby	D	Not named	Charcoal	6,370 ± 160	Laming-Emperaire (1968, p. 82)	
CSIC-518	Arroyo Feo Great Cave	9 base	Río Finturas II a	Charcoal	6,000 ± 60	Alonso *et al.* (1986)	
SI-5482	Arroyo Seco 2	Z	Lower Component	Collagen	5,910 ± 55	Politis (unpubl. thesis, p. 204)	Rejected
CSIC-397	Arroyo Feo Great Cave	9	Río Pinturas II a	Charcoal	5,900 ± 50	Gradin *et al.* (1981, p. 209)	
BM-1204a	Eberhardt Cave	7	Not identifiable	Charcoal	5,684 ± 52	Saxon (1978, Fig. 2b)	
BM-1204b	Eberhardt Cave	7	Not identifiable	Charcoal	5,643 ± 60	Saxon (cited by Borrero, 1980, p. 12)	
Gif-1033	Marazzi rockshelter	4	Not named	Charcoal	5,570 ± 400	Laming-Emperaire (1968, p. 87)	
BM-1201b	Eberhardt Cave	7	Not identifiable	Charcoal	5,395 ± 58	Saxon (cited by Borrero, 1980, p. 12)	
BM-1201a	Eberhardt Cave	7	Not identifiable	Charcoal	5,366 ± 55	Saxon (1976, p. 71)	
No inf.	Las Buitreras Cave	V top	Not named	Unknown	4,310 ± 110	Sanguinetti de Bórmida (cited by Mengoni, 1981, p. 66)	
AC-498	Cárdenas rockshelter	5 base	Río Pinturas II a	Charcoal	3,450 ± 110	Alonso *et al.* (1986)	
NOVA-116	Cueva de las Manos	5	Río Pinturas II a	Charcoal	3,380 ± 90	Gradin and Tamers (1975)	
AC-565	Las Cuevas 2	–	Río Pinturas II a	Charcoal	2,510 ± 110	Mengoni (1984)	
SI-5482	Arroyo Seco 2		Lower Component	Collagen	1,800 ± 110	Politis (unpubl. thesis, p. 204)	Rejected
CSIC-511	Alero del Buho	5	Toldense	Charcoal	1,520 ± 50	Alonso *et al.* (1986)	Rejected

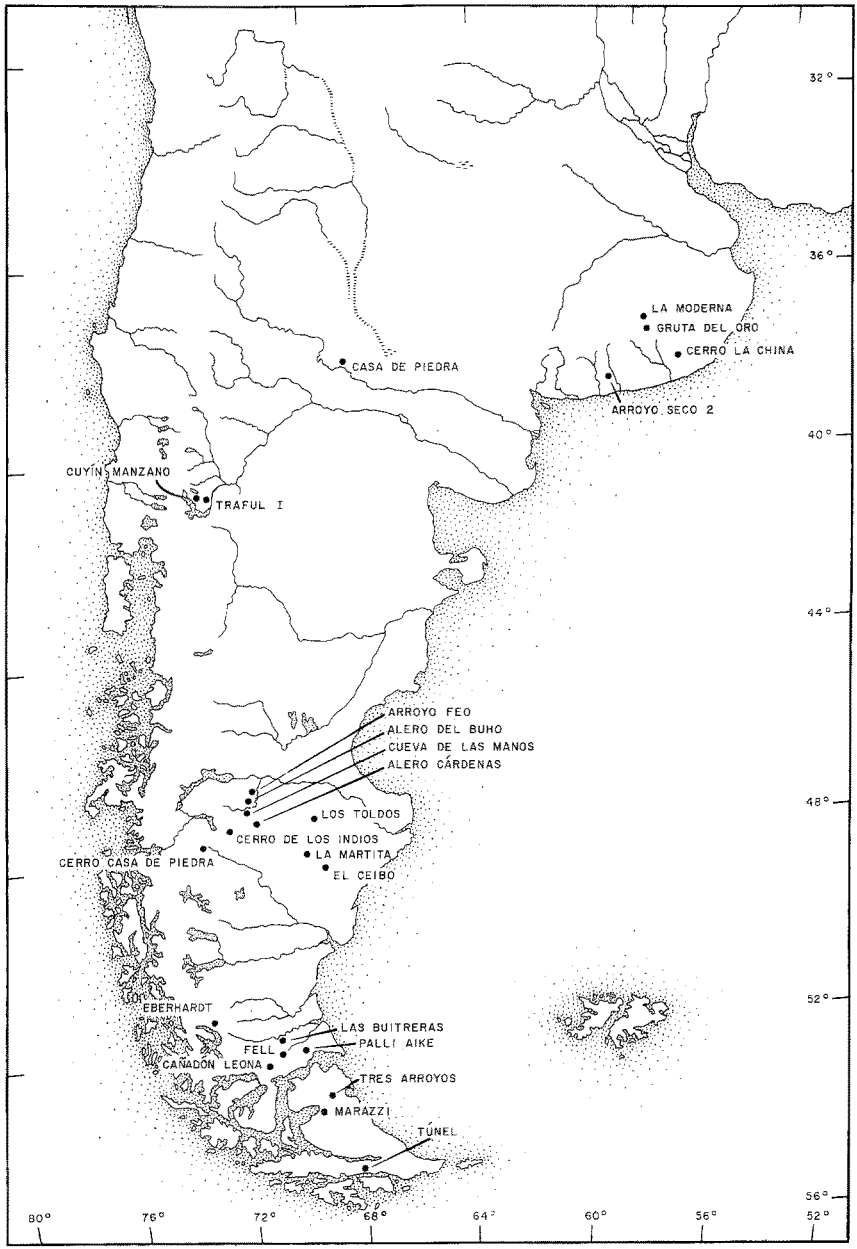

Fig. 8. Locations of sites with early and Río Pinturas IIa occupations.

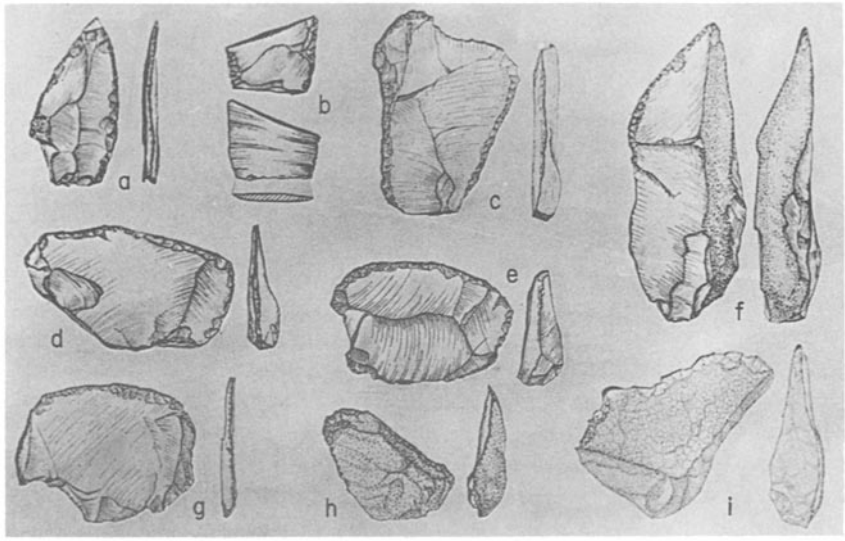

Fig. 9. Lithic implements from Los Toldos Level 11: a, convergent side scraper; b and c, double side scrapers; d–i, simple side scrapers (after Cardich *et al.*, 1973; Cardich, 1977).

retouch was well controlled. Cardich and Flegenheimer maintain that the potential was present for the elaborations that characterize the later Toldense phase.

It is not certain whether this complex represents the general techno-typological status of the first human settlers in the region or a local manifestation associated with exploitation of the immediate habitat. Similar elements—short and broad flakes, edge retouch, absence of projectile points and other bifacial stone objects—have been encountered in similar stratigraphic positions elsewhere in Patagonia, including Level 11 in Cueva Grande del Arroyo Feo, Level 5 in Alero del Buho (Gradin *et al.*, 1981, pp. 204–209), and Level 12 in El Ceibo Cave 7 (Cardich *et al.*, 1983). A technotypological study of the latter complex by Mansur-Franchomme and Giesso revealed numerous similarities with Level 11 at Los Toldos, which is 150 km away, but there are no carbon-14 dates for El Ceibo as yet. Level 11 of Arroyo Feo has three dates between 9410 ± 70 and 8410 B.P. ± 70 years, placing it much later than Los Toldos, Level 11, and contemporary with the Toldense levels in the nearby Cueva de las Manos, which contain bifacial projectile points. This situation led Gradin, Aschero, and Aguerre to disassociate the Arroyo Feo and Alero del Buho complexes from Los Toldos, Level 11, and to group them with the Río Pinturas I in the Toldense phase (Gradin *et al.*, 1981, p. 220; Gradin, 1982a, p. 182).

The Magellan I Phase

Succeeding Los Toldos, Level 11, the earliest documented artifacts are from the lowest stratum of Fell's Cave. This site and the neighboring Palli Aike Cave are in the extreme south of continental Patagonia, near the Strait of Magellan (Fig. 1), and were excavated by Bird in 1937. The finds in the deepest layers, briefly described in 1938, were attributed in Period I in a sequence of five periods formalized by Bird in 1946. Willey (1960, 1971, pp. 43–45; also Krieger, 1964) later designated this complex the Magellan I phase. The most distinctive artifact is a stemmed, round-shouldered projectile point; end and side scrapers and two discoidal objects of polished lava are associated. Three carbon-14 dates have been obtained: 10,720 ± 300, 11,000 ± 170 (Bird, 1969, 1970), and 10,080 B.P. ± 160 years (I-5146), the latter marking the end of the occupation (Bird, personal communication), but their stratigraphic correlations have not been specified. Bird found similar artifacts in Palli Aike, for which he obtained a more recent and dubious date of 8639 B.P. ± 450 years (Bird, 1951, p. 23). The Fell's Cave excavations were expanded by the land owner, John Fell (to obtain samples for dating at the request of Bird), by Bird, by Emperaire, and after the latter's death, by Laming-Emperaire, who described the small collections made by her and Fell (Emperaire *et al.*, 1963).

The Magellan I complex is difficult to evaluate. It has been found only in two sites and the few dates are early. The lithics are poorly known, lacking technomorphological and functional analyses. It is evident, however, that blades do not occur, scrapers were not standardized, side scrapers predominate over end scrapers, and bone tools consist principally of splinters with minimal intentional shaping. The possibility that this inventory represents only part of a larger toolkit cannot be excluded, but applying terms such as "specialized," "advanced," and "miolithic" to the Magellan I phase requires the uncritical assumption that projectiles imply specialized hunting. The composition of the known inventory, however, suggests only a very incipient degree of specialization.

The type of projectile point characteristic of this phase has often been used for tracing the dispersal of hunters using stone-tipped projectiles over South America. Other examples have been encountered in Ecuador (El Inga), Peru (Huanta), and several places in Panama, Venezuela, Colombia, Brazil, Uruguay, and Argentina (Bird, 1969; Schobinger, 1969, pp. 108–118, 1972; Willey, 1971, pp. 44–45; Madrazo, 1972; Cardich, 1977, p. 166; Silveira, 1978). After 1969, these points became known as "fishtail" (Bird, 1969, 1970; Schobinger, 1969, pp. 108–118). Unfortunately, many are surface finds whose antiquity and cultural contexts are unknown, and some have poorly finished stems that make their identification questionable. In my opinion, the

existence of such a "horizon" is problematical, although additional support is provided by a date of 10,720 B.P. ± 150 years (Flegenheimer, 1982) for an example from Cerro La China in the Pampa subarea, if the association is valid.

The Toldense or Río Pinturas Subtradition

In southern Patagonia, the Magellan I phase was followed by Magellan II. In central Patagonia, the Toldense phase developed contemporaneously (Figs. 10 and 11). Its name derives from the caves of Los Toldos, where it was first defined (Menghin, 1952b). The excavations were expanded by Cardich (1977; Cardich *et al.*, 1973). Closely similar materials have been described from Layer 6 in Cueva de las Manos (Gradin *et al.*, 1977, 1981, pp. 207–208; Aguerre, 1978), Level 7b in Cueva La Martita (Aguerre, 1982), Levels 9 and 10 in Cueva Grande del Arroyo Feo (Aguerre, 1983), Layers 6 and 7 in Cárdenas Rockshelter (Gradin, 1982b), and Cerro Casa de Piedra (Aschero, 1983a). I have already mentioned that Gradin *et al.* (1981) include the

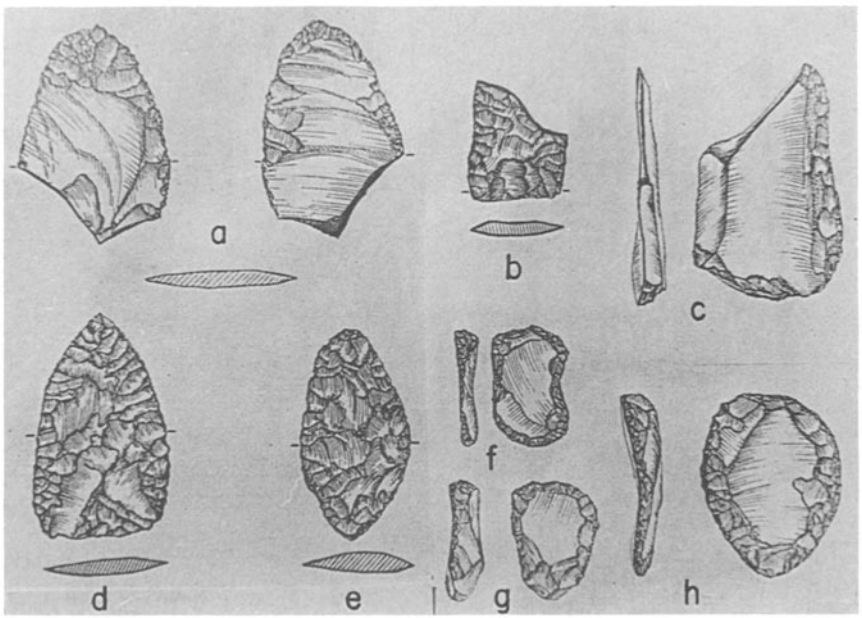

Fig. 10. Toldense-phase lithic implements from Los Toldos 3 Cave: a, e, bifacially flaked tools; b, d, projectile points; c, side scraper; f–h, end scrapers (after Cardich, 1977).

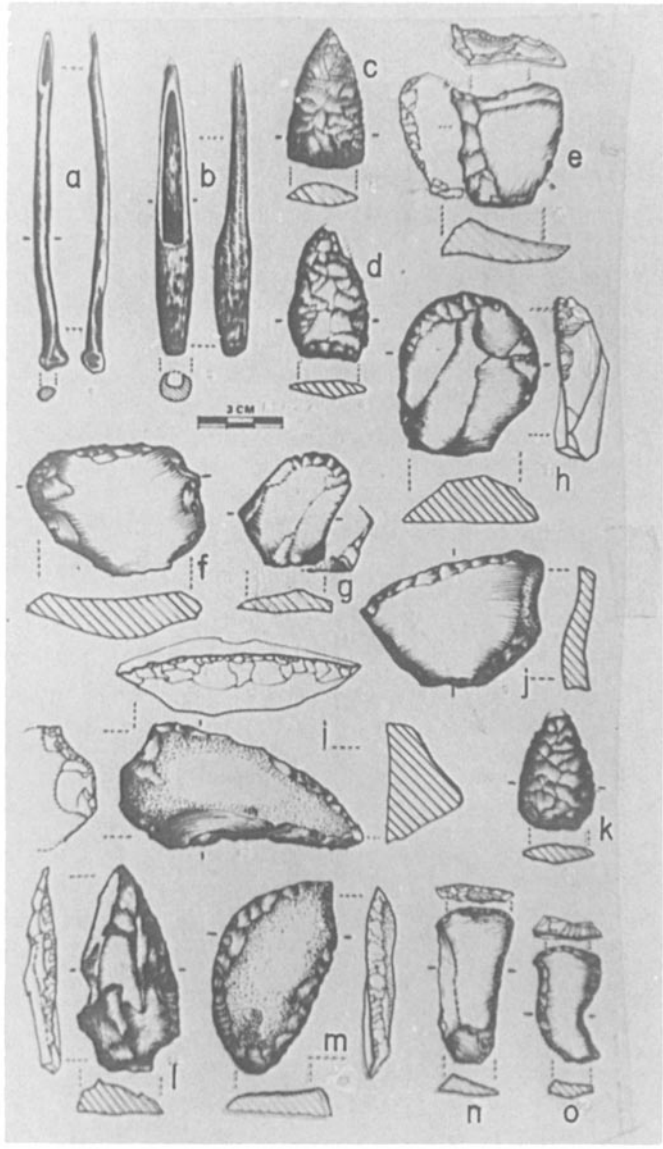

Fig. 11. Toldense-phase implements from Cueva de las Manos and Arroyo Feo Great Cave: a and b, bone awls; c, d, and k, triangular projectile points; e, borer; f–h, n, and o, end scrapers; i, j, l, and m, side scrapers (after Cardich, 1977).

materials from Level 11 at Arroyo Feo (Aguerre, 1983, pp. 214–225) and Level 5 in Alero del Buho in this subtradition. They assign the sites in the Río Pinturas basin to a subregional sequence and designate the early contexts Río Pinturas I.

Cueva de las Manos, Alero del Buho, and Cárdenas are in the precordilleran zone; Los Toldos, La Martita, and El Ceibo are in the central mesetas (Fig. 6). The Solanense industry proposed by Menghin (1952b) *may* be related to this subtradition, but it is represented only by poorly described surface materials from the Atlantic coast.

The Toldense materials are much better analyzed and described morphotechnologically and typologically than those of the Magellan I phase (Gradin *et al.*, 1977; Aguerre, 1978, 1979; Cardich and Flegenheimer, 1979). After comparing the assemblages at Los Toldos and Cueva de las Manos, Aguerre cites the following general characteristics:

(1) a predominance of colored siliceous rocks, with much smaller amounts of obsidian and basalt;
(2) an industry based on flakes, the presence of cores with two or more percussion surfaces and multidirectional removal of flakes, and a very low frequency of true blades;
(3) an absence of morphological standardization, with tools retaining the initial outline of the flake, and a tendency toward large size;
(4) a predominance of scaly marginal retouch and the presence (most notable at Los Toldos) of parallel or subparallel bifacial retouch;
(5) a predominance of scrapers and knives, with end scrapers more common than side scrapers at Los Toldos and the reverse ratio at Cueva de las Manos;
(6) distinctive (but not necessarily abundant) end scrapers with restricted active edges ("snouted" and "shouldered" in European terminology), triangular unstemmed projectile points, and bifacial side scrapers and a few end scrapers with short frontal edges anticipating the Patagoniense:
(7) a simple bone industry (awls and flakers); and
(8) rock art, attested by bits of stone from the wall incorporated in sediments containing Toldense artifacts (Aguerre, 1979).

The Toldense occupation at Los Toldos ended about 8750 B.P. $\pm$ 480 years (Cardich *et al.*, 1973, pp. 97 and 113), so the inception may have been considerably earlier. Hearths in the lower and middle parts of Layer 6 (Level Ia) at Cueva de las Manos have been dated 9320 $\pm$ 90 and 9300 B.P. $\pm$ 90 years, and the upper part of the same layer (Level Ib) was dated 7280 B.P. $\pm$ 60 years (Gradin and Tamers, 1975; Gradin *et al.*, 1977, pp. 221 and 247; Aguerre, 1978, p. 131). Dates similar to the latter have been obtained from Cárdenas, Layer 7 [7750 $\pm$ 125 and 7300 B.P. $\pm$ 200 years

(Alonso *et al.*, 1986)]. The upper part of Level 6 at Cerro Casa de Piedra gave an even more recent date (6780 B.P. ± 110 years).

At Los Toldos and other sites, characteristic Toldense materials were soon replaced by tools of Casapedrense appearance, but elsewhere Toldense traits persisted for a considerable time. The Río Pinturas IIa assemblage, represented by Layer 5 of Cueva de las Manos, Layers 10 and 9 of Arroyo Feo, and Layer 5 of Cárdenas, is very similar although the carbon-14 dates range between 6000 ± 60 and 3380 B.P. ± 90 years (Gradin and Tamers, 1975; Gradin *et al.*, 1977, pp. 221 and 248, 1981, p. 209; Alonso *et al.*, 1986). Levels 4 to 1 of Cerro Casa de Piedra may also belong here (Aschero, 1983a). Although Toldense resemblances include very subtle aspects of technomorphology and typology, the pronounced chronological difference initially led the investigators of Cueva de las Manos to label Layer 5 "transitional" [preferring to place greater weight on the few elements anticipating the later Patagoniense phase (Gradin *et al.*, 1977, pp. 232–234; Aguerre, 1978, pp. 139–140)]. Subsequently, they emphasized the persistence of ancient traits (Gradin *et al.*, 1981, pp. 209 and 221) and this continuity was the foundation for Gradin's (1982a, p. 185) Toldense tradition (later termed the Río Pinturas tradition by Aschero).

The Magellan II and III Phases

Discouragingly little is known about these two phases proposed by Bird (1938, 1946) and rebaptized by Willey (1971). Phase II was initially characterized by the absence of stone projectile points, the presence of bone points, an abundance of awls, and changes in associated fauna (Bird, 1938, 1946). Reexcavations in Fell's Cave, however, have produced discrepancies. Three triangular points were encountered in sediments correlated with those Bird assigned to Phase II; also, Emperaire and Laming found no bone artifacts, although this may be attributable to the small scale of their excavations (Emperaire *et al.*, 1963, pp. 176–177 and 211–216). Samples obtained by Bird provided dates of 9030 ± 230, 9100 ± 150, and 8180 B.P. ± 135 years, the latter equating with the boundary with the subsequent phase (Table I).

The Magellan III phase, represented in Fell, Palli Aike, and Cañadón Leona, is also little known apart from the diagnostic triangular points (typically short) associated with bola stones (Bird, 1938). Subsequent excavations by Fell and by Emperaire *et al.* (1963, pp. 177–178 and 217–223) provided additional but still insufficient information to describe the industry. Side and end scrapers (the former slightly more common than the latter) and bolas seem to have been abundant. Subtrapezoidal and/or thumbnail scrapers, characteristic of the late phases in Patagonia, begin to appear. A

few artifacts not reported by Bird have subsequently been encountered, notably rare stemmed and barbed stone points. Bird (personal communication) obtained a date of 8180 B.P. ± 135 years for the inception of Phase III and 6560 B.P. ± 115 years for the boundary with Phase IV. Gradin (1982a, p. 184) has suggested a relation between Phase III and Level 5 of Las Buitreras, excavated by Sanguinetti de Bórmida (1977).

Relationships Between the Magellan I and the Toldense Phases

Menghin (1952b) correlated the lowest levels he encountered in the Los Toldos caves with the lowest levels of Fell and Palli Aike and postulated a subdivision of the Toldense industry into Subphase I (Los Toldos) and Subphase II (Fell and Palli Aike). With a few reservations, Bird (1969, 1970; see also Schobinger, 1969, p. 112) accepted this relationship. When Cardich expanded the excavations at Los Toldos, however, it became evident that fishtail points (which had initially seemed to characterize the Toldense industry at this site) were much less common than unstemmed triangular forms. Furthermore, naturalistic wall paintings and representations of hands were clearly associated with the lithic assemblage at Los Toldos, whereas they were absent around the Strait of Magellan (Cardich *et al.*, 1973, p. 114). Other differences have been pointed out by Aguerre (1979, p. 42). As a consequence, Cardich disassociated the Toldense of Los Toldos from the lower levels of Fell and Palli Aike, although he recognized their close relationship (Cardich, 1977, p. 166).

Pursuing this problem, Aguerre (1979) has asked, If we accept a correlation without assimilation between Toldense and Magellan I, why not consider the possibility of a close relation between Toldense and Magellan III? In this case, the chronological overlap is much greater and the predominant type of projectile in both phases is the unstemmed triangular form. Although the majority of the Magellan III points is shorter than the Toldense examples and there are other differences, regional variations between the Deseado and the Chico basins would be expected. According to Gradin *et al.* (1981, pp. 220–221), recent excavations in the Cárdenas shelter support this proposition.

Borrero (1984c) has offered a different interpretation, departing from the thesis that archaeological entities should be defined using complementarities at a regional level rather than recurrent associations. After analyzing the functions of several Toldense sites in the Deseado basin in different topographic contexts and representing generalized as well as specialized activities (Los Toldos, Cueva de las Manos, Alero del Buho), he concluded that the concept of a Toldense industry (phase) is viable. In the Chico basin (Fell's

and Las Buitreras caves) and other parts of southern Patagonia (e.g., Eberhardt Cave), however, only kill sites are known. Hence, Borrero contends that only one industry is identifiable (Toldense in the Deseado basin) and no valid comparative data exist from farther south. In short, the definition of "technological traditions" must await better descriptions of artifact complexes from sites representing a broader range of activities.

The Peopling of Tierra del Fuego

The northern part of the large island of Tierra del Fuego was also occupied early. Massone (1983) has published dates of 10,280 ± 110 and 10,420 B.P. ± 110 years (bone samples) from Layer V at Tres Arroyos, and Laming-Emperaire *et al.* (1972) obtained a date of 9590 B.P. ± 210 years for the lower levels at Marazzi. Unfortunately, in both cases the descriptions are brief and the artifacts appear undiagnostic. The time when the land connection across the Strait of Magellan was broken is still unknown.

The earliest reported occupation of the shores of the Beagle Channel is the First Component at Túnel, which has a date of 6980 B.P. ± 110 years (Orquera *et al.*, 1982; Piana, 1984). The assemblage shows neither evidence of adaptation to the maritime coast nor connections with subsequent complexes.

The Postulated "Riogalleguense" Industry

Although the existence of this industry as an autonomous cultural entity is improbable, it must be mentioned because it has been a focus of speculations and because it has frequently been included in general reviews (Krieger, 1964; Willey, 1971; Lynch, 1974). The data are extraordinarily weak and the reconstructions must be completely discarded. A "Riogallegoid" ancestry for the Magellan–Fuegian canoe Indians has been rejected (Orquera *et al.*, 1977, 1984). Menghin's (1963) assignment of the materials from the high terraces of Caleta Olivia to the Riogalleguense and their antiquity have been disputed by Borrero (1979). Finally, Bate (1982) and Orquera (1982) have criticized the definition, chronology, and various premises implicit in the whole conception.

Actually, this supposed cultural entity was postulated on the basis of very superficial examinations of small surface collections, the majority probably consisting of workshop debris. Furthermore, the importance of a type of side scraper based on relatively thick flakes and having scaly retouch on the long, usually convex margin was overemphasized. This artifact is widespread

in diverse cultural configurations of southern Patagonia and Tierra del Fuego. It has been somewhat fancifully designated "Mousteroid" and improperly made the core of a whole cultural tradition, although its stylistic features are too general to be significant.

EARLY INDUSTRIES OF NORTHERN PATAGONIA

If the route of penetration into Patagonia was from the north, northern Patagonia should provide abundant evidence of early human presence. This is not the case. The earliest known remains are from the lower levels of the Cuyín Manzano and Traful I, caves in close proximity at the edge of the cordillera (Fig. 8). In Cuyín Manzano, the initial occupation is represented by a hearth and a few artifacts dated 9920 B.P. ± 85 years (Ceballos, 1982). The succeeding level produced unstemmed triangular points and could not be dated, but Ceballos considers it considerably later. Level 13 in Traful I contained stemmed points and nonstandardized end scrapers. The first carbon-14 result was 9285 B.P. ± 315 years, but another sample from the same layer gave 7850 B.P. ± 70 years (Crivelli *et al.*, 1982a). The occupation has been interpreted as a guanaco-hunting station rather than a base camp. Level 13 does not constitute the earliest use of the site, however, since Layers 16 to 20 (undated) contained hearths, unretouched flakes, and other introduced materials (Crivelli *et al.*, 1982b).

A third site at a lower elevation is Casa de Piedra, on the north bank of the Río Colorado. Gradin conducted a salvage excavation and was able to detect changes in morphology among tools from the lithologically homogeneous sediments. The deepest levels, dated 8620 ± 190 and 7560 B.P. ± 290 years, contained atypical end scrapers, flakes with use damage, and objects that may be either choppers and bifaces or cores (Gradin and Aguerre, 1984b, p. 136).

Great antiquity and primitive technology have been assigned to the Neuquense (I and II) and Protosanmatiense industries (Sanguinetti de Bórmida and Schlegel, 1972; Sanguinetti de Bórmida, 1974), which were considered to represent an initial population characterized by unspecialized hunting and gathering. Bate (1982) and Orquera (1982) have criticized the typology, characterization, chronology, and subdivision of Neuquense and concluded that it is probably based on lithic workshop occurrences. Evaluation of the Protosanmatiense is more equivocal. The artifacts may have some antiquity (they are similar to those of the lowest level at Casa de Piedra), but this has not been demonstrated. Gradin and Aguerre (1984b, p. 138) are now inclined to consider the "Protosanmatiense" sites to be quarry and/or workshop locations.

THE INITIAL PEOPLING OF THE PAMPA

Menghin and Bórmida (1950) attributed a few artifacts found in the Gruta del Oro (Sierras de Tandilia) to the "Tandiliense industry" and estimated its antiquity in the seventh millennium B.P. Madrazo (1968, 1973) has discussed the evidence for this interpretation and assigned an age no greater than the beginning of the Christian era. Since then, the relatively early presence of humans in the Pampa has been securely established, although archaeological data are still meager.

Orquera and Piana (1982) reexcavated the Gruta del Oro and were able to date its occupation at 6560 B.P. ± 80 years. While refuting the thesis of Madrazo, this result does not necessarily validate the arguments employed by Menghin and Bórmida to estimate chronology, nor does it support their characterization of the supposed Tandiliense industry.

At the nearby Estancia La Moderna, a side scraper and a large number of flakes of quartz, a raw material not available in the region, were found in close association with bones of two glyptodons and the scapula of a guanaco (Palanca *et al.*, 1972). The extinct fauna implies some antiquity, making the single carbon-14 date of about 6550 B.P. (obtained from collagen) questionable (Politis, unpublished doctoral thesis).

Three cultural levels have been recognized at Arroyo Seco 2. The lowest contained a few tools with marginal unifacial and bifacial retouch, produced from quartzite and other raw materials, some obtained from a considerable distance. Although these objects have not been described in detail, they do not appear to include diagnostic forms. Their importance derives from possible association with megatherium bones and the presence of a grinding stone (Tonni *et al.*, 1980). Four carbon-14 dates (obtained from various bone samples) are inconsistent, ranging from 8558 ± 316 to 1800 B.P. ± 110 years (Politis, unpublished doctoral thesis).

Two occupation levels were also encountered by Flegenheimer (1982) at Cerro La China 1 and 2. Their characteristics have not yet been described in detail, but the lowest contained flakes with bifacial marginal retouch associated with a date of 10,720 B.P. ± 150 years. At least one fishtail point encountered in the vicinity may correlate with this level.

UTILIZATION OF SUBSISTENCE RESOURCES BY EARLY GROUPS

Although the possible exploitation of Pleistocene megafauna has long been a concern in archaeological investigations of Pampa–Patagonia, detailed studies of faunal remains have been undertaken only very recently.

Lists in early works specify neither quantities nor differential representation of parts of the skeleton. The first detailed description was by Poulain-Josien of the materials from Fell's Cave (appendix of Emperaire *et al.*, 1963). Subsequently, data have been published on Lancha Packewaia and Fell's Cave (Saxon, 1979), Cueva de las Manos (Mengoni and Silveira, 1977), Arroyo Feo (Silveira, 1981), Los Toldos (Cardich and Miotti, 1984), and other sites. Studies more related to taphonomy and strategies of exploitation have been made by Borrero (1980, 1984b, c). The concern for archaeofaunal analysis is shared by many of the investigators cited on the preceding pages, and archaeological descriptions focusing only on tool complexes are increasingly less common.

Within this preoccupation, the exploitation of Pleistocene megafauna is the more spectacular aspect but, fortunately, has not been overemphasized. Coexistence of artifacts and bones of mylodon and horse has been a topic of discussion with reference to Eberhardt, Fell's, and Las Buitreras caves, but archaeologists need to examine more closely whether this coexistence represents actual exploitation. Bird described the mylodon, horse, and guanaco bones from the lower levels of Fell and Palli Aike as "broken and burned," but this categorization is too general to be useful. Poulain-Josien found evidence of cutting and butchering only on the guanaco bones from Fell (Emperaire *et al.*, 1963, pp. 233–234). Saxon (1976) detected human action on horse bones from the same site but not on mylodon. Neither Nordenskiöld nor Emperaire and Laming observed butchering marks on mylodon bones from Eberhardt (Emperaire and Laming, 1954), but Borrero (1980, p. 12) claims to have identified cuts on examples collected (without stratigraphic control) at the end of the last century by Hauthal. Cuts have also been observed on mylodon bones from Las Buitreras (Caviglia *et al.*, 1980, p. 30) excavated by Sanguinetti de Bórmida (1977). Marks on megatherium bones from Arroyo Seco 2 have been interpreted as human in origin (Tonni *et al.*, 1980) and the mixture of glyptodon remains with flakes and a few tools at Estancia La Moderna suggests human intervention. The remaining archaeological complexes mentioned earlier are associated with modern fauna.

The amount of calories reflected in the faunal remains has not been calculated for the early phases; only the minimum number of individuals (Poulain-Josien, in Emperaire *et al.*, 1963; Caviglia *et al.*, 1980, p. 30; Silveira, 1981, p. 244). There is no doubt, however, that guanacos were the principal prey. Since they predominate even in complexes that include extinct megafauna. Borrero (1980a) suggests that the latter never played an important role in the diet. Guanacos also predominate in Magellan II (Poulain-Josien, in Emperaire *et al.*, 1963), although Bird (1938) stated that their numbers decreased markedly.

Other faunal resources exploited included chinchillones [*Lagidium* sp. (Silveira, 1981, p. 244)], probably tucotucos or cururos (*Ctenomys* sp.),

Table II. Radiocarbon Dates Related to the Early Southern Patagonia and Northern Tierra Del Fuego Guanaco Hunters

Lab. No.	Site	Bed or level	Phase or industry	Analyzed material	Age B.P.	Reference	Evaluation
Gak-9191	Palli Aike 2 rockshelter	3	Magellan IV	Charcoal	6030 ± 110	Massone and Hidalgo (1981, p. 136)	Rejected
Gak-8294	Palli Aike 1 Cave		Not identifiable	Charcoal	5020 ± 150	Massone and Hidalgo (1981, p. 137)	Rejected
Gak-9195	Tom Gould		Magellan IV	Unknown	4560 ± 130	Massone (1981, p. 110)	
DIC-2320	Tom Gould	–	Magellan IV	Unknown	4280 ± 50	Massone (1981, p. 110)	
AC-566	El Volcán 1	4	"Riogalleguense"	Charcoal	3600 ± 100	Sanguinetti de Bórmida (1984, p. 17)	
Gif-1043	Bahía Munición 3	11	Not identified	Charcoal	3200 ± 450	Laming-Emperaire (1968, p. 85)	
Gak-8293	San Gregorio 2	–	Not identified	Charcoal	2830 ± 150	Massone (1979, p. 87)	
No inf.	Eberhardt Cave	Shell midden	Not identifiable	Unknown	2556 ± 45	Saxon (cited by Borrero, 1980, p. 12)	
Gak-9188	Palli Aike 2 rockshelter	2	Magellan IV–V	Charcoal	2480 ± 100	Massone and Hidalgo (1981, p. 136)	Rejected
AC-873	Crossley Bay	Top	Not identifiable	Charcoal	2350 ± 220	Piana (unpublished)	Dubious
No inf.	Crossley Bay	1	Not identifiable	Charcoal	2312 ± 292	Chapman (pers. comm.)	Dubious
Gak-8290	Bahía Posesión 3	5	Not identified	Charcoal	2080 ± 200	Massone (1979, p. 93)	
UW	Río Chico 1		Magellan IV	Charcoal	2080 ± 80	Bate (cited by Ortiz Troncoso, 1977–1978)	
Gif-1042	Bahía Munición 2	9	Not identified	Charcoal	1990 ± 110	Laming-Emperaire (1968, p. 85)	
Gak-9190	Palli Aike 2 rockshelter	3E	Magellan IV	Charcoal	1990 ± 90	Massone and Hidalgo (1981, p. 136)	
Gak-9192	Palli Aike 2 rockshelter	3M	Magellan IV	Charcoal	1840 ± 120	Massone and Hidalgo (1981, p. 136)	
No inf.	Crossley Bay	3	Not identifiable	Charcoal	1721 ± 103	Chapman (pers. comm.)	Dubious
Gak-9189	Palli Aike 2 rockshelter	3E	Magellan IV	Charcoal	1700 ± 100	Massone and Hidalgo (1981, p. 136)	
Gif-1039	Bahía Munición 3	6	Not identified	Charcoal	1680 ± 140	Laming-Emperaire (1968, p. 85)	
Gak-8289	Bahía Posesión 3	5	Not identified	Charcoal	1640 ± 170	Massone (1979, p. 93)	
Gak-8285	Punta Dungeness	2	Not identified	Charcoal	1590 ± 110	Massone (1979, p. 93)	
AC-874	Crossley Bay	Base	Not identifiable	Charcoal	1500 ± 100	Piana (unpublished)	Dubious
Gak-80	San Gregorio 5	2	Not identified	Charcoal	1430 ± 80	Massone (1979, p. 89)	
No inf.	Crossley Bay	2	Not identifiable	Charcoal	1427 ± 58	Chapman (pers. comm.)	Dubious
Gak-8288	Bahía Posesión 3	3b	No identified	Charcoal	1380 ± 150	Massone (1979, p. 93)	
Gak-8287	Bahía Posesión 3	3a	Not identified	Charcoal	1290 ± 110	Massone (1979, p. 93)	
MC-1069	Cabeza de León	B	Not identified	Charcoal	1100 ± 95	Saxon (cited by Borrero, 1981, p. 264)	
Gak-9187	Palli Aike 2 rockshelter	1	Magellan V	Charcoal	1040 ± 100	Massone and Hidalgo (1981, p. 136)	Rejected
I-13994	Planicie Los Mellizos		Not identified	Charcoal	1020 ± 80	Lanata (1985)	
DIC-2168	Palli Aike 2 rockshelter	3C	Magellan IV	Charcoal	900 ± 45	Massone and Hidalgo (1981, p. 136)	

Gif-1038	Bahía Munición 3	5	Not identified	Charcoal	800 ± 110	Laming-Emperaire (1968, p. 84)	
AC-2588	Potrok Aike 1	IV	Magellan IV/V	Charcoal	740 ± 180	Gómez Otero (1984)	
Gif-1037	Bahía Munición 3	4	Not identified	Charcoal	740 ± 110	Laming-Emperaire (1968, p. 84)	
DIC-2731	Tres Arroyos	III	Late Period	Charcoal	700 ± 70	Massone (1983)	
Gak-120	San Gregorio 5	1	Not identified	Charcoal	690 ± 120	Massone (1979, p. 89)	
I-5139	Fell's Cave	4	Magellan V	Unknown	685 ± 90	Bird (pers. comm.)	
Gak-8286	Bahía Posesión 3	1	Not identified	Charcoal	550 ± 110	Massone (1979, p. 93)	
Gif-1041	Bahía Munición 3	8	Not identified	Charcoal	550 ± 100	Laming-Emperaire (1968, p. 85)	
Gif-1040	Bahía Munición 3	7	Not identified	Charcoal	530 ± 100	Laming-Emperaire (1968, p. 85)	
No inf.	Cerro Johny	...	Burial	Human flesh	480 ± 70	Massone (1981, p. 113)	
Gak-9193	Tom Gould	Top	Magellan V	Charcoal	470 ± 130	Massone (1981, p. 113)	
No inf.	Cerro Johny	...	Burial	Human skin	390 ± 60	Massone (1981, p. 113)	
Gak-8284	Punta Dungeness	1	European presence	Charcoal	360 ± 90	Massone (1979, p. 99)	
No inf.	Cerro Johny	–	Burial	Human hair	350 ± 90	Massone (1981, p. 113)	
Gif-1035	Bahía Munición 3	2	Not identified	Charcoal	290 ± 90	Laming-Emperaire (1968, p. 84)	
Gak-9194	Tom Gould	Top	Magellan V	Charcoal	250 ± 120	Massone (1981, p. 113)	
Gif-1036	Bahía Munición 3	3	Not identified	Charcoal	250 ± 90	Laming-Emperaire (1968, p. 84)	
No inf.	Cerro Johny	–	Burial	Unknown	240 ± 270	Massone (1981, p. 113)	Discarded
DIC-2321	Palli Aike 2 rockshelter	1D	Magellan V	Charcoal	220 ± 45	Massone and Hidalgo (1981, p. 136)	
MC-1070	Tres Arroyos		Not identified	Charcoal	135 ± 85	Saxon (unpublished)	

rheas, and perhaps other birds. Foxes, pumas, wildcats, and mice have been recorded, but this does not necessarily indicate that they were eaten.

An unresolved argument concerns the possible presence of the domestic dog in very early times. Saxon (1976, p. 68 and Table II) reported *Canis* cf. *familiaris* in the faunal assemblages of Fell's Cave attributed to the Magellan I, II, and III phases. Cardich *et al.* (1978) assigned a mandibular fragment from the Casapedrense level at Los Toldos (which is treated in a subsequent section, since it is somewhat more recent) to *Canis familiaris*. These identifications have been discussed by Caviglia (1978), who points out resemblances to *Dusicyon avus*, a large extinct Patagonian fox. Both Tonni and Politis (1981) and Caviglia *et al.* (1986), persist in their original identifications, however.

Borrero has applied models to the faunal remains in the effort to infer procurement strategies and complementary functions. He interprets sites such as Las Buitreras and Eberhardt Cave as mylodon kill sites, to which remains of guanacos hunted elsewhere were brought (Borrero, 1980, p. 12, 1982; Caviglia *et al.*, 1980, p. 28). Cueva de las Manos, in contrast, is identified as a habitation site, and Cueva del Arroyo Feo, at the time of first utilization, as a place where a guanaco was butchered (Borrero, 1982).

THE INTERMEDIATE AND RECENT TRADITIONS

Southern Patagonian Guanaco Hunters (Fig. 12)

From the fifth millennium B.C. until the arrival of Europeans, the Santa Cruz basin appears to have been a cultural frontier. This role is more evident archaeologically than ethnographically, perhaps because the majority of ethnographic data is from the time when the way of life had been drastically altered by adoption of the European horse and associated cultural elements.

The Magellan IV and V Phases

As mentioned previously, groups in the region between the Río Santa Cruz and the Strait of Magellan were noteworthy for their conservatism (Fig. 13). Although Bird (1938, 1946) recognized two "periods," which Willey (1971) later designated the Magellan IV and V phases, the information supporting this distinction is slight. Both phases have stemmed and shouldered projectile points, bola stones, and end scrapers (which may have been hafted). During Phase V, projectile points became smaller and rough bone tools were added, according to Bird (1938, 1946). Subsequent excavations by Fell and Laming-Emperaire have documented the presence of awls and other

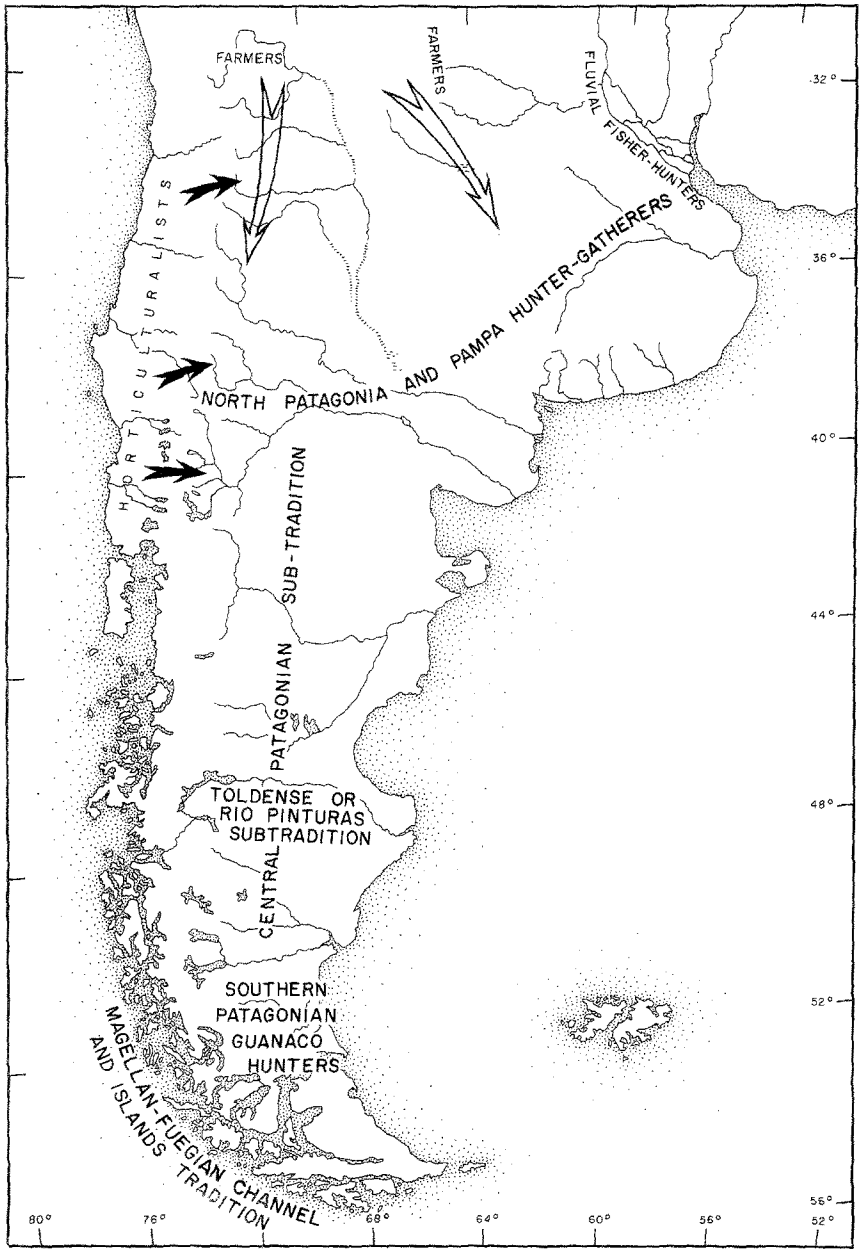

Fig. 12. Geographical extent of the Patagonian and Pampean traditions and subtraditions. Open arrows = old penetrations or influences; filled arrows = post-sixteenth-century penetrations and influences.

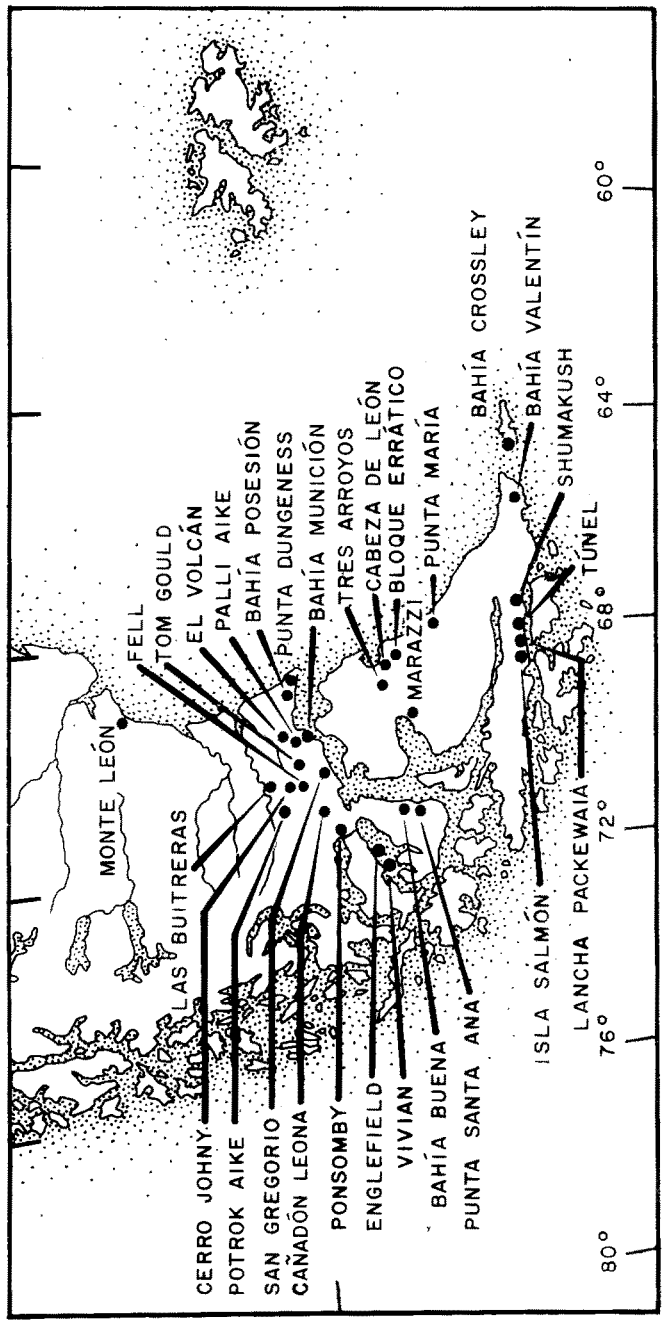

Fig. 13. Locations of sites of the Intermediate and Recent phases representing the guanaco hunters of southern Patagonia and Tierra del Fuego and sites of the Magellan–Fuegian Channels and Islands tradition.

bone tools in Phase IV, however, as well as the abundance of side and end scrapers, the latter typically thumbnail form (Emperaire *et al.*, 1963, pp. 179–181 and 223–226). Among faunal remains, guanaco bones predominate, especially those of the extremities (Poulain-Josien, cited by Emperaire *et al.*, 1963; Saxon, 1976, Table II). Borrero (1984c) suggests that Fell's Cave may have been a multiple-activity camp during Phase IV. Carbon-14 dates place the beginning of Phase IV at about 6560 ± 115 or 6485 B.P. ± 115 years and that of Phase V at about 685 B.P. ± 90 years (Bird, personal communication, 1975).

Recently investigated sites in the interior that can be interpreted as temporary camps are Tom Gould Lake, with carbon-14 dates extending from 4560 ± 130 to 250 B.P. ± 120 years (Table II) (Massone, 1981, pp. 110–111; Massone and Hidalgo, 1981, pp. 138–139); Palli Aike 2, with six dates ranging between 1990 ± 90 and 220 B.P. ± 45 years (Massone and Hidalgo, 1981); and Potrok Aike Shelter, where Level 5 has been dated at 740 B.P. ± 80 years (Gómez Otero, 1984). Tools are rare in all these sites, but guanaco remains are abundant. Analysis of pollen collected by Massone indicates an environment similar to that at present. Cave 4 of El Volcán, which may belong to this phase, has a date of 3600 B.P. ± 100 years for the initial occupation (Sanguinetti de Bórmida, 1984). According to Borrero (1984c, d), it is a hunting camp where game was processed.

Although subsisting primarily on guanacos, rheas, and small rodents, the people associated with these phases visited the coast—presumably temporarily—to augment their diet with birds, shellfish, and where available, seals. This pattern has been reported by Massone (1979) on the north coast of the Strait of Magellan and by Gradin (1966) at Monte León (cf. also Ortiz Troncoso, 1972, 1973; Laming-Emperaire, 1968). Beginning in 1978, Massone made surface collections and small tests in 10 campsites and lithic workshops, some combined with small shell middens. Carbon-14 dates range between 2830 B.P. and younger than 360 B.P. ± 110 years (Massone, 1979). Artifacts are generally rare, but several occupational episodes were distinguished at Punta Dungeness 2, the most recent containing fragments of iron and European ceramics. Shell middens and other evidence of unspecialized exploitation of shore resources were also encountered at Monte León. Although Gradin originally assigned the latter to "Riogalleguense III," the artifacts are compatible with incorporation in the Magellan IV phase.

In spite of the paucity of information, the following series of traits appears to differentiate the Magellan IV and V phases from occurrences north of the Río Santa Cruz:

(1) a predominance of dark-colored volcanic rocks as raw material for lithic artifacts, especially projectile points;
(2) the absence of blade technology and use of flakes for tool making;

(3) unstandardized forms of end scrapers;
(4) a predominance of side scrapers over end scrapers; and
(5) less rich and varied rock art.

The projectile points of Magellan IV are not typically well finished. Nevertheless, their replacement by small, better-made points, which according to Bird characterize Phase V, was gradual. Coexistence of large and small points has been reported by Massone (1981, pp. 112–113) and Gómez Otero (1984).

According to Massone (1981), the Phase V industry correlates with the Aonik'enk (who occupied the region at the time of European contact) and their immediate ancestors, which seems plausible

Northern Tierra del Fuego

Borrero (1984b) has excavated several sites on the northern part of this island, which can be attributed to the immediate ancestors of the Selk'nam. They include Cabeza de León, Bloque Errático 1, and Punta María 2. His aim is to recognize differences in function that would permit reconstructing settlement and subsistence behavior. The lower component at Cabeza de León, dated 1100 B.P. $\pm$ 95 years, contained stemmed projectile points and relatively abundant standardized end scrapers. In the upper component, undated, both points and end scrapers were smaller. Guanaco and rodent remains occurred in both components, and birds were added in the latter (Borrero, 1981). The nearby site, Bloque Errático 1 (Borrero and Casiraghi, 1982; Borrero *et al.*, 1985), contained very few artifacts and has been interpreted as a place where guanacos were butchered. Punta María 2 (Borrero, 1984b) and the middle levels of the Marazzi shelter (Laming-Emperaire *ert al.*, 1972) exemplify the movement of interior groups to the coast to exploit marine resources.

Vidal (1984, 1985) is working at several sites in Valentín Bay on the southeastern extreme of the island (habitat of the Haush) that indicate utilization of different patches of resources.

The Central Patagonian or Casapedrense Subtradition

The archaeological situation in central Patagonia is somewhat more complex. The apparent persistence of the Toldense phase until the third or second millennium B.C. at Cueva de las Manos, Cueva del Arroyo Feo, Cárdenas, and Cerro Casa de Piedra was mentioned earlier. A very different industry, known as Casapedrense, flourished in close proximity. The latter underwent several transformations, which Gradin (1982a) has grouped into

the Casapedrense tradition; Aschero (1984) terms it the "Central Patagonian tradition." Here, this entity is considered a subtradition (Fig. 12).

The Casapedrense Phase

This phase was defined by Menghin (1952b) at Los Toldos and its distinctiveness has been affirmed by Cardich *et al.* (1973; Cardich, 1977). Menghin's collection has been studied by Crivelli (1981). Cardich was able to date the beginning of the occupation at 7260 B.P. ± 350 years (Table III) and its termination at about 4850 B.P. Similar assemblages have been encountered in Layers 5 and 6 of La Martita, with dates of 4520 ± 50 and 4475 B.P. ± 95 years (Aguerre, 1982); in Layers 8 and 7b of Arroyo Feo, falling between 5550 and 3330 B.P. (Gradin *et al.*, 1981; Alonso *et al.*, 1986); and—much farther to the north—in Layers 3b and 4a of Campo Moncada 2 (Piedra Parada locality), with three dates between 5080 ± 100 and 3350 B.P. ± 90 years (Fig. 14) (Bellelli, 1983, 1984).

The following diagnostic characteristics can be culled from these occurrences (Figs. 15 and 16):

(1) the production of large numbers of true blades and selection among them for manufacture of tools [29 to 66% in the Menghin collection from Los Toldos (Crivelli, 1981)];
(2) considerable resultant standardization of tools, medium to large size (Crivelli, 1981; Bellelli, 1984);
(3) the absence of stone projectile points; and
(4) a predominance of end scrapers (28 to 53% in the Menghin collection), the majority incorporated into multifunctional tools.

In contrast to the other Patagonian industries discussed thus far, the ratio of side scrapers to end scrapers is reversed, the latter outnumbering the former three to one. Other traits of the Casapedrense industry are the use of distinct classes of siliceous rocks as raw materials, the absence of bifacial flaking, the rare (but repeated) occurrence of "strangled blades," an abundance of blades and flakes with damage on natural edges, and a rarity of bone tools.

The only animal bones encountered by Cardich were identified as guanaco (Cardich *et al.*, 1973, p. 103; Cardich and Miotti, 1984, pp. 154–155). At Campo Moncada 2, in contrast, guanaco remains were associated with rodent and armadillo (Bellelli, 1983). In Arroyo Feo, guanacos far outnumbered rheas and rodents (Silveira, 1981, pp. 238–241). The possible presence of dogs in these levels was mentioned previously (Cardich *et al.*, 1978; Caviglia, 1978). All parts of the guanaco skeleton were represented at Los Toldos, but not at Arroyo Feo. The remains of sewn guanaco hide with buttonholes, wool, and hair were encountered at Campo Moncada 2 (Bellelli, 1983, 1984).

Table III. Radiocarbon Dates Related to the Central Patagonia Subtradition

Lab. No.	Site	Bed or level	Phase or industry	Analyzed material	Age B.P.	Reference	Evaluation
BVA-Arsenal	Los Toldos Cave 3	7	Casapedrense	Charcoal	7260 ± 350	Cardich *et al.* (1973, p. 97)	
CSIC-519	Arroyo Feo Great Cave	8 middle	Casapedrense	Charcoal	5550 ± 50	Alonso *et al.* (1986)	
AC-666	Campo Moncada 2	4a	Casapedrense	Charcoal	5080 ± 100	Bellelli (1984)	
AC-671	Campo Moncada 2	3b	Casapedrense	Charcoal	4770 ± 90	Bellelli (1984)	
CSIC-505	La Martita Cave 4	5 base	Casapedrense	Charcoal	4520 ± 50	Aguerre (1982)	
I-11904	La Martita Cave 4	5 base	Casapedrense	Charcoal	4475 ± 95	Aguerre (1982)	
CSIC-521	Arroyo Feo Great Cave	7 base	Casapedrense	Charcoal	4380 ± 60	Alonso *et al.* (1986)	
CSIC-520	Arroyo Feo Great Cave	7 base	Casapedrense	Charcoal	4050 ± 50	Alonso *et al.* (1986)	
AC-670	Campo Moncada 2	3b	Casapedrense	Charcoal	3350 ± 90	Bellelli (1984)	
IVIC-860	Alero Manos Pintadas	9	Not identifiable	Charcoal	3330 ± 70	Gradin (1974)	
CSIC-398	Arroyo Feo Great Cave	6b	Protopatagoniense	Charcoal	3330 ± 50	Gradin and Aschero (1979, p. 248)	
CSIC-395	Cerro de los Indios	3c	Protopatagoniense	Charcoal	3260 ± 50	Alonso *et al.* (1986)	
CSIC-130	Alero Manos Pintadas	12	Not identifiable	Charcoal	3120 ± 50	Gradin and Aschero (1979, p. 247)	
I-11794	Bahía Solano 16	3	Not identified	Charcoal	2954 ± 95	Caviglia *et al.* (1982)	
I-12088	La Figura 1	9	Ceramic Patagoniense	Charcoal	2670 ± 90	Nacuzzi (1984)	Rejected
CSIC-129	Alero Manos Pintadas	9	Not identifiable	Wood	2610 ± 80	Gradin and Aschero (1979, p. 246)	
CSIC-128	Alero Manos Pintadas	6	Not identifiable	Dung	2440 ± 50	Gradin and Aschero (1979, p. 246)	
AC-604	La Martita Cave 4	4 top	Transitional	Charcoal	2190 ± 115	Aguerre (1984)	
IVIC-859	Alero Manos Pintadas	4	Patagoniense	Charcoal	1910 ± 60	Gradin (1974)	
CSIC-523R	Arroyo Feo Great Cave	3	Patagoniense	Charcoal	1890 ± 50	Alonso *et al.* (1986)	
CSIC-523	Arroyo Feo Great Cave	3	Patagoniense	Charcoal	1880 ± 50	Alonso *et al.* (1986)	
AC-669	Campo Moncada 2	2c	Not identified	Charcoal	1750 ± 80	Pérez de Micou (1984)	
CSIC-127	Alero Manos Pintadas	4	Patagoniense	Charcoal	1700 ± 50	Gradin *et al.* (1976, p. 249)	
CSIC-399	Arroyo Feo Great Cave	RIII	Protopatagoniense	Charcoal	1660 ± 50	Gradin *et al.* (1981, p. 214)	
AC-603	La Martita Cave 4	3 base	Patagoniense	Charcoal	1620 ± 90	Aguerre (1984)	
Nova-115	Cueva de las Manos	4c	Patagoniense	Charcoal	1610 ± 60	Gradin *et al.* (1976, p. 221)	
CSIC-512	Alero del Buho	4	Patagoniense	Charcoal	1450 ± 50	Alonso *et al.* (1986)	
CSIC-394	Cerro de los Indios	3b	Patagoniense	Charcoal	1420 ± 50	Gradin and Aschero (1979, p. 247)	
CSIC-495	Piedra Parada 1	–	Aceramic Patagoniense	Charcoal	1330 ± 50	Pérez de Micou (1984)	
CSIC-131	Cerro Shequen	–	Ceramic Patagoniense	Charcoal/bone	1250 ± 80	Gradin *et al.* (1976, p. 222)	
AC-500	Cárdenas rockshelter	3 base	Ceramic Patagoniense	Charcoal	1280 ± 85	Alonso *et al.* (1986)	

CSIC-513	Alero del Buho	3b	Ceramic Patagoniense	Charcoal	1270 ± 50	Alonso *et al.* (1986)	
CSIC-524	Arroyo Feo Great Cave	RI	Patagoniense	Charcoal	1270 ± 50	Alonso *et al.* (1986)	
I-12087	La Figura 1	7	Ceramic Patagoniense	Charcoal	1050 ± 80	Nacuzzi (1984)	
CSIC-584	Alero del Buho	3b	Ceramic Patagoniense	Charcoal	960 ± 50	Alonso *et al.* (1986)	
CSIC-545	Alero del Buho	3a	Ceramic Patagoniense	Charcoal	900 ± 50	Alonso *et al.* (1986)	
AC-668	Campo Moncada 2		Ceramic Patagoniense	Charcoal	860 ± 80	Nacuzzi (1984)	
AC-667	Campo Moncada 2	2a	Ceramic Patagoniense	Charcoal	780 ± 80	Nacuzzi (1984)	
AC-665	Campo Nassif 1	–	Ceramic Patagoniense	Charcoal	480 ± 75	Onetto (1984)	
CSIC-137	Cueva de las Manos	3b	Patagoniense	Charcoal	430 ± 430	Gradin *et al.* (1976, p. 222)	Rejected
I-11795	Bahía Solano 13	2	Not identified	Charcoal	205 ± 95	Caviglia *et al.* (1982)	

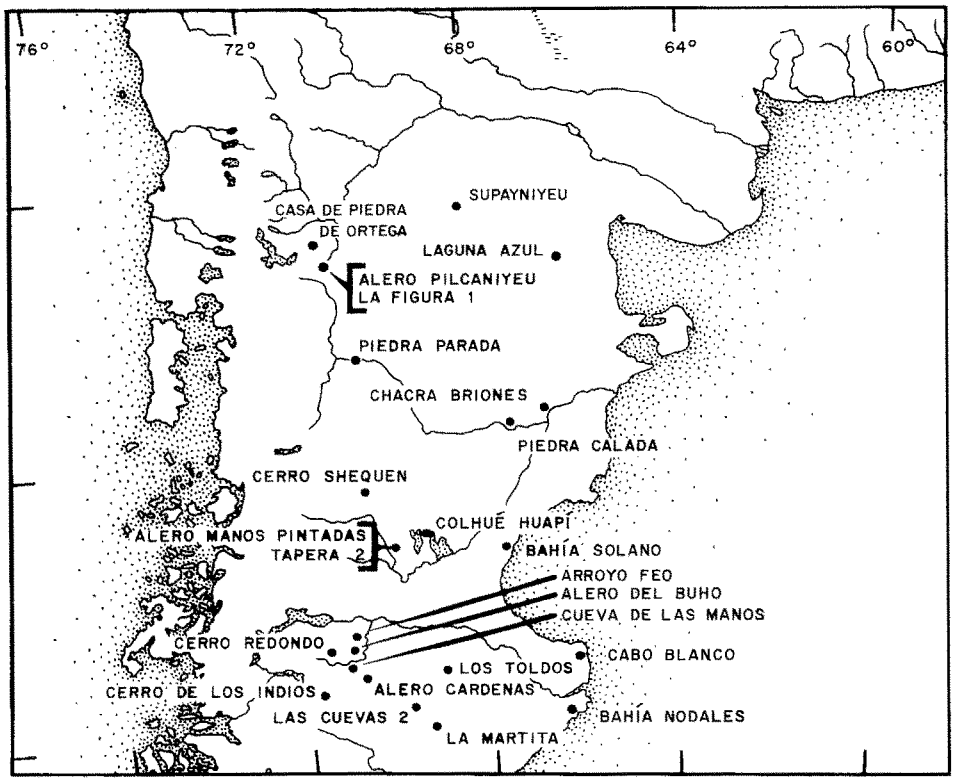

Fig. 14. Sites of the Intermediate and Recent phases of central Patagonia (Casapedrense, Protopatagoniense, and Patagoniense). The Piedra Parada location includes Campo Moncada 2, Campo Nassif, and Barda Blanca.

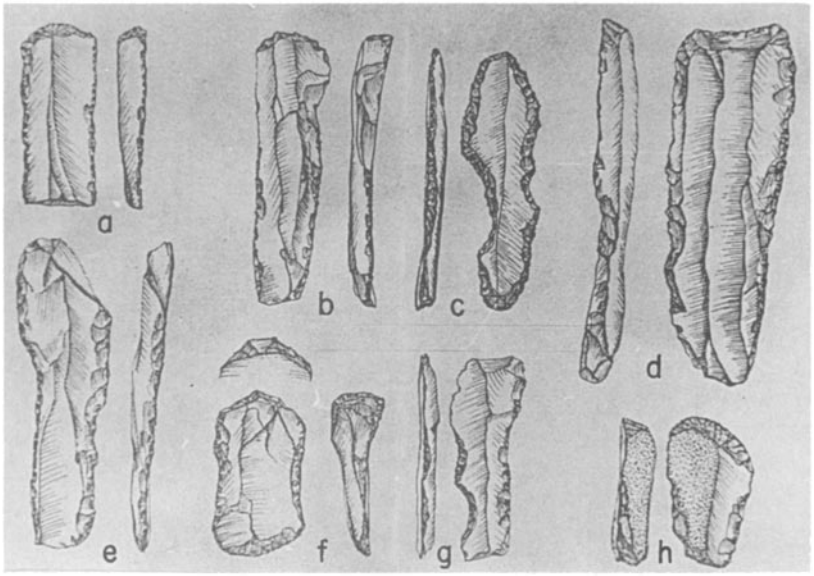

Fig. 15. Casapedrense-phase implements from Los Toldos 3 Cave: a, b, and d, end scrapers on blades with retouched and use-damaged margins; c, e, and g, blades with retouched margins and notches (c is a "strangled blade"); f, double end scraper; h, end scraper (after Cardich, 1977).

The Casapedrense assemblages are enigmatic

(1) with respect to technology, because the frequency of blades vastly outnumbers that among other archaeological manifestations in Pampa and Patagonia, with the partial exception of the subsequent Protopatagoniense and Patagoniense phases;

(2) with respect to typology, because stone projectile points do not occur, in contrast to earlier and later phases from the same sites, in spite of evidence for an overwhelming reliance on guanaco for subsistence (the few bola stones encountered seem insufficient to account for their capture);

(3) with respect to distribution, because they are absent in sites such as Cueva de las Manos, although found in the nearby Cueva del Arroyo Feo, and apparently coexisted with the very different Toldense subtradition (the present state of knowledge makes it difficult to envisage complementary functions that could account for this situation): and

(4) with respect to chronology, because there is a large discrepancy between the Casapedrense dates from Los Toldos and those from other sites.

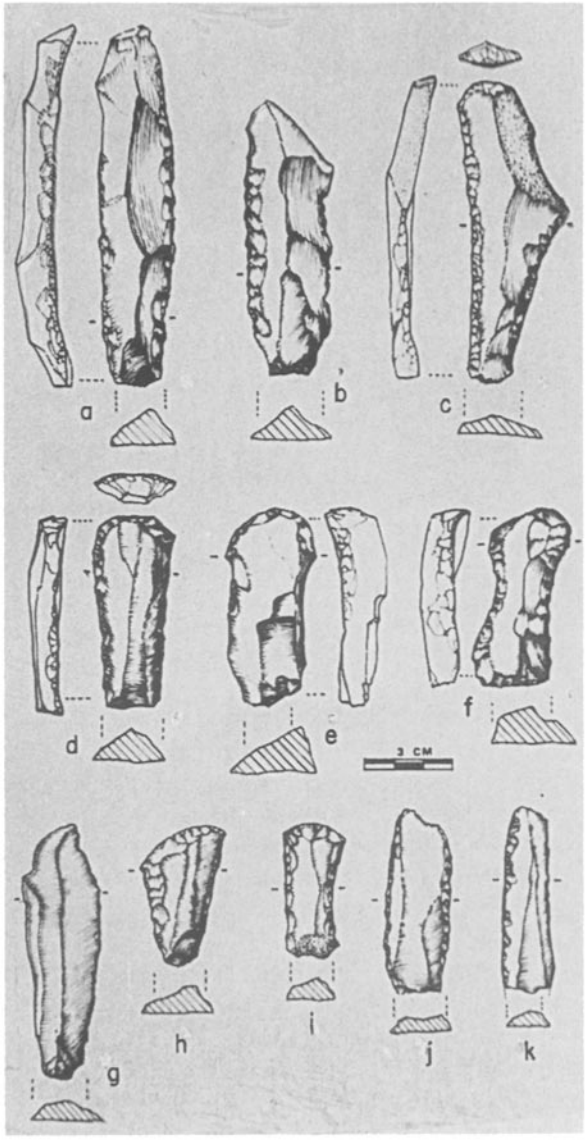

Fig. 16. Casapedrense- and Protopatagoniense-phase implements from Arroyo Feo Great Cave: a–h, Casapedrense or Río Pinturas IIb; i–k, Protopatagoniense or Río Pinturas III. a, b, j, and k, blades with retouched edges; c, d, f, h, and i, end scrapers with retouched sides; g, blade with use-damaged edge (after Gradin *et al.*, 1981, p. 212).

The Protopatagoniense Phase

This phase, proposed by Aschero (1978, 1983b, p. 94), is distinguished by artifacts that preserve the characteristics of the Casapedrense industry but are smaller and generally less skillfully made (Fig. 16). Narrow-edged scrapers continue to predominate and stone projectile points remain absent. In northeastern Santa Cruz (where the phase is represented by the Río Pinturas III level), Layers 7a to 5a of Arroyo Feo have produced three dates between 3330 ± 50 and 1660 B.P. ± 50 years, and Layers 3e to 3c of Cerro de los Indios have a date of 3320 B.P. ± 50 years (Gradin *et al.*, 1981, p. 214). Aschero (1978) places the limits of the phase between 3350 and 1600 B.P.

Other components included in this phase are Layers 9 to 6 of Alero de las Manos Pintadas, which have similar dates but few artifacts (Gradin, 1973a; Aschero, 1975; Gradin *et al.*, 1977, p. 246); Level I of Chacra Briones (Bellelli *et al.*, 1977); Level 3a of Campo Moncada 2 (Bellelli, 1984); and perhaps Pedregoso Cave in the Chilean province of Aysén (Bate, 1976).

Data from Arroyo Feo (Silveira, 1981, pp. 230–238) and Cerro de los Indios (Gradin *et al.*, 1981, p. 215) suggest a diet somewhat more varied than that of the Casapedrense phase but still emphasizing guanacos. Heads and extremities were the most common parts represented at Arroyo Feo.

The Patagoniense Phase

Although materials attributable to the Patagoniense phase have been described since the beginning of interest in Argentine archaeology, their identification as a distinctive entity began only with Menghin (1952b). He initially called them the Tehuelchense industry but soon changed the name to Patagoniense (Menghin, 1957b, 1960). He provided only schematic descriptions, however, consisting of generalized enumerations of traits, and the related finds from the upper levels of Los Toldos have never been analyzed in detail (Cardich *et al.*, 1973, pp. 98–100).

Better technotypological information has been provided by Gradin, Aschero, and their collaborators, who have worked since the mid-1970s at numerous sites in Patagonia: Alero de las Manos Pintadas (Gradin, 1973a; Aschero, 1975), Cueva de las Manos (Gradin *et al.*, 1977), Cueva Grande del Arroyo Feo, Cerro de los Indios, Alero del Buho (Gradin *et al.*, 1981), Chacra Briones (Aschero *et al.*, 1978; Bellelli *et al.*, 1977), Valle de Piedra Parada (Aschero *et al.*, 1983), and various sites in Río Negro, Chubut, and Santa Cruz provinces (Aschero *et al.*, 1978; García and Pérez de Micou, 1979). Additional evidence has been obtained from Cerro Shequen and Cerro Redondo by Gradin (1976, 1979a) and from the upper levels of La Martita by Aguerre (1982).

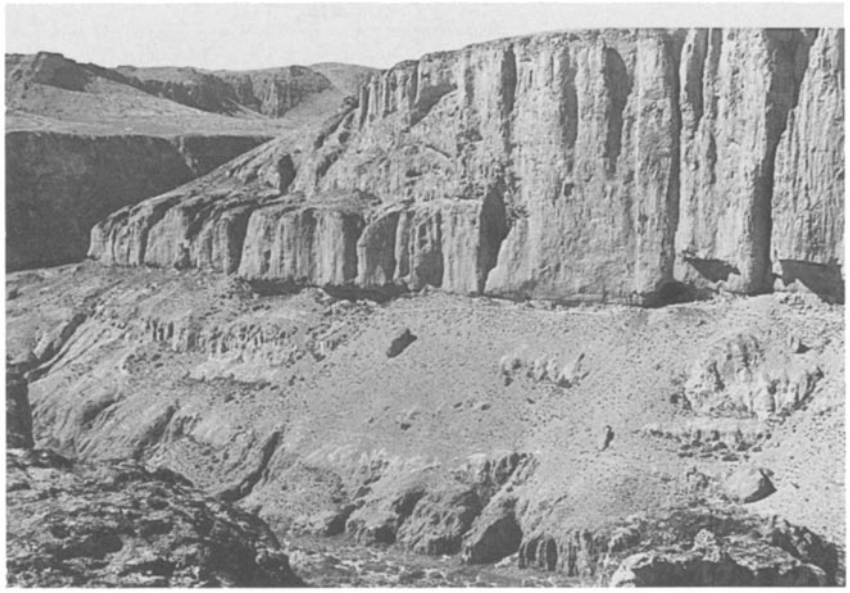

Fig. 17. Cueva de las Manos, showing the precordilleran steppe environment (courtesy C. Gradin).

Patagoniense sites occur in a variety of habitats. In central Patagonia, the caves of Las Manos and Arroyo Feo, the Buho shelter, Cerro de los Indios, Cerro Shequen, and Cerro Redondo are in precordilleran steppe environments (Fig. 17). The first three occupy large ravines at elevations between 400 and 800 m, whereas the last is on the meseta. Alero de las Manos Pintadas, Chacra Briones, Los Toldos, and La Martita are on the central part of the meseta (as are the Alero de Pilcaniyeu and sites of the Somoncura meseta, which are mentioned under Northern Patagonian Expressions). According to Gradin (1982a, p. 190), the populations of this phase exploited "the margins of lakes and the deep wide canyons during the winter, and the intermediate plateaus or pampas and the high mesetas during the summer, following a regime that was probably based on local and seasonal movements of the guanacos." The coastal sites have been little studied, although they have interesting features; unfortunately, their enormous archaeological potential has been almost completely destroyed by continual looting. Examples occur at Bahía Solano (Menghin, 1952b; Borrero, 1979; Caviglia *et al.*, 1982), Bahía Nodales, Cabo Blanco, and other places on the northern coast of Santa Cruz Province (Fig. 14).

Menghin recognized the considerable diversity of the Patagoniense in both time and space. According to Aschero (1983b, p. 95), "the *Patagoniense complex* does not represent a single *culture*, but rather an assemblage of traits

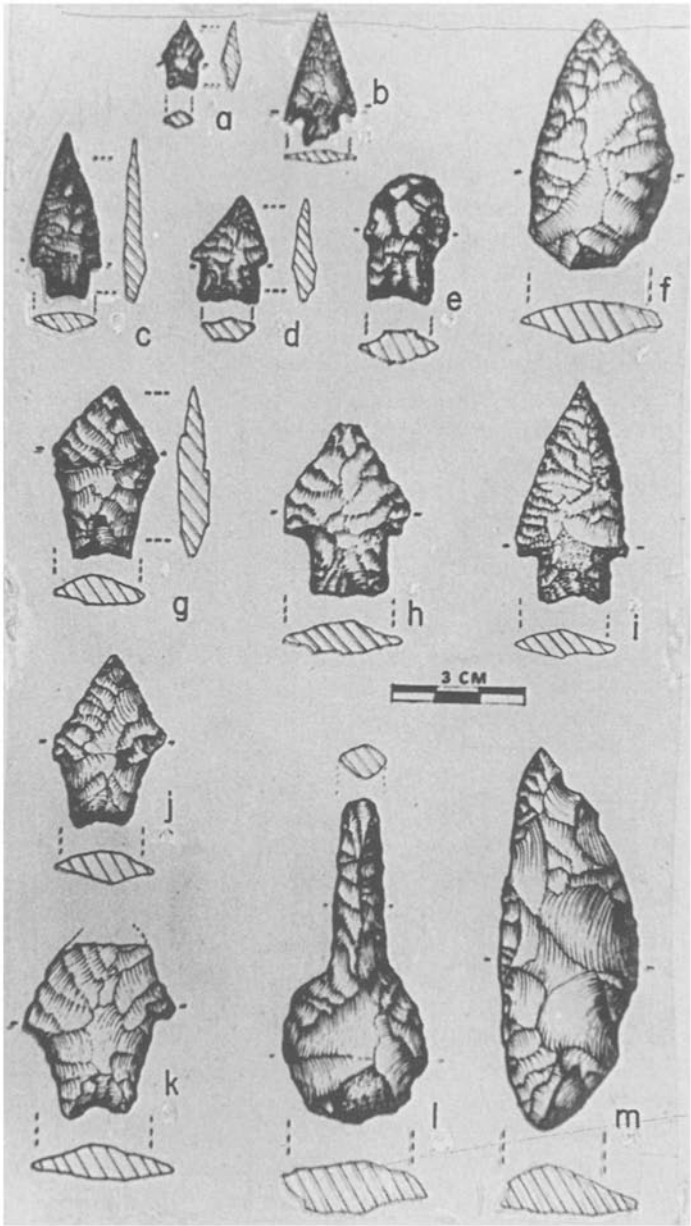

Fig. 18. Ceramic Patagoniense (Río Pinturas V)-phase implements from Arroyo Feo Great Cave, Alero del Buho, and La Madrugada: a–e and g–k, stemmed and shouldered projectile points; f and m, bifacial side scrapers; l, borer (after Gradin *et al.*, 1981, p. 216).

that is shared by significantly different regional cultures, implying their interaction." He has specified several features, especially stylistic, that differentiate occurrences in the Piedra Parada Valley from those in the Río Pinturas Basin (1983b, p. 96). Possibly more important, because they imply the exploitation of distinct kinds of resources, are the variations between the interior and the coast (cf. Caviglia *et al.*, 1982). Although intersite differences in activities can be discerned, analysis of 1400 lithic artifacts from seven localities in meseta, coastal, and fluvial valley contexts revealed no statistically significant differences in typological composition (Aschero *et al.*, 1978).

Stone tools are the overwhelmingly predominant category of remains in Patagoniense sites. Based on the data in the publications cited above, the following features can be considered diagnostic:

(1) intensive production and use of true blades (54 and 62% of the materials from Alero de las Manos Pintadas; 57, 54, and 40% in Cueva de las Manos; 35 to 65% in Chacra Briones; 36% at Piedra Parada 1);
(2) a rarity of bifacial retouch, except at sites such as Cerro Redondo, where projectile points are common;
(3) tools typically smaller than in the Toldense and Casapedrense phases but not microlithic [the incongruity of this situation in a blade technology has led Aschero (1975, p. 196) to suggest that it may imply either loss of skill in producing blades or intentional fragmentation to exploit the raw material more effectively];
(4) a great abundance of end scrapers and standardization into rectangular, subtrapezoidal, or ovaloid forms, medium to small in size; (Except at Cerro Redondo, they always comprise the largest group of intentionally retouched tools: between 8 and 20% of the total at Cueva de las Manos, 17% in Layer 2 of Piedra Parada 1, 46 to 57% in Alero de las Manos Pintadas, 44% in Chacra Briones, and between 26 and 67% at seven other sites. Even at Cerro Redondo, they constitute 28% of the total artifacts.)
(5) an abundance of tools with multiple functions, reaching 48% in Alero de las Manos Pintadas; and
(6) a distinctive type of stemmed and shouldered projectile point, very abundant at surface sites but relatively rare in deeper deposits (Fig. 18).

The raw material is principally brightly colored siliceous rocks; basalt, obsidian, and light-colored cherts are uncommon. Side scrapers are rare (2 to 12%); end scrapers predominate, at ratios ranging from 1.5 to 1 (two levels of Cueva de las Manos) to 23 to 1 (a level of Alero de las Manos Pintadas). Damage on natural edges is frequent (between 16 and 58% of the total). Other elements of the Patagoniense lithic industry are a definite

Fig. 19. Excavation in Alero de las Manos Pintados showing the stratigraphy. Layers IV and VI are separated by large rocks fallen from the ceiling. Geometric paintings are faintly visible on the face of the central block (courtesy C. Gradin).

although rare kind of borer with very delicate bifacial elaboration, bola stones, occasional milling stones, and engraved plaques (presumably with magical significance).

Bone tools are rare and undiagnostic, consisting principally of awls. Pottery may occur in the later complexes but is crude, is very rare, and appears not to have spread south of Bahía Nodales. Rare decoration by incision and punctation resembles that from the Pampa and La Plata Basin. A comprehensive study of the decoration of Patagonian pottery has been made by Bellelli (1980). Hides, wool, feathers, plant fibers, cordage, and basketry are occasionally preserved; the latter are being studied by Pérez de Micou (1984, 1985).

A correlation between the Patagoniense levels and geometric-style art on the walls at Alero de las Manos Pintados is affirmed by the incorporation of a fallen rock in the stratigraphy (Fig. 19) (Gradin, 1973a; Aschero, 1975, p. 191).

It seems probable that many traits without demonstrated cultural association belong to this phase, among them "figure 8" or "ceremonial" axes, pipes, burials in cairns, and artificial cranial deformation.

The tool inventory and the associated fauna (and analogous ethnographic data) suggest that the Patagoniense phase achieved the most advanced adaptation for exploiting guanacos. Unfortunately, the only published faunal analyses are by Mengoni and Silveira (1977) on Layer 4c of Cueva de las Manos. Other resources exploited along the Atlantic coast, apparently during summer visits, included large quantities of shellfish as well as penguins and newborn seals (Caviglia *et al.*, 1982).

Alero de las Manos Pintados has been interpreted as a workshop for finishing and reworking tools (Aschero, 1975, p. 198). Piedra Parada 1 was a spring–summer camp where objects of stone, hide, and plant fibers were manufactured and repaired (Pérez de Micou, 1983). Circular or horseshoe-shaped walls up to 70 cm high, constructed of unworked stones, are often encountered on the mesetas. Gradin (1976) found notable differences between the artifacts from inside and those from outside one of these enclosures and suggested that they were seasonal camps used when hunters went up onto the mesetas to hunt guanacos, which are abundant there during summer.

Menghin (1952b, 1957b) suggested a chronological division of the Patagoniense industry into four subphases. All but the first have pottery and the final one equates with adoption of the horse. Aschero and Gradin have recognized three periods in northwestern Santa Cruz province (Aschero, 1978; Gradin *et al.*, 1981) as follows:

(1) Río Pinturas IV or Typical Patagoniense (1650 to About 1250 B.P.). Protopatagoniense characteristics persist, but stemmed and shouldered projectile points appear. Locations: Arroyo Feo, Layers 4, 3, and 2; Cueva de las Manos, Layers 4c, 4b, and 3b; and Cerro de los Indios, Layer 3;

(2) Río Pinturas V or Ceramic Patagoniense [Beginning About 1200 B.P. by Analogy with a Date from Cerro Shequen Obtained by Gradin (1979a)]. Pottery is added, lithics diminish in size, and bifacial retouch is more common on objects other than projectile points. Locations: Alero del Buho; Cerro Redondo; and Alero Cardenas, Layers 2 and 3;

(3) Río Pinturas VI (Eighteenth and Nineteenth Centuries A.D.). European contact and adoption of horses occurs. No excavated sites have produced these features, although Bahía Solano 13 on the Atlantic coast has a carbon-14 date of 205 B.P. $\pm$ 95 years (Caviglia *et al.*, 1982).

Projecting these criteria across the rest of central Patagonia permits assigning Chacra Briones II and Levels 4 and 2 of Alero de las Manos Pintadas to Period 1 (typical Patagoniense), although carbon-14 dates of 1910 $\pm$ 60 and 1700 B.P. $\pm$ 50 years (Aschero, 1975, p. 101; Gradin *et al.*, 1977, p. 249) imply the somewhat earlier appearance here of stemmed projectile points. Complexes attributable to Period 2 (ceramic Patagoniense) are

Fig. 20. Pottery vessel from Menghin's excavations at Chacra Briones (Ceramic Patagoniense), one of the very rare nearly complete specimens from Central Patagonia (courtesy C. Gradin).

numerous, including Cerro Shequen; Chacra Briones, Level III; Campo Moncada 2, Layers 1 and 2; Piedra Parada, Layer 2; Campo Nassif 1; and the surface collections from Colhué Huapi and Tapera 2 (Fig. 20).

In 1983, Aschero proposed that Menghin's Patagoniense I to IV scheme be retained at a regional level but that subphases II and III be named Tehuelchense and their definitions expanded to include nonceramic components.

There is tacit agreement that the late assemblages of the Patagoniense phase were produced by populations of the "Tehuelche complex" or their immediate predecessors (Fig. 21). Although efforts to correlate regional variations with groups recognized ethnographically are more problematical, Gradin *et al.* (1981, pp. 220 and 222) have suggested that the archaeological remains of the Río Pinturas area equate with the Aonik'enk or the Metcharnue segment. Other Aonik'enk segments are probably responsible for Magellan V (Massone, 1979, 1981).

Northern Patagonian Expressions

Thus far, neither Casapedrense nor Protopatagoniense has been found in northern Patagonia. Alero de Pilcaniyeu (Boschin and Nacuzzi, 1979) and

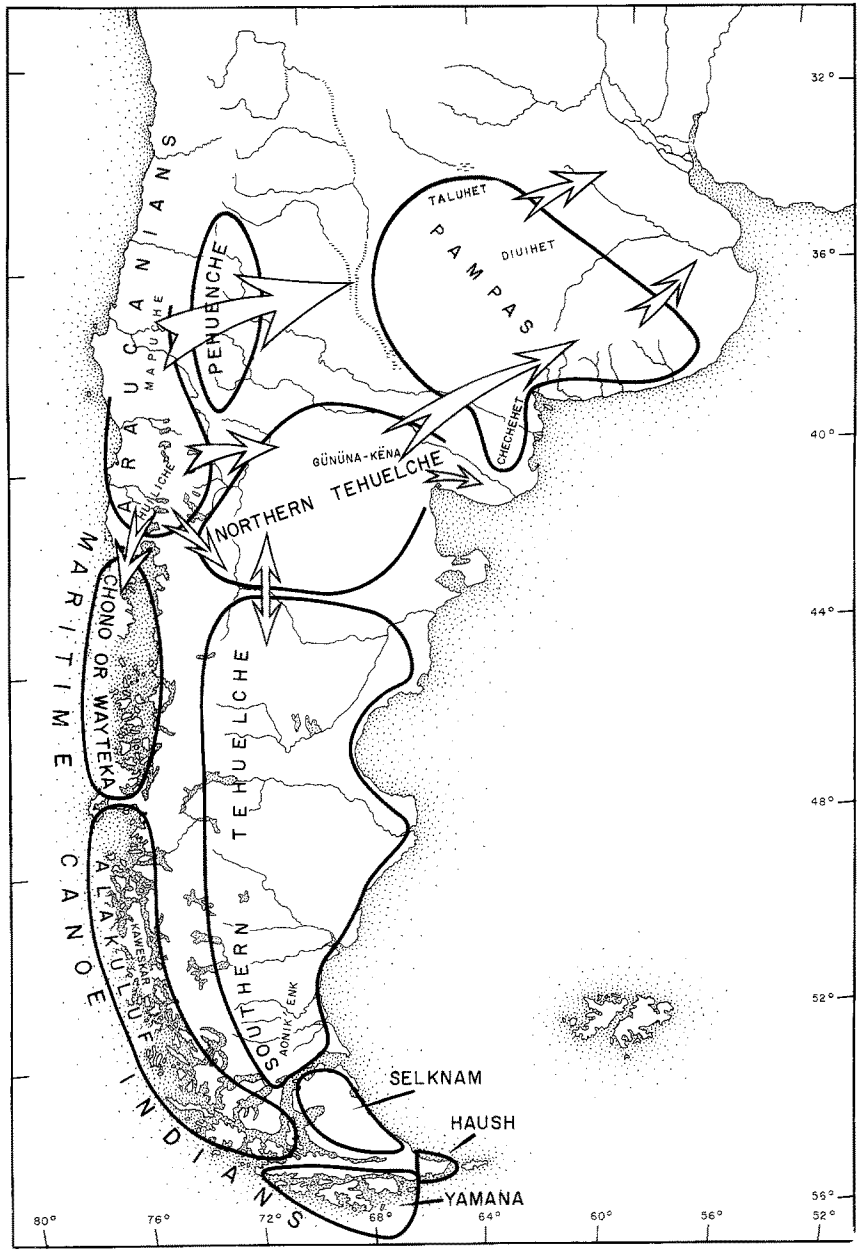

Fig. 21. Distributions of ethnic groups during recent centuries. Arrows indicate the directions of post-European displacements.

Alero La Figura 1 (Nacuzzi, 1984) have produced abundant collections that can be assigned to a lateral facies of ceramic Patagoniense (Fig. 14). La Figura 1 has a carbon-14 date of 1050 B.P. ± 90 years. On Somoncura meseta, farther to the east, Gradin found rock enclosures (Laguna Azul and La Maciega) that also produced different material inside and outside the walls (García and Pérez de Micou, 1979).

The "Jacobaccense" industry, postulated by Menghin (1957b) and Casamiquela (1961) based on very few artifacts, remains speculative. Excavations at Pilcaniyeu, where stratified assemblages were expected, produced Patagoniense; also, Fischer (1984) considers the assemblages from Barda Blanca representative of ceramic Patagoniense. The function of the Jacobaccense "bifaces" is enigmatic, but they may be discarded preforms. Gradin (1972) initially considered the materials from the Supayniyeu ravine related to Jacobaccense but now includes them among quarry and workshop accumulations (Gradin and Aguerre, 1984b, p. 138).

The following list although not applicable to all north-central Patagonian sites, differentiates the Patagoniense of this region from that of Río Pinturas and the Chubut Valley (cf. Crivelli Montero, 1984): much less use of blades, a higher frequency of bifacial flaking, slight stylistic differences in stemmed projectile points, and sporadic association of unstemmed triangular points (characteristic of the cultural tradition to the north). A tendency toward microlithic size is observable at several sites.

During the recent centuries, northern Patagonia was occupied by Gününa-këna groups, whose ancestors may have been associated with this facies (Fig. 21). The frontier role played in historic times by the Río Chubut has not been confirmed archaeologically (Nacuzzi, 1984). With the advent of the European horse, the indigenous population moved to the center of the Pampean subarea, but their displacement has not been documented archaeologically.

HUNTERS AND GATHERERS OF THE PAMPA AND NORTHERN PATAGONIA (FIG. 22)

Other groups in northern Patagonia shared with the inhabitants of the Pampa certain technological traditions and styles of stone working different from those used farther south. They probably exploited a broader spectrum of resources and made greater use of plant foods, although this remains to be demonstrated. At first glance, their stone working appears less skillful, leading Menghin to consider them "epiprotolithic," exposed to a late process of "neolithization" by influences emanating from sedentary peoples living farther north (Fig. 12). This interpretation was the basis for recognizing a

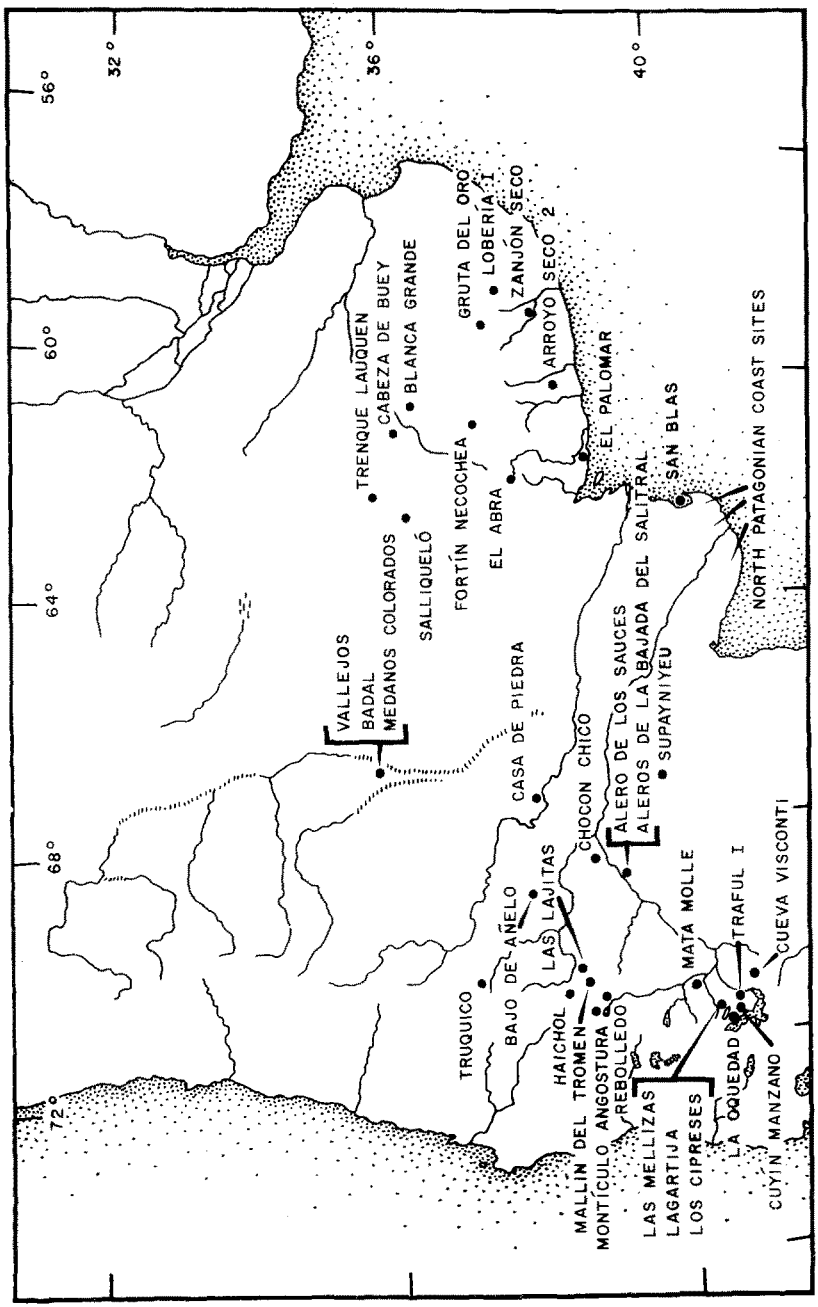

Fig. 22. Locations of sites of the Intermediate and Recent phases of the Pampa and northern Patagonia.

"Tandiliense tradition," which began with the industry of the same name from the Gruta del Oro and passed through the "Blancagrandense" and "Bolivarense" phases (Bórmida, 1960, 1961, 1963–1966; Sanguinetti de Bórmida, 1966, 1970). Austral (1965, 1966) initially accepted this sequence but later (1971) adopted a less compromising scheme.

The notion of a Tandiliense tradition and its antiquity have been discussed by Madrazo (1973). In his opinion, the late inhabitants of the Pampa were guanaco hunters with southern roots (Madrazo, 1968, p. 9), who moved from the hills of southern Buenos Aires Province onto the east-central plains to exploit wild cattle and horses of European origin (Madrazo, 1973, p. 22). From the technotypological standpoint, however, this interpretation is indefensible (Orquera, 1981, p. XLVI). The differentiation and characterization of "Blancagrandense" and "Bolivarense" may also be methodologically invalid and should be reviewed in detail.

Intermediate Complexes

The intermontane region of the province of Buenos Aires is characterized by medium to large artifacts, a predominance of quartzite, edge retouch, an abundance of side scrapers, and the rarity or absence of stone projectile points, among other traits. Although the label Blancagrandense is now avoided or rejected, the fact remains that materials with the above characteristics occur in Layer II of Fortín Necochea, with collagen dates between 6010 ± 150 and 3630 B.P. ± 60 years (Crivelli *et al.*, 1985); at Cueva El Abra (Sierra de la Ventana), whose lower levels have a date of 6230 B.P. ± 90 years (Castro, 1984); in the upper level of Arroyo Seco 2; and at Zanjón Seco, where they are associated with numerous guanaco bones (Table IV) (Politis, unpublished doctoral thesis).

As an alternative to the hypothesis of Menghin and Madrazo, it has been suggested that the industries of the Pampa subarea derive from an early expansion by hunter-gatherer groups from the highlands of northwestern Argentina, rather than a late influence by pottery-making agriculturalists. This idea finds support in the Casa de Piedra site on the bank of the Río Colorado. The upper part of the lower occupation, with an estimated antiquity of 7000 B.P., produced projectile points similar to the Totoral type. The intermediate occupations, with a carbon-14 date of 6080 B.P. ± 120 years, share many traits with the sequence established by González (1962) at Intihuasi (Gradin and Aguerre, 1984b, pp. 138–142), including the gradual replacement of ovoid points by triangular ones, an abundance of milling stones, and similar types of end scrapers. According to Gradin and Aguerre, affinities can also be observed with the complex from level 9 in Traful I Cave,

Table IV. Radiocarbon Dates Related to the Pampa and Northern Patagonia Hunter-Gatherers

Lab No.	Site	Bed or level	Phase or industry	Analyzed material	Age B.P.	Reference	Evaluation
AC-11	Halchol Cave	16–17 A2	Not named	Charcoal	7020 ± 120	Fernández (pers. comm.)	
Beta-3271	Gruta del Oro	3	Not identifiable	Sediment	6560 ± 80	Orquera and Piana (1982)	
LJ-5132	Traful I Cave	9	Not named	Charcoal	6240 ± 60	Crivelli and Silveira (1983)	
LP-91	El Abra Cave	V–VI–VIII	Not named	Charcoal	6230 ± 90	Castro (1984, p. 105)	
I-12065	Case de Piedra I	Middle	Middle occupations	Charcoal	6080 ± 120	Gradin (1984, p. 42)	
I-11304	Traful I Cave	9	Not named	Charcoal	6030 ± 115	Curzio *et al.* (1980)	
LP-88	Fortín Necochea	II base	Not named	Collagen	6010 ± 400	Crivelli *et al.* (1985)	
AC-21	Haichol Cave	15–16 A1	Not named	Charcoal	6000 ± 115	Fernández (pers. comm.)	
AC-232	Haichol Cave	16–17 B4	Not named	Charcoal	5525 ± 110	Fernández (pers. comm.)	
AC-231	Haichol Cave	16–17 B4	Not named	Charcoal	5050 ± 100	Fernández (pers. comm.)	
AC-573	Mata Molle	Below human skel.	Not identifiable	Peaty sedim.	4930 ± 150	Fernández (1983b)	
AC-222	Haichol Cave	16–17 B2	Not named	Charcoal	4870 ± 100	Fernández (pers. comm.)	
AC-575	Meta Molle	Below human skel.	Not identifiable	Peaty sedim.	4550 ± 110	Fernández (1983b)	
AC-12	Haichol Cave	14	Not named	Charcoal	4500 ± 120	Fernández (pers. comm.)	
Unknown	Alero de los Sauces	3	Norpatagoniense	Unknown	4400 ± ?	Sanguinetti de Bórmida (1978)	
AC-16	Haichol Cave	12–13 A2	Not named	Charcoal	4360 ± 115	Fernández, (pers. comm.)	
CSIC-593	Fortín Necochea	II top	Not named	Collagen	3630 ± 60	Crivelli *et al.* (1985)	
AC-221	Haichol Cave	16–17 B2	Not named	Charcoal	3620 ± 95	Fernández (pers. comm.)	
AC-230	Haichol Cave	16 B3	Not named	Charcoal	3590 ± 100	Fernández (pers. comm.)	
AC-955	Los Cipreses rockshelter	4	Not named	Charcoal	2890 ± 80	Silveira (pers. comm.)	
LP-146	Casa de Piedra Ortega	1	Northern Patagoniense	Charcoal	2840 ± 80	Crivelli (pers. comm.)	
LJ-5131	Traful I Cave	4	Not named	Charcoal	2720 ± 40	Crivelli and Silveira (1983)	
AC-953	La Oquedad rockshelter	9	Not named	Charcoal	2590 ± 90	Silveira (pers. comm.)	
LP-85	Visconti Cave	VIII	Not named	Charcoal	2526 ± 93	Ceballos and Peronja (1985)	
AC-309	Chocon Chico rockshelter		Early occupation	Charcoal	2490 ± 90	Fernández (pers. comm.)	
Unknown	Aleros Bajada del Salitral	1	Norpatagoniense	Unknown	2440 ± ?	Sanguinetti de Bórmida (1978)	
AC-901	Haichol Cave	17 B2	Not named	Charcoal	2440 ± 100	Fernández (pers. comm.)	
AC-276	Mata Molle	Above human skel.	Not identifiable	Peat	2430 ± 125	Fernández (1983b)	
AC-229	Haichol Cave	16 B3	Not named	Charcoal	2420 ± 100	Fernández (pers. comm.)	
AC-13	Haichol Cave	12 A1	Not named	Charcoal	2380 ± 100	Fernández (pers. comm.)	
AC-896	Haichol Cave	13 B2	Not named	Charcoal	2350 ± 150	Fernández (pers. comm.)	

AC-899	Haichol Cave	16 B2	Not named	Charcoal	2290 ± 120	Fernández (pers. comm.)	
AC-18	Haichol Cave	17 A1	Not named	Charcoal	2260 ± 100	Fernández (pers. comm.)	
AC-217	Haichol Cave	16 B2	Not named	Charcoal	2230 ± 100	Fernández (pers. comm.)	Disturbed
LJ-5130	Traful I Cave	3a′	Not named	Charcoal	2230 ± 70	Curzio *et al.* (1980)	
AC-80	Haichol Cave	16 B2	Not named	Charcoal	2150 ± 90	Fernández (pers. comm.)	Disturbed
AC-900	Haichol Cave	11 B2	Not named	Charcoal	2130 ± 110	Fernández (pers. comm.)	
AC-77	Haichol Cave	15 B2	Not named	Charcoal	1830 ± 85	Fernández (pers. comm.)	
Unknown	Mallín del Tromen	Lower	Not named	Charcoal	1815 ± 145	Pastore (1974, p. 286)	
Unknown	Aleros Bajada del Salitral	3	Norpatagoniense	Unknown	1795 ± ?	Sanguinetti de Bórmida (1973)	
AC-956	Lagartija Cave	4 base	Not named	Charcoal	1730 ± 100	Silveira (pers. comm.)	
AC-952	La Oquedad rockshelter	7	Not named	Charcoal	1640 ± 90	Silveira (pers. comm.)	
AC-898	Haichol Cave	14 B1	Not named	Charcoal	1440 ± 90	Fernández (pers. comm.)	
AC-11	Haichol Cave	12 A1	Not named	Charcoal	1390 ± 100	Fernández (pers. comm.)	
AC-308	Chocón Chico rockshelter		Late occupation	Shells	1380 ± 85	Fernández (pers. comm.)	
AC-75	Haichol Cave	10 B1	Not named	Charcoal	1290 ± 70	Fernández (pers. comm.)	
AC-897	Haichol Cave	9 B1	Not named	Charcoal	1290 ± 110	Fernández (pers. comm.)	
AC-15	Haichol Cave	13 A2	Not named	Charcoal	1250 ± 80	Fernández (pers. comm.)	
CSIC-136	Médanos Planicie del Gigante	–	Norpatagoniense	Unknown	930 ± 50	Sanguinetti de Bórmida (1978)	
Unknown	Montícalo Angostura	9	Not identified	Charcoal	900 ± 75	Hajduk (unpublished)	
Unknown	Mallín del Tromen	Upper	Not named	Charcoal	890 ± 120	Pastore (1974, p. 285)	
AC 307	Chocón Chico rockshelter		Late occupation	Shells	810 ± 75	Fernández (pers. comm.)	
AC-954	Los Cipreses rockshelter	3 Middle	Not named	Charcoal	840 ± 90	Silveira (pers. comm.)	
AC-4	Truquico mine	–	Early occupation	Wood	725 ± 100	Fernández (1983a)	
AC-5	Truquico mine	–	Early occupation	Wood	630 ± 80	Fernández (1983a)	
AC-570	Las Mellizas rockshelter		Not named	Charcoal	590 ± 90	Silveira (1984)	
AC-551	Haichol Cave	13 B2	Not named	Eggshell	470 ± 110	Fernández (pers. comm.)	Experimental
Beta-4385	Lobería I		Not named	Charcoal	440 ± 60	Ceresole and Slavsky (1985)	
AC-550	Haichol Cave	13 B2	Not named	Eggshell	420 ± 110	Fernández (pers. comm.)	Experimental
AC-2	Truquico mine	–	Historic Pehnenche?	Shells	350 ± 70	Fernández (1983a)	

dated at 6030 ± 115 and 6170 B.P. ± 100 years (Curzio *et al.*, 1980), where triangular points and small end scrapers also occur. Similar traits reported from the middle levels of Cuyín Manzano could not be dated (Ceballos, 1982). Haichol Cave in central Neuquén has provided a sequence beginning about 7000 B.P. (Table IV).

In the Limay Basin somewhat farther south, the Alero de los Sauces (dated 4400 B.P.) and Aleros de la Bajada del Salitral (Level 1, 2440 B.P.; Level 3, 1975 B.P.) have been included in the Norpatagoniense because of the presence of triangular projectile points. Guanaco remains do not occur; smaller game and riverine clams were exploited instead (Sanguinetti de Bórmida, 1973). The relationship of these sites to the later coastal Norpatagoniense is problematical, however.

Recent Complexes

In the interval between the occupations at the sites mentioned above and the arrival of Europeans, no significant changes appear to have taken place in the way of life on the Pampa. A few modifications occurred, such as a tendency toward a reduction in the size of projectile points and end scrapers, accompanied by greater standardization of the latter (Fig. 23). Another innovation was the adoption of crude pottery, which remained very rare. According to Bórmida, a crucial distinction between Blancagrandense and Bolivarense is the predominance of quartzite in the former and the greater use of chalcedony in the latter. Crivelli *et al.* (1985) suggest that this difference in raw materials reflects the preference for quartzite for side scrapers and chalcedony for end scrapers.

Regional differences can be observed among these late industries. The Bolivarense is associated with the ponds in the center of Buenos Aires Province. In the Palomarense on the southern coast of the same province, bipolar objects are more common (Austral, 1965). The Pampean–Atuelense industry correlates with the dune region around the Río Chadileuvu (Austral, 1971, 1972, 1975). No specific justification has been provided for differentiating the Bolivarense from the Norpatagoniense of the lower Río Negro Valley and the Colorado Basin (Bórmida, 1964). The only detailed description of the "Norpatagoniense" comes from the upper levels of Casa de Piedra, and the authors believe the name Norpatagoniense should be discarded (Gradin and Aguerre, 1984b, p. 142).

The archaeological manifestations on the northern coast of Patagonia (Bahía San Blas and Gulf of San Matías) present a persistent problem. The Sanmatiense and Puntarrubiense facies appear valid (Bórmida, 1962, 1964, 1969), but the postulated Jabaliense industry can be discounted. The former

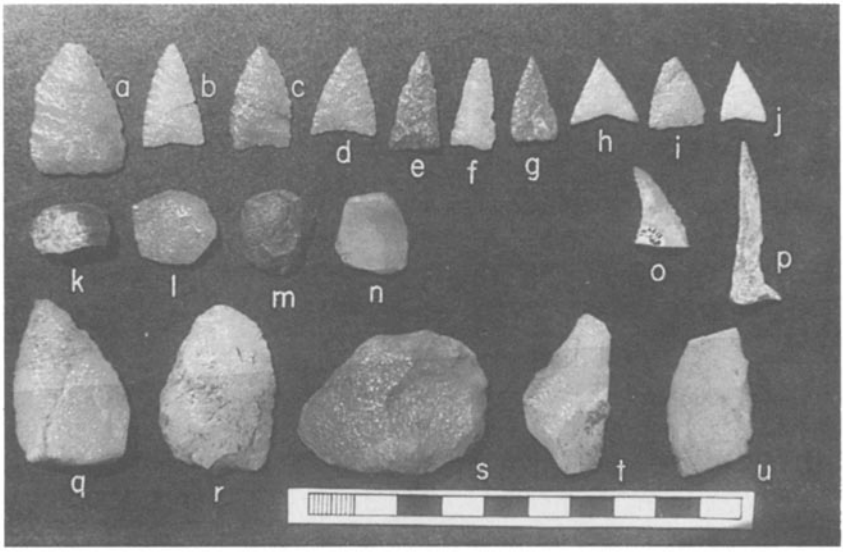

Fig. 23. Late industries of the Pampa exemplified by implements from Loberia I: a–j, triangular projectile points; k–n, end scrapers; o, stone borer; p, bone borer; q–u, side scrapers (courtesy G. Ceresole and L. Slavsky).

have been dated between 6000 B.P. and the first millennium of our era, but Orquera (1979) has questioned the applicability of the Auer curve on which these estimates are based. Their division into subphases is equally speculative. The tool morphologies are unquestionably distinctive and Bórmida (1964, p. 34, 1969, p. 42) denies categorically that they represent coastal expressions of transhuman groups from the interior. Nonetheless, the situation needs careful review.

Few data on subsistence are available for these late phases. Although it was assumed that deer and smaller game played important roles, guanaco remains predominate at Zanjón Seco 2 and in the upper levels of Fortín Necochea (Politis, unpublished doctoral thesis; Crivelli *et al.*, 1985). Conflicting opinions exist regarding the retreat of guanacos from the humid to the dry Pampa. Madrazo (1973, p. 22) used the absence of guanacos in the central Pampa as an argument against an early peopling of this zone; Tonni and Politis (1980) date their retreat toward the west and southwest prior to the sixteenth century and attribute it to climatic changes. In contrast, the persistence of guanacos and their coexistence with animals of European origin have been reported by Crivelli *et al.* (1985) at Fortín Necochea in the intermontane zone.

Marine resources continued to be exploited on the north Patagonian coast, including mollusks and seals (Bórmida, 1964, 1969), but there are no quantitative data. The function of the numerous milling stones—including a few mortars—far from regions where leguminous plants could have been processed is an enigma. Their antiquity is established by finds at Casa de Piedra and Aleros de la Bajada del Salitral.

Although many sites provide evidence of occupation until after European contact, the ethnic identity of the population of the Pampa remains controversial. Some authorities (Madrazo, Casamiquela), relying on eighteenth-century observers, consider them extensions of Patagonian groups. Others (Bórmida, Orquera, Crivelli), drawing on archaeological data and different ethnographic sources, consider them separate and distinct. In any case, the introduction of cattle and horses and the influences of Araucanians from Chile (which were more linguistic and social than material and biological) profoundly transformed the way of life of the indigenous population beginning with the eighteenth century.

THE ARAUCANIAN PENETRATION

The prehistory of the Araucanians or Mapuche, a southern Chilean horticultural people, was summarized by Menghin (1962) and little has been added since. They are believed to have begun expanding across the Andes into the precordilleran valleys of Neuquén Province (northwestern Argentine Patagonia) prior to the sixteenth century (Fig. 21). After the seventeenth century, their impact increased and they absorbed culturally the hunter-gatherers that occupied these valleys and the adjacent plains. Archaeological evidence for this influx is ambiguous, however. The principal indicator, pottery, may denote either the presence of resident Araucanians, incursions that began to alter the local traditional way of life, or an indigenous population in contact with their more sedentary neighbors. The occurrences of spindle whorls and pottery favor the first two alternatives, but the abundance of projectile points (generally triangular with notched bases but sometimes stemmed and shouldered), end scrapers, and borers, as well as the predominance of guanaco bones among food remains, suggests that hunting remained extremely important. Other artifacts include milling stones, pipes, and ornaments. Evidence of European contact appears in the upper levels.

Sites providing these data include the upper levels of Cuyín Manzano (Ceballos, 1982), Montículo Angostura (Hajduk, 1987), Alero Las Mellizas (Silveira, 1984), and surface remains at Bajo de Añelo (Hajduk, 1978). A carbon-14 date in the eleventh century has been obtained for some pottery and Hajduk assigns a few vessels to the Pitrén phase on the other side of the

cordillera. Sherds of the same type were found by Silveira (1984), however, in Alero Los Cipreses associated with European contact. A cemetery containing a similar combination of cultural elements, but more pronouncedly Mapuche, was excavated by Podestá and Pereda (1981) at Las Lajitas. Burials at Rebolledo Arriba (Hajduk, 1983) are completely Mapuche and attributable to the beginning of the eighteenth century.

ROCK ART

The quantity of rock paintings and engravings in Patagonia and the Pampa is so large that their study has become a semi-autonomous branch of archaeology in the region (Fig. 24). The foundation was laid by Menghin (1952a, 1957a), who recognized seven "styles" that could be assigned chronological and cultural significance. His definitions were based on type motifs, however, which combined execution with content (Gradin, 1978b, pp. 126–127). It is preferable to separate these two criteria and to assign a modal significance to Menghin's units or, better still, to view them as thematic complexes. Gradin was able to reduce their number by combining some of them.

Gradin is the principal authority on indigenous Pampean–Patagonian art. He has published numerous monographs on specific sites: Piedra Calada (Menghin and Gradin, 1972), Alero de las Manos Pintadas (Gradin, 1973a; Gradin and Aschero, 1979), Mamuel Choique (Gradin, 1973b), Cueva de las Manos (Gradin *et al.*, 1977), Angostura del Deseado (Gradin, 1977), Alero Cárdenas (Gradin, 1978a), Angostura de Gaiman (Gradin, 1979b), Cerro Shequen (Gradin, 1979a), Arroyo Feo (Gradin, 1983), and La Martita (Gradin and Aguerre, 1984a). In addition, he has several times examined the distributions of motifs and styles, including schematic engravings and associated signs (Gradin, 1977) and geometric paintings of the "fret style" (Gradin, 1979a). For the Cueva de las Manos and bordering zones of the Río Pinturas Basin, Gradin *et al.* (1977, 1981) distinguish four successive clusters. He has also attempted to standardize descriptive concepts (Gradin, 1979b) and produced synthetic works (Schobinger and Gradin, 1985; Gradin, 1985).

Other noteworthy recent contributions have been made by Aschero (1983a) on Cerro Casa de Piedra, Fernández (1980) on the province of Neuquén, Cardich (1981) on El Ceibo, Llamazares (1982) on Pilcaniyeu, and Ceballos and Peronja (1985) and Gonzalez (1977) on Patagonia.

The greatest density and variety of manifestations occur in the zone between the Neuquén and the Santa Cruz rivers. South of the latter and in the Pampa subarea, examples are rarer and less complex (cf. Bate, 1970;

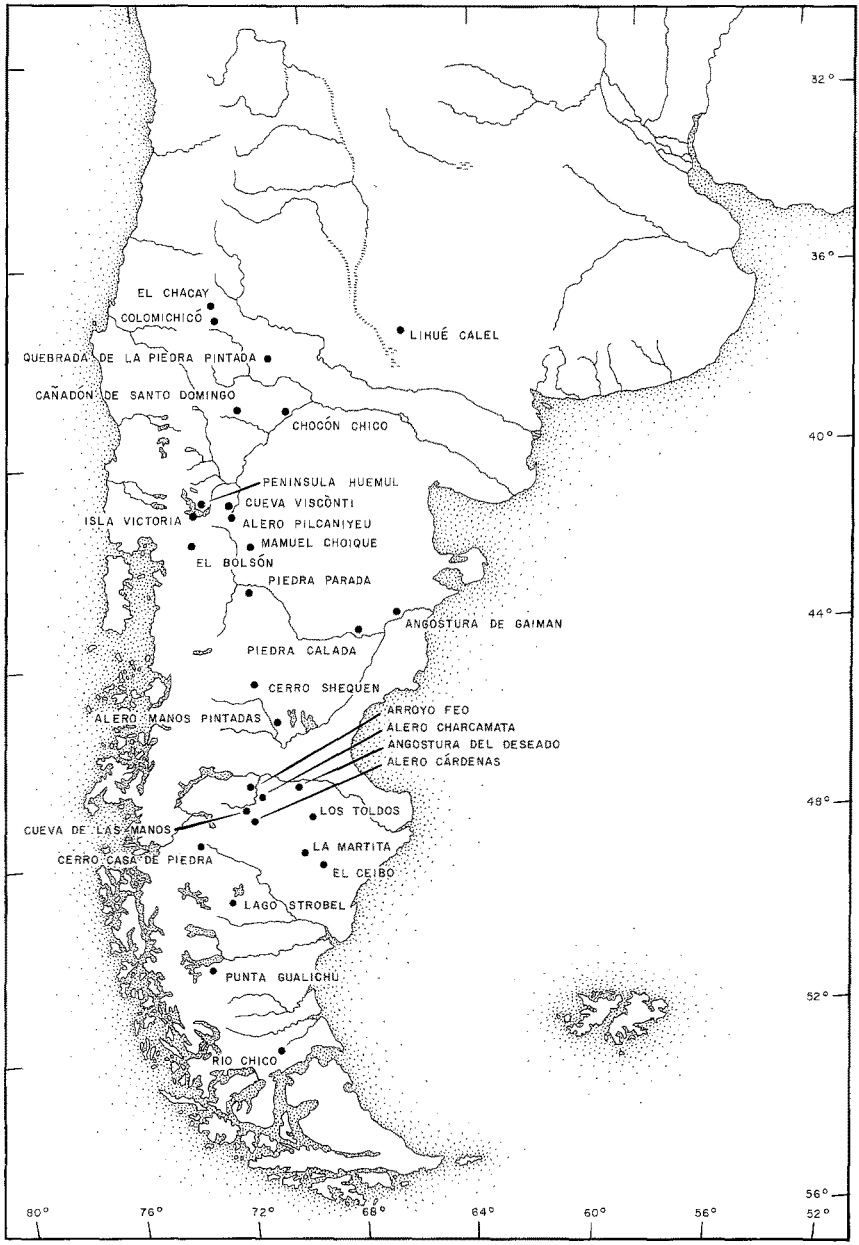

Fig. 24. Locations of the principal sites with rock art.

Fig. 25. Negative prints of hands in the Cueva de las Manos, Toldense phase (courtesy C. Gradin).

Fig. 26. Guanaco-hunting scene from Cueva de las Manos, probably associated with the Toldense phase (courtesy C. Gradin).

Fig. 27. Geometric designs from Cerro Shequen (courtesy C. Gradín).

Gradin, 1975) and give an impression that the elements have been dismantled and recombinated.

The oldest examples, associated with Río Pinturas I facies of the Toldense, are negative imprints of hands (Fig. 25) and scenes of humans interacting with guanacos (Fig. 26). Subsequently, the scenes disappear and the guanacos assume more static positions. The late period, equating with the Protopatagoniense and Patagoniense phases, features geometric themes in painting (Fig. 27) and highly stylized but presumably biomorphic elements in engraving (Fig. 28) (Gradin, 1976, 1979a). The motifs executed using parallel incisions in northern Neuquén are probably also recent. The same geometric elements [misnamed "frets" (grecas)] occur on portable objects, such as pottery, stone plaques, axes, and textiles (Gradin, 1973b, 1979a). Equestrian representations have been observed in the vicinity of Lago Nahuel Huapí, but European and Argentine explorers of the Pampa and Patagonia found neither practitioners of art on rocks nor memories of its significance.

THE CANOE INDIANS OF THE MAGELLAN–FUEGIAN CHANNELS AND ISLANDS

This region is ecologically very different from those discussed thus far and was considered for a long time to be hostile, poor in resources, and suitable only as a refuge for marginalized groups (Fig. 29). This view was expressed by Menghin (1960), who drew on speculations by earlier ethnographers, such as Gusinde and Imbelloni. Early archaeological investigations were restricted to those by Bird (1938, 1946) and Emperaire and Laming (1961). This conception began to change during the 1970s as a consequence of intensive fieldwork. There now exist solid and abundant data to affirm the continuity of a specialized adaptation to the seacoast in the extreme south from at least the second half of the fifth millennium B.C. until the past century (Table V).

Intermediate Complexes

On the north coast of the western part of the Strait of Magellan, this form of adaptation is exemplified by Bahía Buena and Punta Santa Ana, excavated by Ortiz Troncoso (1975, 1980). On the north coast of the Beagle Channel, it has been studied at Lancha Packewaia, excavated in 1975 (Orquera *et al.*, 1977), and at Túnel, where eight seasons of fieldwork have been conducted since 1976 (Orquera *et al.*, 1982, 1984; Orquera and Piana, 1983; Piana, 1984). Bahía Blanca and Punta Santa Ana have dates extending

Fig. 28. Schematic engravings from the vicinity of Lago Strobel (courtesy C. Gradin).

Fig. 29. Beagle Channel landscape, characterized by forested slopes and narrow beaches.

from 6410 ± 70 to 5210 B.P. ± 110 years and the Second Component of Túnel extends from 6200 ± 100 to 5680 B.P. ± 130 years (Table V). Although the dating of Englefield is uncertain (cf. Ortiz Troncoso, 1979), the cultural remains are very similar. An area measuring 210 m^2 has been excavated at Englefield and 146 m^2 at Túnel. The former produced more than 1300 tools, and the latter 911 implements and 958 ornaments.

At all the sites except Englefield, the initial occupation is characterized by intensive consumption of seals, which clearly predominate over remains of guanacos, birds, and fish. Later, shellfish were exploited, producing large accumulations. Túnel appears to have been occupied discontinuously throughout the year. Incomplete data indicate consumption of nearly 400 seals, more than 300 cormorants, and more than 50 penguins but only 30 guanacos (represented only by easily transported parts).

At Englefield, Bahía Buena, Punta Santa Ana, and Túnel, bone tools were very abundant (constituting more than 45% of the Túnel inventory) and include detachable harpoon points with cruciform bases, multibarbed spear points, bird-bone awls, chisels, etc. An important distinction is the abundance of ovoid obsidian projectile points at Englefield, Bahía Buena, and Punta Santa Ana and their extreme rarity at Túnel. Grooved and notched pebbles were presumably used in fishing. At Túnel, the presence of axes and other objects of smoothed and/or pecked stone is stratigraphically documented 6000 years ago. The remainder of the lithic inventory, in which side

Table V. Radiocarbon Dates Related to the Magellan–Fuegian Channels and Islands Cultural-Adaptive Tradition

Lab. No.	Site	Bed or level	Phase or industry	Analyzed material	Age B.P.	Reference	Evaluation
	Englefield	–	Not named	Charcoal	9236 ± 1500	Emperaire and Laming (1961, p. 16)	Dubious
	Englefield	–	Not named	Charcoal	8446 ± 1500	Emperaire and Laming (1961, p. 16)	Dubious
GrN-7612	Punta Santa Ana	No. inf.	Not named	Shells	6410 ± 70	Ortiz Troncoso (1980, p. 181)	Dubious
AC-697	Túnel I	D	Second Component	*Fisurella* shells	6340 ± 130	Albero *et al.* (1985)	Experimental
AC-696	Túnel I	D	Second Component	*Aulacomyas* shells	6290 ± 120	Albero *et al.* (1985)	Experimental
AC-693	Túnel I	D	Second Component	*Arctocephalus* bone	6220 ± 140	Albero *et al.* (1985)	Experimental
AC-693	Túnel I	D	Second Component	*Nacella* shells	6220 ± 120	Albero *et al.* (1985)	Experimental
Beta-3270	Túnel I	E 1	Second Component	Charcoal	6200 ± 100	Orquera *et al.* (1982)	
AC-694	Túnel I	D	Second Component	*Mytilus* shells	6180 ± 120	Albero *et al.* (1985)	Experimental
Beta-2819	Túnel I	D	Second Component	Charcoal	6140 ± 130	Orquera *et al.* (1982)	
CSIC-310	Túnel I	E	Second Component	Charcoal	6070 ± 70	Orquera *et al.* (1977, p. 238)	
CSIC-309	Túnel I	D	Second Component	Charcoal	5960 ± 170	Orquera *et al.* (1977, p. 238)	
CSIC-305	Lancha Packewaia	X	Ancient Component	Charcoal	5920 ± 90	Orquera *et al.* (1977, p. 235)	Rejected
GrN-7614	Bahía Buena	No inf.	Not named	Charcoal	5895 ± 65	Ortiz Troncoso (1980, p. 181)	
CSIC-308	Túnel I	D	Second Component	Charcoal	5850 ± 70	Orquera *et al.* (1977, p. 238)	
GrN-7613	Bahía Buena	No inf.	Not named	Charcoal	5770 ± 110	Ortiz Troncoso (1980, p. 181)	
AC-676	Túnel I	D	Second Component	*Trophon* shells	5720 ± 120	Albero *et al.* (1985)	Experimental
AC-236	Túnel I	D base	Second Component	Charcoal	5700 ± 170	Orquera *et al.* (1982)	
AC-238	Túnel I	E	Second Component	Charcoal	5690 ± 170	Orquera *et al.* (1982)	
AC	Túnel I	D	Second Component	*Mytilus* shells	5680 ± 130	Orquera *et al.* (1982)	Experimental
AC-683	Túnel I	D	Second Component	Charcoal	5630 ± 120	Albero *et al.* (1985)	Experimental
Gif-2928	Punta Santa Ana	Lower	Not named	Shells	5620 ± 120	Ortiz Troncoso (1975, p. 104)	
AC-675	Túnel I	Alpha	Fourth Component	*Trophon* shells	5380 ± 120	Albero *et al.* (unpublished)	Experimental
AC-684	Túnel I	Alpha	Fourth Component	*Balanus* shells	5330 ± 170	Albero *et al.* (unpublished)	Experimental
AC-703	Túnel I	D	Second Component	*Guanaco* bone	5280 ± 100	Albero *et al.* (1985)	Experimental
Gif-2927	Bahía Buena	Lower	Not named	Charcoal	5210 ± 110	Ortiz Troncoso (1975, p. 104)	
AC-695	Túnel I	D	Second Component	*Balanus* shells	5110 ± 130	Albero *et al.* (1985)	Experimental
CSIC-307	Lancha Packewaia	E	Ancient Component	Collagen	4980 ± 170	Orquera *et al.* (1977, p. 237)	
AC-869	Túnel VI	Base	Not identified	Charcoal	4870 ± 90	Orquera and Piana (unpublished)	
Beta-4385	Túnel I	C 3	Third Component	Charcoal	4300 ± 80	Orquera *et al.* (1982)	
MC-1068	Lancha Packewaia	E	Ancient Component	Charcoal	4215 ± 305	Orquera *et al.* (1977, p. 237)	Minimum age
AC-685	Túnel I	Alpha	Fourth Component	*Nacella* shells	4020 ± 120	Albero *et al.* (unpublished)	Experimental
CSIC-306	Lancha Packewaia	X	Ancient Component	Charcoal	4020 ± 70	Orquera *et al.* (1977, p. 237)	
GrN	Englefield		Not named	Charred bone	3915 ± 75	Ortiz Troncoso (1979)	Dubious

AC-686	Túnel I	Alpha	Fourth Component	*Mytilus* shells	3780 ± 110	Albero *et al.* (unpublished)	Experimental
Gif-1049	Ponsonby	B	Not named	Charcoal	3720 ± 130	Laming-Emperaire (1968, p. 81)	
Gif-1050	Ponsonby	A	Modern canoemen	Charcoal	3700 ± 130	Laming-Emperaire (1968, p. 81)	Dubious
AC-687	Túnel I	Alpha	Fourth Component	*Mytilus* shells	3700 ± 110	Albero *et al.* (unpublished)	Experimental
AC-702	Túnel I	Lower C	Third Component	Charcoal	3530 ± 90	Orquera and Piana (unpublished)	
AC-677	Túnel I	Alpha	Fourth Component	Charcoal	3030 ± 100	Orquera and Piana (unpublished)	
Beta-4387	Túnel I	Gamma	Not identifiable	Charcoal	2880 ± 60	Orquera *et al.* (1982)	
Gif-2729	Lauta	–	Not named	Shells	2780 ± 110	Ortiz Troncoso (1977–78, p. 245)	
Beta-2516	Túnel I	Alpha	Fourth Component	Charcoal	2690 ± 80	Orquera *et al.* (1982)	
AC-850	Túnel I	C 1	Fifth Component	Charcoal	1920 ± 80	Orquera and Piana (unpublished)	
GrN-12430	Isla Salmón 5	–	Not named		1765 ± 25	Figuerero Torres and Mengoni (1986)	
CSIC-312	Lancha Packewaia	D	Beagle channel Recent phase	Charcoal	1590 ± 50	Orquera *et al.* (1977, p. 237)	
AC-831	Shumakush X	–	Beagle channel Recent phase	Charcoal	1480 ± 100	Piana and Orquera (1985)	
AC-827	Shumakush I	D	Beagle channel Recent phase	Charcoal	1290 ± 110	Piana and Orquera (1985)	
AC-824	Túnel II	C	Beagle channel Recent phase	Charcoal	1230 ± 110	Orquera and Piana (unpublished)	
AC-826	Shumakush II	–	Beagle channel Recent phase	Charcoal	1150 ± 115	Piana and Orquera (1985)	
MC-1065	Lancha Packewaia	D	Beagle channel Recent phase	Charcoal	1080 ± 100	Orquera *et al.* (1977, p. 237)	
R-4542/1	Lauta	–	Not identified	Shells	1080 ± 60	Ortiz Troncoso (1977–1978, p. 245)	
AC-830	Shumakush IX	–	Beagle channel Recent phase	charcoal	990 ± 110	Piana and Orquera (1985)	
I-3989	Navarino	–	Not identified	Wood	970 ± 90	Bird (pers. comm.)	
AC-862	Túnel III	B	Beagle channel Recent phase	Charcoal	970 ± 110	Orquera and Piana (unpublished)	
GrN-9886	Angostura Titus	–	Not identified	Shells	860 ± 30	Ortiz Troncoso (1980, p. 89)	
AC-701	Túnel I	Beta	Beagle channel Recent phase	Charcoal	670 ± 80	Orquera and Piana (unpublished)	
AC-832	Shumakush X	E	Beagle channel Recent phase	Charcoal	500 ± 100	Piana and Orquera (1985)	
CSIC-314	Lancha Packewaia	D	Beagle channel Recent phase	Charcoal	470 ± 50	Orquera *et al.* (1977, p. 237)	
MC-1063	Lancha Packewaia	C	Beagle channel Recent phase	Charcoal	455 ± 85	Orquera *et al.* (1977, p. 237)	
AC-828	Shumakush III	–	Beagle channel Recent phase	Charcoal	450 ± 100	Piana and Orquera (1985)	
Beta-4388	Túnel I	Beta	Beagle channel Recent phase	Charcoal	450 ± 60	Orquera *et al.* (1982)	
AC-864	Túnel III	D	Beagle channel Recent phase	Charcoal	420 ± 80	Orquera and Piana (unpublished)	
MC-1066	Lancha Packewaia	C	Beagle channel Recent phase	Charcoal	410 ± 75	Orquera *et al.* (1977, p. 237)	
AC-829	Shumakush IV	–	Beagle channel Recent phase	Charcoal	370 ± 110	Piana and Orquera (1985)	
MC-1062	Lancha Packewaia	B	Beagle channel Recent phase	Charcoal	280 ± 85	Orquera *et al.* (1977, p. 237)	
MC-1064	Lancha Packewaia	B	Beagle channel Recent phase	Charcoal	280 ± 85	Orquera *et al.* (1977, p. 237)	
Gif-2728	Lauta		Not named	Shells	280 ± 90	Ortiz Troncoso (1977–1978, p. 245)	
AC-871	Túnel VII	B	Not named	Charcoal	100 ± 45	Piana and Orquera (unpublished)	

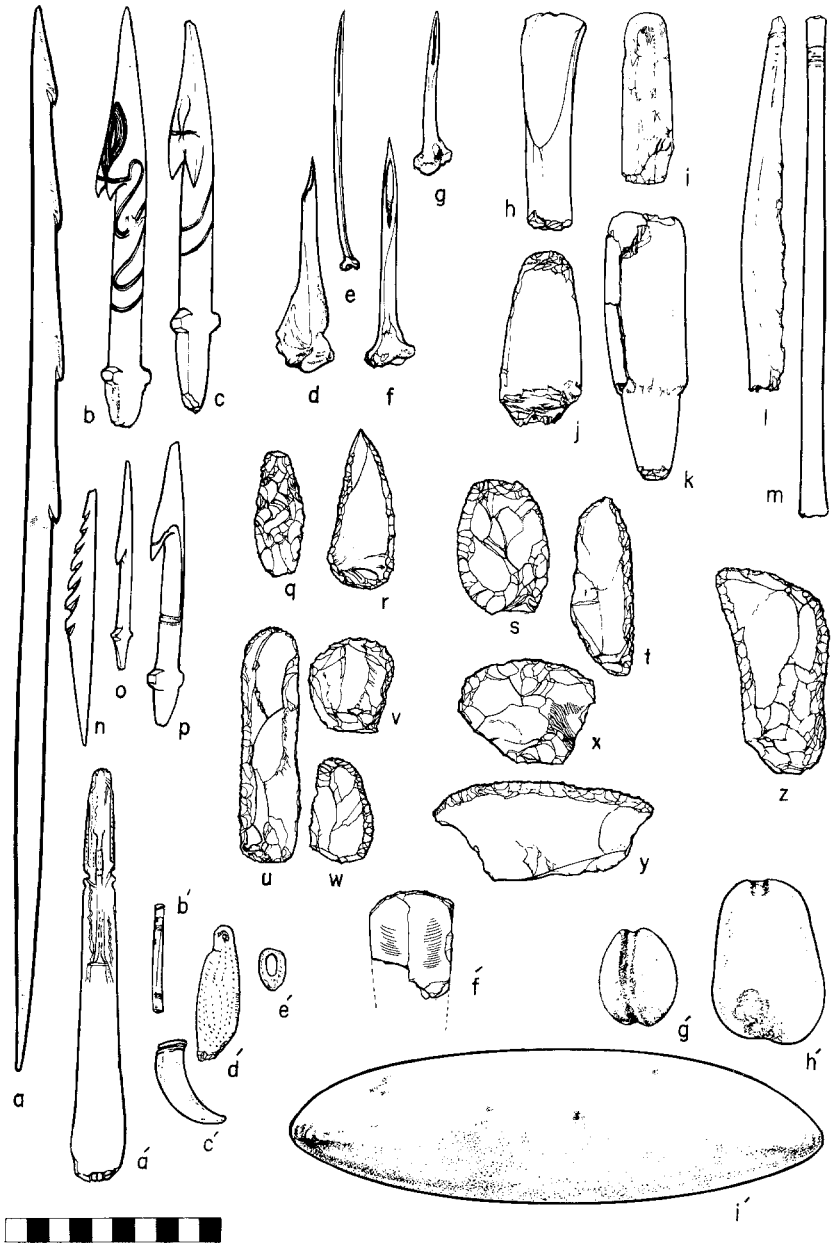

Fig. 30. Bone and stone implements characteristic of the Second Component at Túnel: a–c and n–p, multibarbed and cruciform-based harpoon heads; d–g, bird-bone awls; h, chisel; i, bark remover?; j and k, wedges; l, bone flaker; m, bone tube; q, projectile point; r, borer; s, t, x, and y, lateral and transversal side scrapers; u–w, end scrapers; z, triple side scraper; a′, decorated rib; b′–e′, bone and shell beads and pendants; f′, fragment of a shell knife; g′ and h′, grooved and notched pebbles (fishing weights?); i′, ax.

scrapers are very abundant and end scrapers rare, is less idiosyncratic (Fig. 30).

The same general type of adaptation characterizes these four sites, but there are stylistic and quantitative differences between Englefield and Túnel, with Bahía Buena and Punta Santa Ana presenting intermediate features. Data are insufficient as yet to establish whether these sites reflect an expansion from one region to the other or whether they are contemporary subtraditions with a common origin. The correlation observed by Orquera *et al.* (1984) between the initiation of this process of adaptation in the Beagle Channel area and the expansion of *Nothofagus* forest lends some weight to the first alternative. Whatever the situation, Túnel provides a few indications of communication with the Strait of Magellan.

A hiatus exists in the known sequence in the west after this early period. In the Beagle Channel, however, continuity of occupation is documented by the Early Component at Lancha Packewaia and the late levels at Túnel. At Túnel, the settlement pattern changes from multiple-activity camps to sporadic small visits principally for butchering guanacos. The latter are characteristic of the Third (4300 ± 80 to 3530 B.P. ± 90 years), Fourth (2690 B.P. ± 80 years), Fifth (1920 B.P. ± 80 years), and Sixth (450 B.P. ± 60 years) Components (Table V).

In contrast, Lancha Packewaia, only a kilometer away but more protected, was occupied more permanently. Its Early Component (4215 ± 305 and 4020 B.P. ± 70 years) continues the adaptive and typological tendencies characterizing the Second Component at Túnel with one notable exception: lanceolate or two-ended stone spear points 12 to 17 cm long, bifacially worked from large core preforms of basaltic–andesitic rock, are very numerous (Fig. 31). Their abundance correlates with a significant increase in the consumption of guanacos. Calculations of the contribution of each resource to the diet (Saxon, 1979) indicate that guanacos furnished 28% of the calories, and seals 63%. The same kinds of projectile points occur in the Ponsonby site much farther north, which has a carbon-14 date of 3720 B.P. ± 130 years (Laming-Emperaire, 1968).

Recent Complexes

In the Beagle Channel region, the population can be traced without difficulty into the Christian era through the Recent phase (Orquera *et al.*, 1977), which incorporates the Recent Component at Lancha Packewaia (eight dates between 1590 ± 50 and 280 B.P. ± 85 years), the Sixth Component at Túnel, Bird's finds at Navarino, and Shumakush I and X, with dates of 1480 ± 100 and 500 B.P. ± 100 years (Piana and Orquera, 1985).

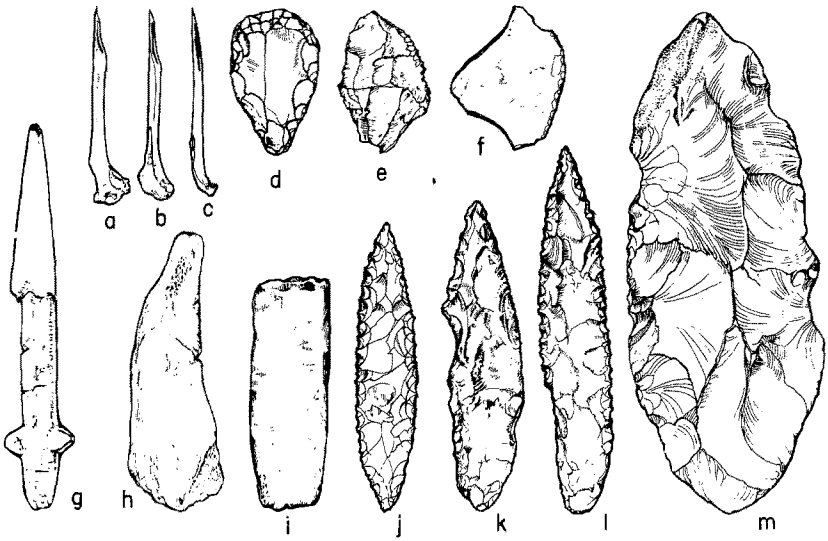

Fig. 31. Bone and stone implements from the Early Component at Lancha Packewaia: a–c, bird-bone awls; d, end scraper; e and f, side scrapers; g, harpoon head with cruciform base; h, chisel; i, wedge; j–l, spear points; m, bifacial preform.

Isla Salmón probably also belongs here (Figuerero Torres and Mengoni, 1986). In the western region, a little information has been obtained from the Vivian site (Emperaire and Laming, 1961) and very sparse data exist from others. The Recent phase of the Beagle Channel differs from the Early Component at Lancha Packewaia in the replacement of large stone points (presumably used on spears) by smaller but not microlithic ones (probably associated with arrows), and a concomitant decline in the size of preforms, and by a change in bone harpoon points from cruciform to simple shouldered bases (Fig. 32). The rest of the implements show little alteration. The typological variation in projectile points is great and some forms imply the introduction of bows (known in the region since the time of the Fourth Component at Túnel).

Stone projectile points remain abundant during the first millennium A.D. but decline in frequency soon thereafter. This trend is consistent with ethnographic information and faunal evidence for decreased consumption of guanacos at Lancha Packewaia. At the beginning of the Recent Component, seals contributed 84% of the calories consumed, and at the end, 91%; concomitantly, guanacos declined from 12 to 3%. Birds remained stable at about 3%; fish and mollusks contributed less than 1%. The same resources were exploited at the Shumakush sites (Piana and Orquera, 1985), but in different proportions. The latter sites also

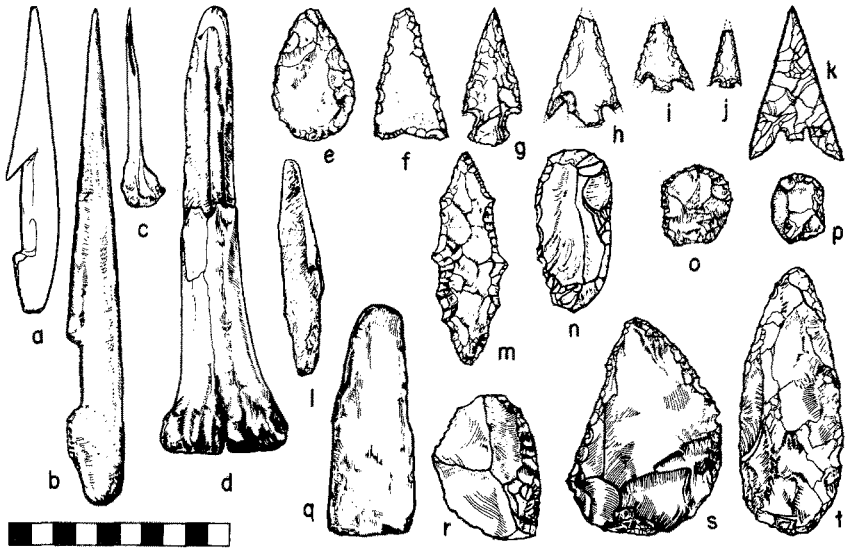

Fig. 32. Bone and stone implements from the Recent phase of the Beagle Channel: a and b, simple shouldered harpoon heads; c, bird-bone awl; d, bark remover; e–k and m, projectile points; l, chisel; n–p, end scrapers; g, wedge; r and s, side scrapers; t, bifacial side scraper.

clarify the structure of the "pit houses," about which Bird (1938) and Menghin (1956) disagreed.

The earliest archaeologically observable European influences date during the seventeenth century, although the Beagle Channel was not discovered officially until 1830.

Adaptive Continuity

Orquera and Piana (1984; Piana, 1984; Orquera *et al.*, 1984) assert that the notion of marginalization previously supported by other authors must be drastically revised

(1) because the high productivity of the Fuegian and southwestern Magellanic environment permitted a population density some 30 times higher than recorded on the Pampa and continental Patagonia prior to Araucanian penetration; and

(2) because adaptation to the shore environment was rapid, having been achieved by the end of the fifth millennium B.C.

Thereafter, a stable equilibrium was maintained, with a slow drift toward greater emphasis on resources that provided equivalent return for less effort. There were a few technological advances, but decoration of bone objects

declined in quality or disappeared, as did the technique of smoothing stone, production of stemmed wedges, and other traits. At least in the Beagle Channel, growing carelessness in the finishing of scrapers is perceptible. Orquera and Piana attribute this situation to the absence of environmental or demographic pressures or encroachments by neighboring groups that would have made more intensive exploitation of the resources necessary.

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REFERENCES

Aguerre, A. M. (1975). Acerca del Protosanmatiense. *Relaciones de la Sociedad Argentina de Antropología* **9**: 163–176.

Aguerre, A. M. (1978). A propósito de un nuevo fechado radiocarbónico para la Cueva de las Manos (Alto Río Pinturas, Provincia de Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **11**: 129–142.

Aguerre, A. M. (1979) Observaciones sobre la industria Toldense. *Sapiens* **3**: 35–54.

Aguerre, A. M. (1982). Informe preliminar de las excavaciones en la Cueva 4 de La Martita (Departamento Magallanes, Provincia de Santa Cruz). Paper delivered at the 7th Congreso Nacional de Arqueología Argentina, San Luis.

Aguerre, A. M. (1983). Los niveles inferiores de la Cueva Grande (Arroyo Feo): Área Río Pinturas, Provincia de Santa Cruz. *Relaciones de la Sociedad Argentina de Antropología* **14**(2): 211–239.

Alonso, F., Gradin, C. J., Aschero, C. A., and Aguerre, A. M. (1986). Algunas consideraciones sobre recientes dataciones radiocarbónicas para el área Río Pinturas (Provincia de Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **16**: 275–285.

Aschero, C. A. (1975). Secuencia arqueológica del Alero de las Manos Pintadas (Las Pulgas, Depto. Río Senguerr, Chubut). *Relaciones de la Sociedad Argentina de Antropología* **9**: 187–209.

Aschero, C. A. (1978). El complejo Patagoniense en el noroeste de Santa Cruz: Posición estratigráfica e indicadores arqueológicos. Paper delivered at the 5th Congreso Nacional de Arqueología Argentina, San Juan.

Aschero, C. A. (1983a). Nuevos datos sobre la arqueología del Cerro Casa de Piedra, sitio CCP 5 (Parque Nacional Perito Moreno, Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **14**(2): 267–284

Aschero, C. A. (1983b). La secuencia de Piedra Parada a través de las campañas 1979–1981: Consideraciones finales. In Aschero, C. A. (ed.), *Arqueología del Chubut: El Valle de Piedra Parada*, Edición Oficial de la Provincia del Chubut, Rawson, pp. 91–103.

Aschero, C. A. (1984). Tradiciones culturales en la Patagonia central (una perspectiva ergológica). Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Aschero, C. A., Bellelli, C., Lannot, C. F., Fischer, A., Fontanella, M. V., Otero, J. G., and Pérez de Micou, C. (1978). Un análisis tipológico y tecno-morfológico de siete sitios del complejo Patagoniense. Paper delivered at the 5th Congreso Nacional de Arqueología Argentina, San Juan.

Aschero, C. A., Pérez de Micou, C., Onetto, M., Bellelli, C., Nacuzzi, L., and Fischer, A. (1983). *Arqueología del Chubut: El Valle de Piedra Parada*, Edición Oficial de la Provincia de Chubut, Rawson.

Austral, A. (1965). Investigaciones prehistóricas en el curso inferior del río Sauce Grande. *Trabajos de Prehistoria* **19** (Madrid).

Austral, A. (1966). Prehistoria del sur de la región pampeana. *Actas y Memorias del 37° Congreso Internacional de Americanistas* **3**: 325–338.

Austral, A. G. (1971). El yacimiento arqueológico Vallejo en el Noroeste de la Provincia de La Pampa. Contribución a la sistematización de la prehistoria y arqueología de la región pampeana. *Relaciones de la Sociedad Argentina de Antropología* **5**(2): 49–70.

Austral, A. G. (1972). El yacimiento arqueológico Badal en el departamento de Chadileo, Provincia de La Pampa. *Anales de Arqueología y Etnología* **26**: 99–109.

Austral, A. G. (1975). El yacimiento arqueológico de Médanos Colorados (Departamento de Chadileo, Provincia de La Pampa). *Relaciones de la Sociedad Argentina de Antropología* **9**: 119–133.

Bate, L. F. (1970). Primeras investigaciones sobre el arte rupestre de la Patagonia chilena. *Anales del Instituto de la Patagonia* **1**(1): 15–25.

Bate, L. F. (1976). Análisis del material lítico del sitio río Pedregoso. *Actas y Memorias del Cuarto Congreso Nacional de Arqueología Argentina* (San Rafael, Mendoza) **3**: 339–364.

Bate, L. F. (1982). *Orígenes de la Comunidad Primitiva en Patagonia*, Cuicuilco, México D.F.

Bellelli, C. (1980). La decoración de la cerámica gris incisa de Patagonia (República Argentina). *Revista do Museu Paulista* **27**: 199–225.

Bellelli, C. (1983). Sitio Campo Moncada 2. In Aschero, C. A. (ed.), *Arqueologia del Chubut: El Valle de Piedra Parada*, Edición Oficial de la Provincia del Chubut, Rawson, pp. 31–42.

Bellelli, C. (1984). El componente de las capas 3a, 3b y 4a de Campo Moncada 2 (Provincia del Chubut) y sus relaciones con las industrias laminares de Patagonia central. Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Bellelli, C., Fontanella, M. V., and Aschero, C. (1977). Consideraciones sobre la distribución espacial y la variación morfológica del instrumental lítico en la secuencia de Chacra Briones. *Sapiens* **4**: 109–115.

Bird, J. B. (1938). Antiquity and migrations of the early inhabitants of Patagonia. *Geographical Review* **28**: 250–275

Bird, J. B. (1946). The archeology of Patagonia. In Steward, J. H. (ed.), *Handbook of South American Indians, Bureau of American Ethnology Bulletin* **143**(1): 17–24.

Bird, J. B. (1951). South American radiocarbon dates. *Memoirs of the Society for American Archaeology* **8**: 37–49.

Bird, J. B. (1969). A comparison of South Chilean and Ecuadorian "fishtail" projectile points. *Kroeber Anthropological Society Papers* **40**: 52–71.

Bird, J. B. (1970). Paleo-indian discoidal stones from southern South America. *American Antiquity* **35**: 205–209.

Bórmida, M. (1960). El epiprotolítico epigonal de la pampa bonaerense: La industria de La Montura (partido de Bolívar, Provincia de Buenos Aires). *Journadas Internacionales de Arqueología y Etnografía* **2**: 113–132.

Bórmida, M. (1961). Investigaciones paletnológicas en a región de Bolíver (Provincia de Buenos Aires). *Anales de la Comisión de Investigación Científica* **1**: 197–283.

Bórmida, M. (1962). El Jabaliense. *Trabajos de Prehistoria* **6** (Madrid).

Bórmida, M. (1963–1966). *Prolegómenos para una Arqueología de la Pampa Bonaerense*, Edición Oficial de la Provincia de Buenos Aires, La Plata.

Bórmida, M. (1964). Arqueología de la costa norpatagónica. *Trabajos de Prehistoria* **15** (Madrid).

Bórmida, M. (1969). El Puntarrubiense. *Trabajos de Prehistoria* **26**: 7–116 (Madrid).

Borrero, L. A. (1979). Problemas geomorfológicos y cronológicos relacionados con materiales arqueológicos atribuidos a las industrias Solanense y Oliviense. *Sapièns* **4**: 117–121.

Borrero, L. A. (1980). Arqueología del seno de la Ultima Esperanza (Magallanes, Chile). *7° Congreso Nacional de Arqueología* (Colonia del Sacramento, Uruguay, pp. 11–16.

Borrero, L. A. (1981). Excavaciones en el alero "Cabeza de León" (Isla Grande de Tierra del Fuego). *Relaciones de la Sociedad Argentina de Antropología* **13**: 255–271.

Borrero, L. A. (1982). Tipos de sitios con ocupación antigua en Patagonia. Paper delivered at the 7th Congreso Nacional de Arqueología Argentina, San Luis.

Borrero, L. A. (1984a). Pleistocene extinctions in South America. *Quaternary of South America and Antarctic Peninsula* **2**: 115–125.

Borrero, L. A. (1984b). El proyecto arqueológico "Norte de la Isla Grande de Tierra del Fuego": Contribuciones metodológicas y principales resultados generales. Paper delivered at the Primeras Jornadas de Arqueología de la Patagonia, Trelew.

Borrero, L. A. (1984c). Variabilidad de sitios arqueológicos en la Patagonia meridional. Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Borrero, L. A. (1984d). Informe preliminar sobre el material faunístico del sitio "El Volcán 4." *PREP Informes de Investigación* **1**: 39–51.

Borrero, L. A., and Casiraghi, M. (1982). Excavaciones en el sitio Bloque Errático 1 (San Sebastián, Tierra del Fuego). *Relaciones de la Sociedad Argentina de Antropologia* **14**(1): 129–142.

Borrero, L. A., Casiraghi, M., and Yacobaccio, H. D. (1985). First guanaco-processing site in southern South America. *Current Anthropology* **26**: 273–276.

Boschin, M. T., and Nacuzzi, L. R. (1979). Investigaciones arqueológicas en el abrigo de Pilcaniyeu (Río Negro). *Sapiens* **4**: 123–129.

Cardich, A. (1977). Las culturas pleistocénicas y post-pleistocénicas de Los Toldos y un bosquejo de la prehistoria de Sudamérica. *Obra del Centenario del Museo de La Plata* **2**: 149–172 (La Plata).

Cardich, A. (1981). A propósito de un motivo sobresaliente en las pinturas rupestres de El Ceibo (Provincia de Santa Cruz, Argentina). *Relaciones de la Sociedad Argentina de Antropología* **13**: 163–182.

Cardich, A., and Flegenheimer, N. (1979). Descripción y tipología de las industrias más antiguas de Los Toldos. *Relaciones de la Sociedad Argentina de Antropología* **12**: 225–242.

Cardich, A., and Miotti, L. (1984). Recursos faunísticos en la economía de los cazadores-recolectores de Los Toldos (Prov. de Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **15**: 145–157.

Cardich, A., Cardich, L. A., and Hajduk, A. (1973). Secuencia arqueológica y cronológica radiocarbónica de la cueva 3 de Los Toldos (Santa Cruz, Argentina). *Relaciones de la Sociedad Argentina de Antropología* **7**: 85–123.

Cardich, A., Tonni, E. P., and Kriscautzky, N. (1978). Presencia de *Canis familiaris* en restos arqueológicos de Los Toldos (Prov. de Santa Cruz, Argentina). *Relaciones de la Sociedad Argentina de Antropología* **11**: 115–119.

Cardich, A., Mansur-Franchomme, M. E., Giesso, M., and Durán, V. A. (1983). Arqueología de las cuevas de El Ceibo (Provincia de Santa Cruz, Argentina). *Relaciones de la Sociedad Argentina de Antropología* **14**(2): 173–209.

Casamiquela, R. M. (1961). Dos neuvos yacimientos patagónicos de la cultura Jacobaccense. *Revista del Museo de La Plata*, Sección Antropología **5**: 171–178.

Castro, A. S. (1984). Noticia preliminar sobre un yacimiento en la Sierra de la Ventana (Sierras Australes de la Provincia de Buenos Aires). *Relaciones de la Sociedad Argentina de Antropología* **15**: 91–107.

Caviglia, S. E. (1978). La presencia de *Dusicyon avus* (Burmeister) 1864 en la capa VIII de la cueva Las Buitreras (Patagonia, Argentina): Su relación con otros hallazgos de Patagonia meridional. Paper delivered at the 6th Congreso Nacional de Arqueología de Uruguay, Salto.

Caviglia, S. E., Yacobaccio, H., and Borrero, L. A. (1980). Los niveles con megafauna de Las Buitreras: Componentes culturales y faunísticos. *7° Congreso Nacional de Arqueología* (Colonia del Sacramento, Uruguay), pp. 27–35.

Caviglia, S. E., Borrero, L. A., Casiraghi, M., García, L. C., and Horwitz, V. D. (1982). Nuevos sitios arqueológicos para la región de Bahía Solano (Chubut). Paper delivered at the 7th Congreso de Arqueología Argentina, San Luis.

Caviglia, S. E., Yacobaccio, H., and Borrero, L. A. (1986). Las Buitreras: Convivencia del hombre con fauna extinta en Patagonia meridional. In Bryan, A. L. (ed.), *New Evidence for the Pleistocene Peopling of the Americas*, pp. 295–313. Center for The Study of Early Man, Univ. of Maine, Orono.

Ceballos, R. (1982). El sitio Cuyín Manzano. *Centro de Investigaciones Científicas de Río Negro, Serie Estudios y Documentos* **9**: 1–66.

Ceballos, R., and Peronja, A. (1985). Informe preliminar sobre el arte rupestre de la cueva Visconti. Paper delivered at the 8th Congreso Nacional de Arqueología Argentina, Concordia.

Ceresole, G. T. P., and Slavsky, J. L. (1985). Localidad arqueológica Lobería 1. Paper delivered at the 8th Congreso Nacional de Arqueología Argentina, Concordia.

Crivelli Montero, E. A. (1981). La industria Casapedrense (colección Menghin). *Runa* **13**: 35–57.

Crivelli Montero, E. A. (1984). La "Casa de Piedra de Ortega" y el problema del Patagoniense septentrional. Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Crivelli Montero, E. A., and Silveira, M. J. (1983). Radiocarbon chronology of a tephra layer in Río Traful valley (province de Neuquén, Argentina). *Quarternary of South America and Antarctic Peninsula* **1**: 135–150 (Rotterdam).

Crivelli Montero, E. A., Curzio, D., and Silveira, M. J. (1982a). Un piso de ocupación en la capa 13 de la cueva Traful I (Provincia de Neuquén, República Argentina). Paper delivered at the 7th Congreso Nacional de Arqueología Argentina, San Luis.

Crivelli Montero, E. A., Curzio, D., and Silveira, M. J. (1982b). Las ocupaciones iniciales de la cueva Traful I (Provincia del Neuquén). Paper delivered at the 7th Congreso Nacional de Arqueología Argentina, San Luis.

Crivelli Montero, E. A., Silveira, M. J., Eugenio, E. O., Escola, P. S., Fernández, M. M., and Franco, N. V. (1985). El sitio Fortín Necochea (partido de General La Madrid, Provincia de Buenos Aires): Estado actual de los trabajos. Paper delivered at the 8th Congreso Nacional de Arqueología Argentina, Concordia.

Curzio, D., Crivelli Montero, E., and Silveira, M. J. (1980). La cueva Traful I (Provincia de Neuquén, República Argentina). Informe preliminar. *7° Congreso Nacional de Arqueología* (Colonia del Sacramento, Uruguay), pp. 36–49.

Emperaire, J., and Laming, A. (1954). La grotte du Mylodon (Patagonie occidentale). *Journal de la Société des Américanistes* **32**: 173–205.

Emperaire, J., and Laming, A. (1961). Les gisements des îles Englefield et Vivian dans la mer d'Otway (Patagonie australe). *Journal de la Société des Américanistes* **50**: 7–77.

Emperaire, J., Laming-Emperaire, A., and Reichlen, H. (1963). La grotte Fell et autres sites de la région volcanique de la Patagonie chilienne. *Journal de la Société des Américanistes* **52**: 169–255.

Fernández, J. (1980). Estudios sobre el arte rupestre del Neuquén. *Anales de Arqueología y Etnología* **29–31**: 5–36.

Fernández, J. (1982). *Historia de la Arqueología Argentina*, Asociación Cuyana de Antropología, Mendoza.

Fernández, J. (1983a). Cronología y tecnología de las hachas salineras de Truquico (Neuquén). *Relaciones de la Sociedad Argentina de Antropología* **14**(2): 109–124.

Fernández, J. (1983). Cronología y posición estratigráfica del llamado "hombre fósil" de Mata Molle. *Historia Natural* **3**(7): 57–72.

Figuerero Torres, M. J., and Mengoni, G. (eds.) (1986). Excavaciones arqueológicas en la isla El Salmón (Parque Nacional Tierra del Fuego). *PREP Informes de Investigación* **4**.

Fischer, A. (1984). Los sitios de Barda Blanca y los bifaciales "Jacobaccenses." Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Flegenheimer, N. (1982). Hallazgos de puntas "cola de pescado" en la provincia de Buenos Aires. *Relaciones de la Sociedad Argentina de Antropología* **14**(1): 169–176.

García, L. C., and Pérez de Micou, C. B. (1979). Aproximación a un análisis funcional de parapetos pertenecientes al complejo Patagoniense en la meseta de Somoncurá (provincia de Río Negro). *Sapiens* **4**: 139–144.

Gómez Otero, J. (1984). Posición estratigráfica particular de puntas de los períodos IV y V de Bird en el alero Potrok-Aike (Santa Cruz). Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

González, A. R. (1962). La estratigrafía de la gruta de Intihuasi (provincia de San Luis, Argentina) y sus correlaciones con otros sitios precerámicos de Sud América. *Revista del Instituto de Antropología* **1**: 1–302 (Córdoba).

González, A. R. (1977). *Arte Precolombino de la Argentina*, Filmediciones Valero, Buenos Aires.

Gradin, C. J. (1966). Concheros y materiales líticos de Monte Léon (provincia de Santa Cruz). *Acta Praehistorica* **5–7**: 53–71.

Gradin, C. J. (1972). Noticia preliminar sobre el cañadón Supayniyeu y la industria lítica de Paso Burgos (Río Negro). *Relaciones de la Sociedad Argentina de Antropología* **6**: 211–224.

Gradin, C. J. (1973a). El Alero de las Manos Pintadas (Las Pulgas, provincia del Chubut, Argentina). *Bollettino del Centro Camuno di Studi Preistorici* **10**: 169–207.

Gradin, C. J. (1973b). La piedra pintada de Mamuel Choique (provincia de Río Negro). *Relaciones de la Sociedad Argentina de Antropología* **7**: 145–157.

Gradin, C. J. (1974). Dataciones con el C 14 en Argentina. *Bollettino dei Centro Camuno di Studie Preistorici* **XI**: 19–20 (Capo di Ponte).

Gradin, C. J. (1975). *Contribución a la Arqueología de La Pampa*, Edición Oficial de la Provincia de La Pampa.

Gradin, C. J. (1976). Parapetos de piedra y grabados rupestres de la meseta del lago Buenos Aires. *Actas y Memorias del Cuarto Congreso Nacional de Arqueología Argentina* (San Rafael, Mendoza), pp. 315–337.

Gradin, C. J. (1977). Grabados de la Angostura del río Deseado. *Actas del 7° Congreso de Arqueología de Chile* (Altos de Vilches) **2**: 595–616.

Gradin, C. J. (1978a). Pinturas rupestres del alero Cárdenas (provincia de Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **11**: 143–158.

Gradin, C. J. (1978b). Algunos aspectos del análisis de las manifestaciones rupestres. *Revista del Museo provincial de Neuquén* **1**: 120–132.

Gradin, C. J. (1979a). Las pinturas del Cerro Shequen (provincia del Chubut). *Revista del Instituto de Antropología* **6**: 63–92 (Córdoba).

Gradin, C. J. (1979b). Los grabados rupestres de la Angostura de Gaiman (provincia del Chubut). *Monografías de Arte Rupestre (Arte Americano)* **1**: 161–171 (Barcelona).

Gradin, C. J. (1982a). Secuencias radiocarbónicas del sur de la Patagonia argentina. *Relaciones de la Sociedad Argentina de Antropología* **14**(1): 177–194.

Gradin, C. J. (1982b). Excavaciones arqueológicas en el alero Cárdenas (provincia de Santa Cruz). Paper delivered at the 7th Congreso Nacional de Arqueología Argentina, San Luis.

Gradin, C. J. (1983). Las pinturas de la Cueva Grande (Arroyo Feo): Área Río Pinturas, provincia de Santa Cruz. *Relaciones de la Sociedad Argentina de Antropología* **15**: 241–265.

Gradin, C. J. (1985). El arte rupestre de la cuenca del río Pinturas (provincia de Santa Cruz, República Argentina). *Ars. Praehistórica* **II**: 87–149.

Gradin, C. J., and Aguerre, A. M. (1984a). Arte rupestre del área La Martita, sección A del departamento Magallanes (provincia de Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **15**: 195–223.

Gradin, C. J., and Aguerre, A. M. (1984b). A modo de resumen. In Gradin, C. J. (ed.), *Investigaciones Arqueológicas en Casa de Piedra*, Edición Oficial de la Provincia de La Pampa, pp. 135–144.

Gradin, C. J., and Aschero, C. A. (1979). Cuatro fechas radiocarbónicas para el alero del Cañadón de las Manos Pintadas (Las Pulgas, provincia del Chubut). *Relaciones de la Sociedad Argentina de Antropología* **12**: 245–248.

Gradin, J., and Tamers, M. A. (1975). Tres fechas radiocarbónicas para la Cueva de las Manos (estancia Alto Río Pinturas, provincia de Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **9**: 215–216.

Gradin, C. J., Aschero, C. A., and Aguerre, A. M. (1977). Investigaciones arqueológicas en la Cueva de las Manos (Alto Río Pinturas, Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **10**: 201–270.

Gradin, C. J., Aschero, C. A., and Aguerre, A. M. (1981). Arqueología del área Río Pinturas (provincia de Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **13**: 183–227.

Hajduk, A. (1978). Excepcionales ceramios de la provincia del Neuquén. *Revista del Museo Provincial de Neuquén* **1**: 103–119.

Hajduk, A. (1983). Cementerio Rebolledo Arriba (departamento Aluminé, provincia de Neuquén). *Relaciones de la Sociedad Argentina de Antropología* **14**(2): 125–145.
Hajduk, A. (1987). Arqueología del montículo Angostura. Primer fechado radiocarbónico (provincia de Neuquén). *Notas Científicas del Museo Provincial de Neuquén* (in press).
Krieger, A. D. (1964). Early man in the New World. In Jennings, J. D., and Norbeck, E. (eds.), *Prehistoric Man in the New World*, University of Chicago Press, Chicago, pp. 23–84.
Laming-Emperaire, A. (1968). Missions archéologiques françaises au Chili austral et au Brésil méridional: Datations de quelques sites par le radiocarbone. *Journal de la Société des Américanistes* **57**: 77–99.
Laming-Emperaire, A., Lavallée, D., and Humbert, R. (1972). Le site de Marazzi en Terre de Feu. *Objets et Mondes* **12**: 225–244.
Llamazares, A. M. (1982). El arte rupestre del abrigo de Pilcaniyeu (provincia de Río Negro). *Relaciones de la Sociedad Argentina de Antropología* **14**(1): 103–120.
Lynch, T. F. (1974). The antiquity of man in South America. *Quaternary Research* **4**: 356–377.
Madrazo, G. B. (1968). Hacia una revisión de la prehistoria de la Pampa bonaerense. *Etniia* **7**: 1–12.
Madrazo, G. B. (1972). Arqueología de Lobería y Salliqueló (provincia de Buenos Aires). *Etnía* **15**: 1–18.
Madrazo, G. B. (1973). Síntesis de arqueología pampeana. *Etnía* **17**: 13–25.
Massone, M. (1979). Panorama etnohistórico y arqueológico de la ocupación tehuelche y proto-tehuelche en la costa del estrecho de Magallanes. *Anales del Instituto de la Patagonia* **10**: 63–107.
Masson, M. (1981). Arqueología de la región volcánica de Pali-Aike (Patagonia meridional chilena). *Anales del Instituto de la Patagonia* **12**: 95–124.
Massone, M. (1983). 10400 años de colonización humana en Tierra del Fuego. *Infórmese* **14**.
Massone, M., and Hidalgo, E. (1981). Investigaciones arqueológicas en el alero Pali-Aike 2 (Patagonia meridonal chilena). *Anales del Instituto de la Patagonia* **12**: 125–140.
Menghin, O. F. A. (1952a). Las pinturas rupestres de Patagonia. *Runa* **5**: 5–22.
Menghin, O. F. A. (1952b). Fundamentos cronológicos de la prehistoria de Patagonia. *Runa* **5**: 23–43.
Menghin, O. F. A. (1956). Existe en Tierra del Fuego la auténtica casa-pozo? *Runa* **7**(1): 107–112.
Menghin, O. F. A. (1957a). Estilos del arte rupestre de Patagonia. *Acta Praehistorica* **1**: 57–87.
Menghin, O. F. A. (1957b). Vorgeschichte Amerikas. In *Abriss der Vorgeschichte*, Munich, p. 162–218.
Menghin, O. F. A. (1960). Urgeschichte der Kanuindianer des südlichsten Amerika. In *Steinzeitfragen der Alten und Neuen Welt*, Bonn, pp. 343–375.
Menghin, O. F. A. (1962). Estudios de prehistoria araucana. *Acta Praehistorica* **3–4**: 49–120.
Menghin, O. F. A. (1963). Industria de morfología protolítica en Suramérica. *Anales de la Universidad del Norte* **2**: 69–77 (Antofagasta).
Menghin, O. F. A., and Bórmida, M. (1950). Investigaciones prehistóricas en cuevas de Tandilia (provincia de Buenos Aires). *Runa* **3**: 5–36.
Menghin, O. F. A., and Gradin, C. J. (1972). La piedra calada de Las Plumas (provincia del Chubut). *Acta praehistórica* **11**: 13–63.
Mengoni, G. (1981). Los materiales óseos de la cueva 2 de Los Toldos (expedición Menghin) y una aproximación a la metodología de análisis de restos faunísticos. *Runa* **13**: 59–68.
Mengoni, G., and Silveira, M. J. (1977). Restos faunísticos de la Cueva de las Manos. *Relaciones de la Sociedad Argentina de Antropología* **10**: 261–270.
Nacuzzi, L. R. (1984). Una hipótesis etnohistórica aplicada a sitios de Patagonia central y septentrional. Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.
Onetto, M. (1984). Arte rupestre del valle de Piedra Parada (provincia de Chubut). Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.
Orquera, L. A. (1979). Geocronología del Cuaternario en Patagonia. *Sapiens* **4**: 109–115.
Orquera, L. A. (1981). Arqueología y etnografía histórica de las regiones pampeanas. In Piana, E. L. (ed.), *Toponimia y Arqueología del Siglo XIX en La Pampa*, EUDEBA, Buenos Aires, pp. xxxi–lix.

Orquera, L. A. (1982). Tradiciones culturales y evolución en Patagonia. Paper delivered at the 7th Congreso Nacional de Arqueología Argentina, San Luis.

Orquera, L. A. (1984). Specialization and the Middle/Upper Paleolithic transition. *Current Anthropology* **25**: 73–98.

Orquera, L. A., and Piana, E. L. (1982). La antigüedad de la ocupación humana de la Gruta del Oro (partido de Juárez, provincia de Buenos Aires): Un problema resuelto. *Relaciones de la Sociedad Argentina de Antropología* **14**(1): 83–101.

Orquera, L. A., and Piana, E. L. (1983). Prehistoric maritime adaptation at the Magellan-Fuegian littoral. Paper delivered at the symposium on New World Maritime Adaptations, Society for American Archaeology, 48th annual meeting, Pittsburgh.

Orquera, L. A., Sala, A. E., Piana, E. L., and Tapia, A. H. (1977). *Lancha Packewaia (Arqueología de los Canales Fueguinos)*, Huemul S.A., Buenos Aires.

Orquera, L. A., Piana, E. L., Sala, A. E. and Tapia, A. H. (1982). Cuarta y quinta campañas arqueológicas en Tierra del Fuego: El sitio Túnel. Paper delivered at the 7th Congreso Nacional de Arqueología Argentina, San Luis.

Orquera, L. A., Piana, E. L., and Tapia, A. H. (1984). Evolución adaptativa humana en la región del canal Beagle. I, II, III. Papers delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Ortiz Troncoso, O. R. (1972). Material lítico de Patagonia austral: Seis yacimientos de superficie. *Anales del Instituto de la Patagonia* **3**: 49–82.

Ortiz Troncoso, O. R. (1973). Aspectos arqueológicos de la península de Brunswick (Patagonia austral). *Anales del Instituto de la Patagonia* **4**: 109–129.

Ortiz Troncoso, O. R. (1975). Los yacimientos de Punta Santa Ana y Bahía Buena (Patagonia austral): Excavaciones y fechados radiocarbónicos. *Anales del Instituto de la Patagonia* **6**: 93–122.

Ortiz Troncoso, O. R. (1977–1978). Nuevas dataciones radiocarbónicas para Chile austral (Patagonia y Tierra del Fuego). *Boletín del Museo Arqueológico de La Serena* **16**: 244–250.

Ortiz Troncoso, O. R. (1979). Neuvo fechado radiocarbónico para la isla Englefield (seno Otway, Patagonia austral). *Relaciones de la Sociedad Argentina de Antropología* **12**: 243–244.

Ortiz Troncoso, O. R. (1980). Punta Santa Ana et Bahia Buena: Deux gisements sur une ancienne ligne de rivage dans le détroit de Magellan. *Journal de la Société des Américanistes* **66**: 133–204.

Palanca, F., Daino, L., and Benbassat, E. (1972). Yacimiento Estancia La Moderna (partido de Azul, provincia de Buenos Aires). Nuevas perspectivas para la arqueología de la Pampa bonaerense. *Etnia* **15**: 19–27.

Pastore, M. A. (1974). Hallazgos arqueológicos en el Mallín del Tromen (provincia de Neuquén). *Relaciones de la Sociedad Argentina de Antropología* **8**: 277–288.

Pérez de Micou, C. B. (1983). Sitio Piedra Parada 1. In Aschero, C. A. (ed.), *Arqueología del Chubut: El Valle de Piedra Parada*, Edición Oficial de la Provincia del Chubut, pp. 43–49.

Pérez de Micou, C. B. (1984). Aprovechamiento de la flora local en los sitios Campo Nassif 1 y Piedra Parada 1 (departamento Languiñeo, Chubut). Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Pérez de Micou, C. B. (1985). Estrategias aplicadas a la investigación de vestigios vegetales en componentes arqueológicos. Paper delivered at the 8th Congreso Nacional de Arqueología Argentina, Concordia.

Piana, E. L. (1984). Arrinconamiento o adaptación en Tierra del Fuego. In *Ensayos de Antropología Argentina Año 1984*, Editorial Belgrano, Buenos Aires, pp. 7–110.

Piana, E. L., and Orquera, L. A. (1985). Octava campaña arqueológica en Tierra del Fuego: La localidad Shumakush. Paper delivered at the 8th Congreso Nacional de Arqueología Argentina, Concordia.

Podestá, C., and Pereda, I. (1981). Excavación del cementerio Las Lajitas (provincia de Neuquén). *Relaciones de la Sociedad Argentina de Antropología* **13**: 117–135.

Sanguinetti de Bórmida, A. C. (1966). Las industrias líticas de Trenque Lauquen (provincia de Buenos Aires). *Acta Praehistorica* **5–7**: 72–94.

Sanguinetti de Bórmida, A. (1970). La neolitización de las áreas marginales de la América del Sur. *Relaciones de la Sociedad Argentina de Antropología* **5**(1): 9–23.

Sanguinetti de Bórmida, A. C. (1973). Los aleros de la Bajada del Salitral de El Chocón (provincia de Río Negro). Nota preliminar. *Antiquitas* **16**: 1–6.

Sanguinetti de Bórmida, A. C. (1974). Investigación arqueológica en la Loma de la Lata, Planicie Banderita y Bajo de Mari Menuco (provincia de Neuquén). *Relaciones de la Sociedad Argentina de Antropología* **8**: 289–310.

Sanguinetti de Bórmida, A. C. (1977). Excavaciones prehistóricas en la cueva de Las Buitreras (Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **10**: 271–319.

Sanguinetti de Bórmida, A. C. (1984). Noticia sobre el sitio El Volcán, su relación con el poblamiento tardío de las cuencas de los ríos Gallegos y Chico (provincia de Santa Cruz, Argentina). *PREP Informes de Investigación* **1**: 5–37.

Sanguinetti de Bórmida, A. C., and Schlegel, M. L. (1972). Industrias arcaicas del río Neuquén. *Relaciones de la Sociedad Argentina de Antropología* **6**: 91–108.

Saxon, E. C. (1976). La prehistoria de Fuego-Patagonia: Colonización de un habitat marginal. *Anales del Instituto de la Patagonia* **7**: 63–73.

Saxon, E. C. (1979). Natural prehistory: The archaeology of Fuego-Patagonian ecology. *Quaternaria* **21**: 329–356.

Schobinger, J. S. (1969). *Prehistoria de Suramérica*, Labor, Barcelona.

Schobinger, J. S. (1972). Una punta de tipo "cola de pescade" de La Crucesita (Mendoza). *Anales de Arqueología y Etnología* **26**: 89–97.

Schobinger, J. S., and Gradin, C. J. (1985). *Cazadores de la Patagonia y Agricultures Andinos (Arte Rupestre en la Argentina)*, Ediciones Encuentro, Madrid.

Silveira, M. J. (1978). Hallazgo de una punta "cola de pescado" en la provincia de Buenos Aires. Paper delivered at the 5th Congreso Nacional de Arqueología Argentina, San Juan.

Silveira, M. J. (1981). Análisis e interpretación de los restos faunísticos de la Cueva Grande del Arroyo Feo (provincia de Santa Cruz). *Relaciones de la Sociedad Argentina de Antropología* **13**: 229–253.

Silveira, M. J. (1984). Investigaciones arqueológicas en el área boscosa del lago Traful. Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Tonni, E. P., and Politis, G. G. (1980). La distribución del guanaco (*Mammalia, Camelidae*) en la provincia de Buenos Aires durante el Pleistoceno tardío y Holoceno. Los factores climáticos como causas de su retracción. *Ameghiniana* **17**: 53–66.

Tonni, E. P., and Politis, G. G. (1981). Un gran cánido del Holoceno de la provincia de Buenos Aires y el registro prehispánico de *Canis (Canis) familiaris* en las áreas pampeana y patagónica. *Ameghiniana* **18**: 251–265.

Tonni, E. P., Politis, G. G., and Guzmán, L. M. (1980). La presencia de *Megatherium* en un sitio arqueológico de la pampa bonaerense (República Argentina): Su relación con la problemática de las extinciones pleistocénicas. *7° Congreso Nacional de Arqueología* (Colonia del Sacramento, Uruguay), pp. 146–155.

Vidal, H. J. (1984). Primeros lineamientos para una arqueología etnográfica de península Mitre. Paper delivered at the Primeras Jornadas de Arqueología de Patagonia, Trelew.

Vidal, H. J. (1985). Bahía Valentín: El primer contacto. Paper delivered at the 8th Congreso Nacional de Arqueología Argentina, Concordia.

Willey, G. R. (1960). New World prehistory. *Science* **131**: 73–83.

Willey, G. R. (1966). *An Introduction to American Archaeology, Vol. 1, North and Middle America*, Prentice Hall, Englewood Cliffs, N.J.

Willey, G. R. (1971). *An Introduction to American Archaeology, Vol. 2, South America*, Prentice Hall, Englewood Cliffs, N.J.