

CHAPTER TWENTY-TWO

COMPARATIVE STUDIES OF TECHNOLOGICAL PRACTICES BETWEEN COASTAL AND MEDITERRANEAN PATAGONIAN HUNTER-GATHERER GROUPS

MANUEL CUETO, ALICIA CASTRO
& PABLO AMBRÚSTOLO

Facultad de Ciencias Naturales y Museo-UNLP, CONICET
Argentina.

acastro@fcnym.unlp.edu.ar, manuelcueto@fcnym.unlp.edu.ar,
pambrustolo@hotmail.com

Abstract

The aim of this work is to discuss changes and continuities within the framework of the technological organisation of hunter-gatherer societies who inhabited the centre-south region of Patagonia. For that reason we analyse evidence of human occupations during the Holocene, recorded in two sectors with peculiar features: the Central Plateau and the Atlantic Coast. By means of techno-morphological studies and the microscopic analysis of traces in lithic artefacts, we intend to evaluate the existence of variability in the production strategy of those items. In a preliminary stage the studies evidence continuities in the production and use of those artefacts. This could arise from a progressive regional integration of the human groups who occupied both sectors during the Holocene.

Introduction

The objective of this work is to evaluate the existence of changes and continuities within the organisation of the lithic technology (Nelson 1991)

of the hunter-gatherer societies who inhabited the southern region of Patagonia, Argentina. For that reason we have selected lithic assemblages of Holocene human occupations, recorded in rock shelters within two geographical areas of Santa Cruz province, each separated from the other by a distance of *ca.* 150 km: the Central Plateau and the Atlantic Coast (Fig. 22.1). We are interested in exploring, from a comparative focus, the variability in the production strategies and use of lithic artefacts, and so to generate preliminary information about the mobility and integration range of the groups from both areas. It is important to consider that pioneer works on Patagonia supposed the non-existence of relationships between them (Menghin 1952).

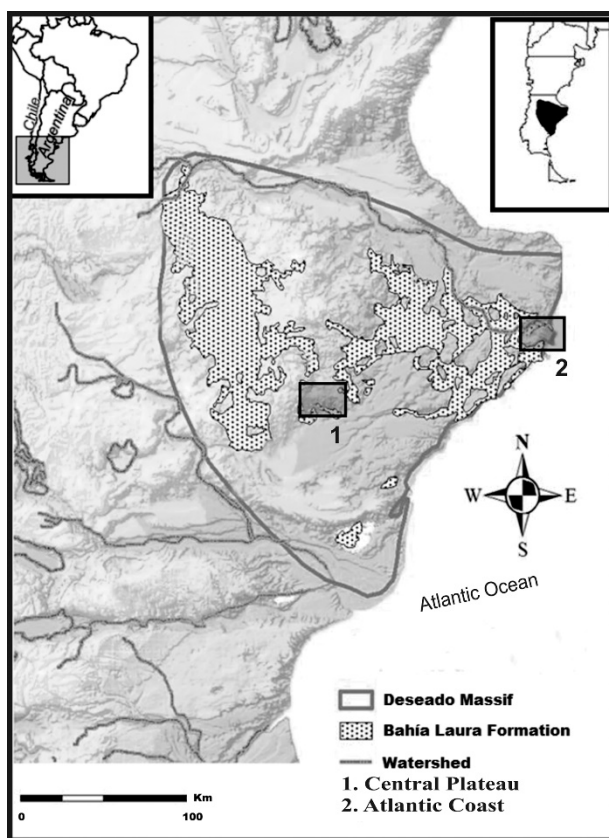


Fig. 22.1. Geographical areas, the Central Plateau and the Atlantic Coast.

This work is focused on four lithic assemblages; two come from sites located in the plateau sector and two on the coast. The first sector is located in the centre of the province where the sites of *La Mesada y La Ventana* are found: both with early Holocene occupations; the second one, south from *ría Deseado*, is located on the north coast where we find the *Alero El Oriental y la Cueva del Negro*, with respective mid and late Holocene occupations (Fig. 22.1). During the early Holocene the plateau was characterised by the presence of plateaus of different heights, gullies and rocky outcrops, arid weather and a low vegetal layer (Paunero *et al.* 2005). During the mid and late Holocene, the coastal sector, showed as a characteristic feature in the *ría Deseado* the presence of beaches and rocky outcrops. In this environment a change was produced: from dry conditions with mid Holocene semi-desert vegetation to mild-cold weather with a bushy steppe, during the late period (Ambrústolo n.d.).

Our methodological concern is to integrate the functional analysis with the study of the organisation of lithic technology (Álvarez 2004). We consider that the functional analysis has an essential role in the interpretation of the technological production systems. We consider the morphology of an artefact as the final product of a work process ideally planned. The function is in this context, the materialisation resulting from the use process which is turned into the evidence of the interaction between production and consumption (Briz 2010).

Archaeological Contexts

All four lithic assemblages come from cultural components identified in rocky shelters of the *Formación Bahía Laura* (Fig. 22.1). Three are settled in gullies—*La Mesada*, *La Ventana*, *El Oriental*—and one is situated on a beach near the Atlantic front—*Cueva del Negro*. The cultural components of the plateau sites have chronologies attributed to the early Holocene (*La Mesada*, Beta-135963: 9090 ± 40 ^{14}C BP y *La Ventana*, Beta-135965: 7970 ± 40 y 7665 ± 75 BP), while the ones on the coast correspond to the mid (*El Oriental*, LP-2218: 5860 ± 90 BP) and late Holocene (*Cueva del Negro*, LP-2290: 1220 ± 80 BP). Considering the occupations' archaeological records, it is important to remark that the plateau contexts mainly present the remains of guanaco and other indeterminate mammals. On the coast the sea archaeofaunistic remains predominate (wolf seals and mollusk valves). In all cases burnt sediment and/or combustion structures were identified (Paunero *et al.* 2005; Ambrústolo 2011).

Sample Analysis

Considering the typological groups represented, predominant in all assemblages are flakes with respect to the lithic tool and the cores (Table 22.1).

Table 22.1. Techno-morphological characteristics of the lithic assemblages by period.

Features	Early Holocene		Middle Holocene	Late Holocene
	Central Plateau		Coast	
Site	La Mesada	La Ventana	El Oriental	Cueva del Negro
Typological group N (%)	Flakes: 32 (76,19) Lithic tools: 5 (11,9) Lithic undetermined: 4(9,52)	Flakes: Lithic tools: 2 (4,87) Lithic undetermined: 5 (12,19)	Flakes: 456 (95,8) Cores: 2 (0,4) Lithic Tools: 18 (3,8)	Flakes: 648 (93,55) Cores: 9 (1,3) Lithic Tools: 36 (5,19)
Raw material (%)	Chert: 75,75 Chalcedony: 18,18 Silicified wood: 3,03 Obsidian: 3,03 Others: -	Chert: 67,64 Chalcedony: 11,76 Silicified wood: 5,88 Obsidian: - Others: 14,72	Chert: 60,32 Chalcedony : 23,48 Silicified wood: - Obsidian: 0,81 Others: 15,39	Chert: 47,33 Chalcedony: 19,62 Silicified wood: 0,58 Obsidian: 1,15 Others: 31,32
Provenance RM (%)	Local: 96,96 Nonlocal: 3,04	Local: 94,1 Nonlocal: 2,94	Local: 15 Nonlocal: 85	Local: 25,2 Nonlocal: 74,8
Production sequence	Initial: 3,12 Medium: 56,25 Formatization: 9,37 Indet.: 31,25	Initial: - Medium: 90,9 Formatization: 9 Indet.: -	Initial: 1,77 Medium: 94 Formatization: 4,23 Indet.: -	Initial: 9,06 Medium: 89,4 Formatization: 1,54 Indet.: -

In all periods of occupation there is a tendency towards the exploitation of silicic raw materials of good quality for flaking (chert and chalcedony). However, in coastal occupations a wider variability of rocks is recorded

(Table 22.1). This can be related to the variations in the structure of lithic resources within the analysed sectors. In this sense, in the plateau, the good quality silicic rocks are presented in a ubiquitous way. On the other hand, the availability of apt rocks for flaking is less frequent on the coast (macroscopically similar to the ones registered in the plateau). This would suggest the circulation of these materials in the relationship framework between groups.

If we consider the artefact production sequence, the represented stages in all sites are intermediate (Table 22.1). During the late Holocene, there is a higher formation of artefacts; we regard this as a possible relationship with the diversification in the productive activities associated to the effective occupation of space. We also observe in the formatisation of artefacts, in all occupations, a selection of raw materials of good quality for flaking—chert and chalcedony (Fig. 22.2).

To evaluate the variability of use strategies all lithic tools were analysed as well as samples of flakes with natural sharp edges, up to 128 artefacts. The probable or definite use of 32 artefacts was also identified (Table 22.2).

The frequency of early Holocene artefacts in the plateau is low, since it corresponds to a period of sporadic occupations. These contrast with the final Pleistocene occupations, which were more intense and give evidence of a more constant use of the area (Paunero *et al.* 2005).

During the three Holocene periods, a preference for the use of lithic tools is registered, although a big quantity of flakes were available with edges suitable for further use. The difference in the frequency of tools and flakes used during the mid and late Holocene, in comparison to the early Holocene (Table 22.2) would be related to the fact that the former correspond to more stable occupations, with a higher number of people and a greater quantity of re-occupations (Ambrústolo n.d.; Paunero *et al.* 2005).

Table 22.2. Analyzed sample by period. Absolute frequencies of artifacts and edges. LT: lithic tools; FL: flakes; e: edges (retouched/natural).

	Early		Middle		Late	
	LT / e	FL / e	LT / e	FL / e	LT / e	FL / e
Without use	7 / 13	13 / 24	14 / 18	4 / 5	42 / 58	48 / 92
With use	4 / 5	1 / 1	12 / 13	1 / 1	12 / 15	2 / 2



Fig. 22.2. Sample of lithic artifacts by period.

The artefacts were utilised to process different resources, mainly of animal origin, of species available at a local level (Figs. 22.3 and 22.4). In all occupations there is a preponderance of hide processing, a resource worked in a predominant way in other mid and early Holocene sites of the plateau (Cardich *et al.* 1993-1994). This activity was performed probably linked to tent and clothing production (Claraz 1988). During the Holocene, among other substances bone and wood were exploited in a secondary way (Fig. 22.4). Wood processing presents significant value during the early Holocene.

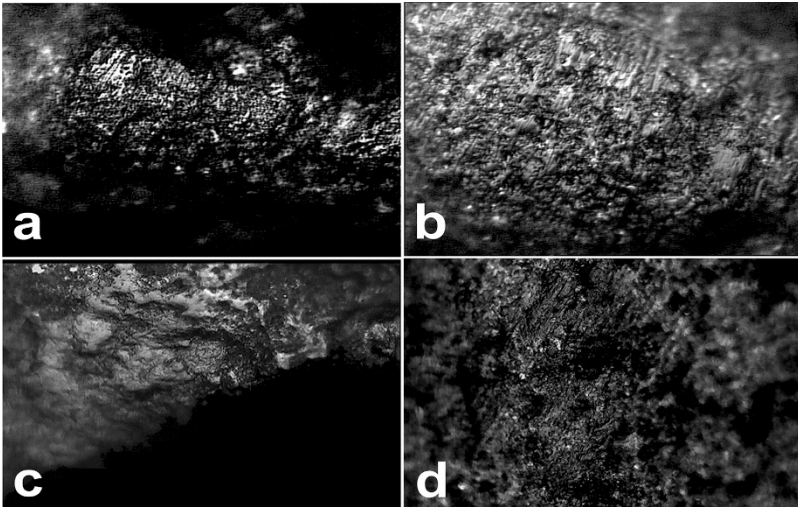


Fig. 22.3. a. Hide scraping micropolish, 300X. Early Holocene, scraper. b. Wood scraping micropolish, 300X. Early Holocene, scraper. c. Wood cutting micropolish, 300X. Late Holocene, scraper. d. Hide scraping micropolish 175X. Mid Holocene, denticulate.

Combustion structures also give evidence of the utilisation of this substance; this could also be related to food consumption, tent production, shafts and retouchers (Musters 2005).

Bone exploitation is significant during the mid and late Holocene (Fig. 22.4). Within these contexts the bone assemblages are more numerous. This would be related to the capture of prey, generally giving evidence of a big diversity of fauna, which suggests a wider diet and the consumption of sea and terrestrial fauna. The production of bone artefacts is also

registered on the coast, such as harpoons, as well as specialised technology in the capture of sea mammals (Ambrústolo n.d.).

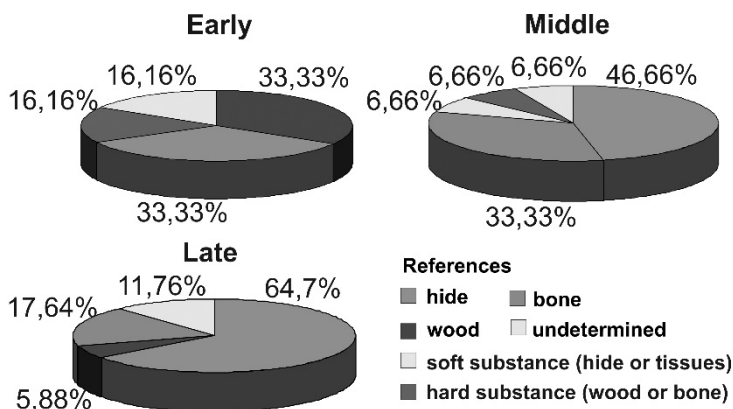


Fig. 22.4. Proportion of substances processed by period.

When evaluating the relation between the kind of artefact, raw materials and the processed substance, we can register a tendency in chert use in all periods. During the early period, we find a predominant processing of wood (50%), secondly, of hide and hard substances such as bone or wood respectively (25%). Hide was mainly processed in the mid period (50%), then bone material (28.57%), and in a lower level soft, hard and indeterminate substances (7.14%), respectively. On the other hand, other rocks locally available were utilised with less frequency. During the mid period, tuff was employed in the coastal occupations to modify bones (100%), and in the late period silicified tuff for the hide craft (100%). Lastly, chalcedony was used during the early period, although the processed substances were not determined (100%).

The relation between the kind of artefact, the movement and the kind of processed substance indicates a trend in these hunters-gatherer societies for using only one edge for each artefact. At the same time the use of each edge for only one kind of movement was preferred for only one substance. Artefacts were operated manually.

During all three periods very few flakes were selected to be utilised with natural edges (Fig. 22.5). These were utilised in the processing of soft and hard materials (i.e. hide and bone), by means of transverse movements, as well as longitudinal movements in the cutting of hides.

During the early Holocene the side-scrapers were used in longitudinal actions (Fig. 22.5). For the cutting activities of hard substances sharp angle cutting edges were preferred. On the basis of the analysis of this and other assemblages of the period, we have supposed that side-scrapers had a wide range of uses, with a versatile design. Scrapers were used in transverse movements. A specimen with an acute cutting edge was used to scrape wood. Another scraper with an abrupt edge was utilised to process hide. A lithic tool, which is at the same time a scraper and a denticulate, presents evidence of use on both edges for transverse craft wood actions. Short cutting edges were selected to perform transverse movement activities.

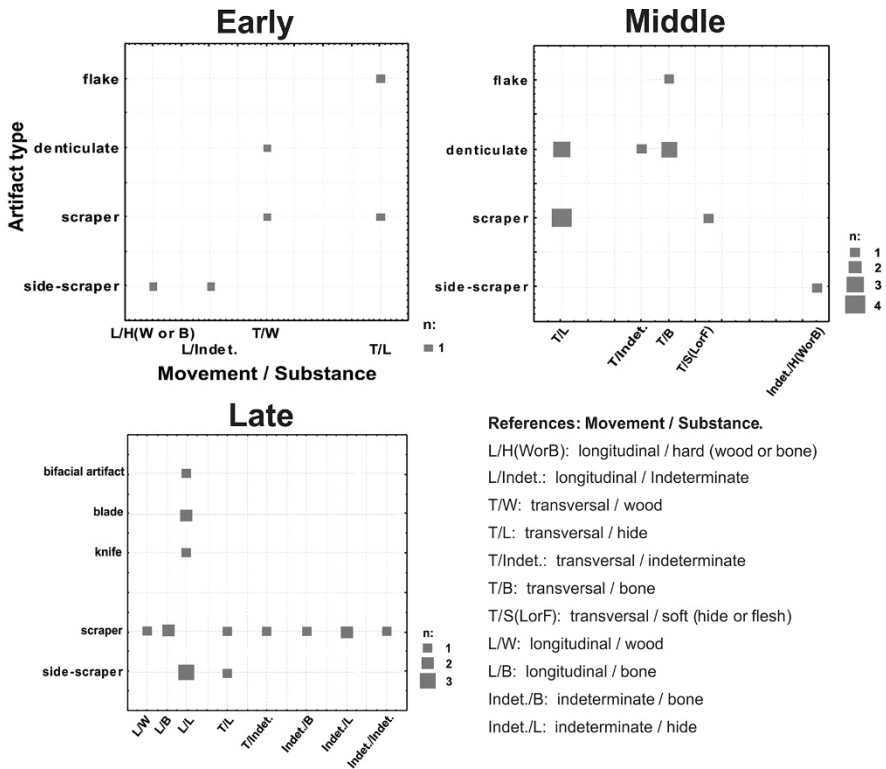


Fig. 22.5. Relationship between kind of artifact, the movement and kind of processed substance, by period.

In the mid Holocene, scrapers were mainly used in transverse actions, almost exclusively to process hides (Fig. 22.5). In these periods the denticulates were more frequent and they can also be considered as artefacts designed to perform transverse movement tasks such as hide tanning and bone holding. Only one artefact has two edges utilised in the same action: hide tanning. On the other hand, side-scrapers are less frequent than in the early period.

During the late period other kind of artefacts were utilised, such as bifacial tools and knives. No denticulates were produced. In contrast with the previous periods, the function of scrapers diversifies. They were chosen to perform mainly transverse and longitudinal movement tasks. They were used for hide tanning and cutting bones and wood. This period is characterised by the choice of artefacts with long and acute cutting edges such as side-scrapers, knives, blades and bifacial artefacts only to perform longitudinal movements, i.e hide cutting. Only in three artefacts were both edges used, in two cases to process different substances (bone and hide).

Final Words

This is a preliminary study with a small sample. However this first assessment has allowed us to define some patterns in terms of technology. We aim to further these studies, incorporating more sites, to discuss the ways of occupation, the exploitation of resources and the possible complementarity in the use of these areas.

Initially the patterns and trends identified in the strategies of production and the use of stone artefacts suggest some continuity in technological organisation throughout the Holocene. The discontinuities would relate to the kind of occupation (temporary or durable), the variety and recurrence of the activities at the sites, as well as lithic resource availability and food.

This is evident in the late Holocene occupations where there is a higher frequency and variability of lithic artefacts that could be related to the extension level of resources exploited and new productive activities. Lithic artefact used samples conformed mainly to three kinds of artefacts—side-scrapers, scrapers and denticulates, of varying frequencies. Also each typological group shows in some degree a variation in character and in combination with other classes during the occupations.

The principally used kinds of artefacts, for the three periods, have a mid-level functional integrity, and the actions that were performed have

practically the same movement (transversal or longitudinal), however varying in processed substances.

The set of similarities in the production and use strategies of artefacts could suggest a progressive regional integration in these areas through time. This is probably because the implementation of broad and complementary home ranges could have favoured the transmission of information, ideas, and plans in terms of technology between the groups. Nevertheless, particular signals according to local contexts can appear.

This proposal contrasts with the previous ideas in the first studies in Patagonia that considered the coast as a marginal sector with autonomous development on the plateau occupations.

References

- Álvarez, M., 2004. Estrategias tecnológicas en los grupos canoeros tempranos del área Fuego-Patagónica. *Magallania*, 32, 191-208.
- Ambrústolo, P., n.d., (Unpublished results). *Estudio de las estrategias de aprovisionamiento y utilización de los recursos líticos por grupos cazadores recolectores en la Costa Norte de Santa Cruz (Patagonia Argentina)*. Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata. La Plata.
- Briz i Godino, I., 2010. Dinámicas producción-consumo en conjuntos líticos: El análisis de los conjuntos líticos de la sociedad Yámana. *Magallania*, 38(2), 189-211.
- Cardich, A., Paunero, R. & Castro, A., 1993-1994. Análisis de los conjuntos líticos de la cueva 2 de Los Toldos (Santa Cruz, Argentina). *An. del Inst. de la Patagon. Ser. Cienc. Hum.* 22,149-173.
- Claraz, J., 1988. *Diario de viaje de exploración al Chubut 1865-67*. ed. Marymar. Buenos Aires.
- Menghin, O., 1952. Fundamentos cronológicos de la Prehistoria de Patagonia. *Runa* V, 23-43.
- Musters, G., 2005. *Vida entre los patagones*. ed. Elefante Blanco, Buenos Aires
- Nelson, M., 1991. The study of technological organization. *Archaeological Method and Theory* 3, 57-100.
- Paunero, R., Frank, A., Skarbun, F., Rosales, G., Zapata, G., Cueto, M., Paunero, M., Martínez, D., López, R., Lunazzi, N., Del Giorgio & M., 2005. Arte Rupestre en Estancia La María, Meseta Central de Santa Cruz: Sectorización y contextos arqueológicos. *Relaciones de la Soc. Argentina de Antropol.* XXX. 147-168.