View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by Naturalis

Technological and Functional Analysis of Pleistocene Components from La Maria Locality, Santa Cruz, Argentina

Manuel Cueto[1] *and Alicia Castro*[2]

➤**Keywords:** Functional analysis, Pleistocene components, Santa Cruz

Technological studies related to late-Pleistocene hunter-gatherers from the Central Plateau of Santa Cruz, Argentina, have historically tended to describe morphologically and typologically samples of lithic artifacts from individual sites (Cardich and Flegenheimer 1978; Cardich et al. 1987; Miotti 1996). Very few comparative studies have been done, especially in relation to early technologies (Aguerre 1979; Cattaneo 2002; Mansur 1984; Paunero and Castro 2001; Gradín et al. 1987).

Here we present a comparative analysis of samples of lithic artifacts from two different early cultural components from the Patagonia Central Plateau. We study the kinds of tasks tools were made for and analyze differences and similarities between both sites, taking into consideration the information provided by analyzing stone-tool production and use strategies. The materials we analyzed come from unit 4 (U4) of the Casa del Minero 1 site (CDM1) and from units 8, 9 and 10 (U8/10) of the Cueva Túnel (CT) site. Both are multicomponent sites located in caves and dated to ca. 10,600 CALYBP (Castro et al. 2011).

Tools yield a corpus of information related to ancient societies and provide knowledge about exploiting resources, manufacturing techniques, preference for certain kinds of rock, and morphological characteristics of the edges. Analyzing goes beyond the material object and considers techniques and strategies that figure in producing artifacts (Pfaffenberger 1992).

[1] Departamento de Arqueología. Museo de La Plata. Paseo del Bosque S/N CP:1900 La Plata, Argentina. CONICET; e-mail: manuelcueto@fcnym.unlp.edu.ar

[2] Departamento de Arqueología. Museo de La Plata. Paseo del Bosque S/N CP:1900 La Plata, Argentina; e-mail: acastro@fcnym.unlp.edu.ar

Our goal is to analyze the techno-morphological characteristics and use made of stone
7 tools from two late-Pleistocene components, CDM1-U4 and CT-U8/10. A secondary aim is to compare the macroscopic characteristics of the stone tools of both sites with neighboring sites from the Central Plateau to determine whether they are technologically related.

8 Methodology

We described and classified the samples through an analytical approach, compatible with
9 functional analysis, based on criteria built on regional lithic research (Castro et al. 2011). Among the technological traits considered when analyzing stone artifacts were the type of blank, platform, characteristics of blank flaking, module, and size.

For the comparative analysis with other early components from the region, we considered published papers (see above) on lithic technology. Information from sites Los Toldos (LT), El Ceibo (EC), Piedra Museo (PM), Cerro Tres Tetas (C3T), and Cueva de las Manos (CdlM) have been averaged. The lithic assemblages from these sites share certain technical and morphological characteristics such as: flakes used as blanks; predominance of angular flakes,
10 followed by secondary backed flakes and primary flakes; production of predetermined shapes such as blades; prepared platforms and artifacts with unifacial marginal retouch predominate; marginal dorsal retouch that is mostly scalar. The preferred raw material was flint, followed by chalcedony and silicified wood. Artifacts are usually large, but there are also medium-sized and very large artifacts. The typology is dominated by scrapers, sidescrapers, and knives; morphological standardization is absent. Microscopic functional analysis was used to verify the function of the artifacts (Castro et al. 2011).

11 Results

We found technological similarities between the stone artifacts from CDM1-U4 and CT-U8/10. The selected raw materials were flint and chalcedony. The typological structure of the analyzed assemblages from both sites is dominated by retouched flakes and knives, followed by scrapers, sidescrapers, and retouched blades. There is also a chopper/hammerstone. All the
12 artifacts are of large, medium, and very large size. In both assemblages the principal blanks selected are angular and primary flakes, followed by blades and cobbles. There is a prevalence of flat platforms, followed by prepared ones. No cortical platforms were recorded, which signifies that the flaking surface of the core was prepared before producing a blank. For the final shaping of blanks, marginal and extramarginal retouch and microretouch prevail. The type of retouch is in all cases scalar. This kind of flaking does not change the general shape of the blank. Bifacial retouch is less represented.

Functional analysis was done on 32 edges from 18 stone tools (Table 1 and Figure 1). The tools at CDM1 were always used applying a single movement on a single substance. Those artifacts which, according to functional analysis, were used–scraper/side scraper and retouched flakes—scraped hides and cut bones; the applied movement was transverse to the edge, in a minor proportion longitudinal movements were detected. In other cases indicators refer to
13 a probable use, because use-wear was not diagnostic. One of these cases shows evidence of wear of a longitudinal movement; another two show transverse actions, all on unspecified substances. The remaining stone tools did not have any traces of use, in spite of having finely regularized edges (Castro et al. 2011). The stone artifacts from CT were used for up to two actions on different substances. Side scrapers, knife/side scrapers and a chopper-hammerstone were used to cut meat and bone, to strike stone and to crush hard substances such as bone or

Table 1. Traces of use wear detected on stone artifacts from Casa del Minero 1 and Cueva Túnel.

Stone tools	No. edges	Used? Sure	Probable	Unused	Action	Substance
Unit CDM1 U4						
Retouched flake	2	X			Transversal	Hide
Retouched flake	2	X			Longitudinal	Bone
Retouched flake	2			X		
Retouched flake	2			X		
Retouched flake	1			X		
Retouched flake	2					
Edge 1			X		Transversal	Undet.
Edge 2				X		
Scraper	1		X		Transversal	Undet.
Sidescraper	2			X		
Knife	3					
Edge 1			X		Longitudinal	Undet.
Edge 2				X		
Edge 3				X		
Scraper/sidescraper	2	X			Transversal	Bone
Biface	2			X		
Unit CT U8/10						
Knife	2					
Edge 1			X		Longitudinal	Meat
Edge 2			X		Longitudinal	Meat
Knife	1		X		Longitudinal	Meat
Knife/sidescraper	2					
Edge 1		X			Longitudinal	Meat
Edge 2				X		
Retouched flake	1			X		
Retouched blade	1			X		
Chopper/hammer	3					
Edge 1		X			Strike	Stone
Edge 2		X			Crush	Bone
Edge 3		X			Strike	Stone
Sidescraper	1	X			Longitudinal	Meat

wood. These artifacts performed longitudinal and punctual movements. In two other cases the indicators refer to a probable use, both knives with traces of longitudinal action on a soft substance such as meat, skin, or some other soft tissues. The remaining stone tools did not have diagnostic traces of microwear.

The technomorphological comparative analysis performed with the other contemporary sites from the region (see above) shows that there are similarities in the manufacturing techniques and in the kinds of rocks selected; therefore, we think there was a similar *way of doing* (regarding ideas and gestures) in the production of lithic artifacts during the late Pleistocene in the region.

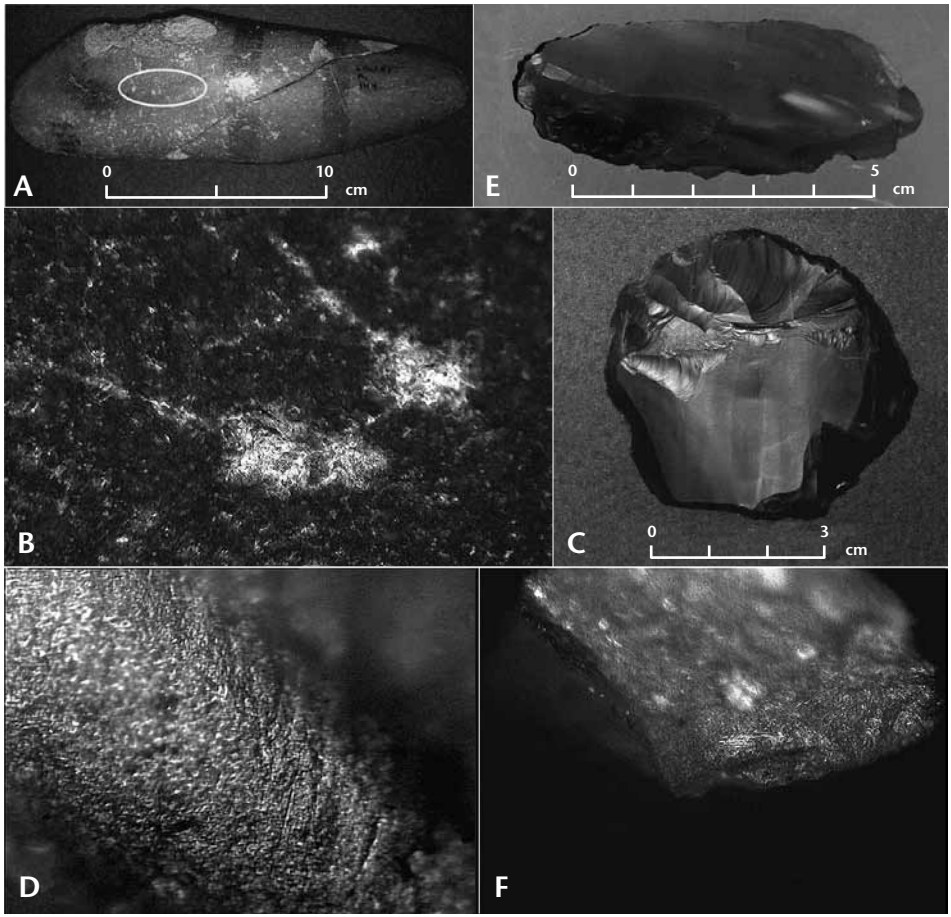

Figure 1. Artifacts and micrographs of materials from Casa del Minero 1 and Cueva Túnel. **A–B,** chopper/hammer from Cueva Túnel, magnification 70X (note rushed marks in kite-shaped oblique orientation); **C–D,** scraper/sidescraper from Casa del Minero 1, magnification 300X (microwear and transverse striations of action imply scraping of leather); **E–F,** knife/sidescraper from Cueva Túnel, magnification 150X (note longitudinal movement of microwear implying cutting of flesh and bone).

Conclusions

Regularity is evident in the stone-artifact technology of the earliest lithic assemblages from the area, including CDM1 and CT. Tools of all the assemblages are of a size suitable for manual handling, and the toolkits are characterized by a low investment of work on good-quality rocks. The prevalence of large stone tools only marginally modified by retouch suggests that resharpening was implicit in the conception of the artifact.

Differences between CDM1 and CT arise when considering functional aspects. Stone tools of CDM1 were made to process hides, to remove fleshy matter or to tan by scraping; and to cut bone when dismembering or when separating soft tissue from bone. These activities may have been a part of the secondary processing of bones for making tools like those

found in the component. The technological repertoire and inferred activities suggest a site where primary butchering and secondary processing of prey were done and tools were given their final shaping. At CT, on the other hand, artifacts were designed for the primary processing of prey. This is evident in the retouched edges of knives and sidescrapers, which bear microwear and other traces associated with cutting hard substances such as bone and soft tissue such as meat. Percussion marks around the edge of the chopper-hammerstone suggest impacts from breaking wood or bone. We also detected evidence of percussion on rocks by marks on its working surfaces.

The evidence suggests a technology for making stone tools to perform simple and planned tasks. We wish to emphasize the importance of supplementing technological analysis with functional analysis, thereby yielding great benefits in interpreting the activities performed in settlements and the variability of contemporary sites, such as those occupied by the first societies of Patagonia.

References Cited

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

Cardich, A., and N. Flegenheimer 1978 Descripción y tipología de las industrias más antiguas de Los Toldos. *Relaciones de la SAA* XII:225–42, Buenos Aires.

Cardich, A., L. Miotti, and A. Castro 1987 Paleoindians in the Patagonian Region: Los Toldos Archaeological Locality, Santa Cruz Province, Argentina. *Current Research in the Pleistocene* 4:145–47.

Castro A., M. Cueto M., and A. Frank 2011 New Approaches in Functional Analysis for the Discussion of Lithic Technological Organization: Cases from Patagonia Argentina. Paper presented at the 76th Annual Meeting of the Society for American Archaeology, Sacramento.

Cattaneo, G. 2002 Una Aproximación a la Organización de la Tecnología Lítica entre los Cazadores-Recolectores del Holoceno Medio/Pleistoceno Final en la Patagonia Austral (Argentina). Tesis Doctoral. Facultad de Ciencias Naturales, Universidad de La Plata.

Gradín, C., C. Aschero, and A. Aguerre 1987 Primeros niveles culturales en el Área Río Pinturas (Provincia de Santa Cruz, Argentina). *Revista Estudios Atacameños* 8:115–36.

Mansur, M. 1984 Características tecno-tipológicas y análisis funcional de la Industria "Nivel 11". Paper presented at the Primeras Jornadas de Arqueología de la Patagonia, Trelew.

Miotti, L. 1996 Piedra Museo (Santa Cruz), nuevos datos para la ocupación pleistocénica en Patagonia. In *Arqueología. Sólo Patagonia,* edited by J. G. Otero, pp. 27–38. Centro Nacional Patagónico/CONICET, Argentina.

Paunero, R., and A. Castro 2001 Análisis lítico y funcionalidad del componente inferior del sitio Cueva 1, localidad arqueológica Cerro Tres Tetas, provincia de Santa Cruz, Argentina. *Anales del Instituto de la Patagonia* 29:189–206.

Pfaffenberg, B. 1992 Social Anthropology of Technology. *Annual Review of Anthropology* 21:491–516.