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Interaction and circulation of symbolic goods in Quebrada de La Cueva, Jujuy, Argentina: The fossil *Weyla alata* (von Buch)*Interaction et circulation de biens symboliques dans la Quebrada de La Cueva, Jujuy, Argentine : le fossile Weyla alata* (von Buch)Paola Silvia Ramundo<sup>a,\*</sup>, Susana Ester Damborenea<sup>b</sup><sup>a</sup> CONICET, Museo Etnográfico de Buenos Aires, FFyL, UBA, Moreno 350, Directora del Programa de Estudios Arqueológicos (UCA), Buenos Aires, Argentina<sup>b</sup> CONICET, Departamento Paleontología Invertebrados, Museo de Ciencias Naturales La Plata, Paseo del Bosque s/n, 1900 La Plata, Argentina

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## ABSTRACT

An Early Jurassic fossil bivalve specimen belonging to the pectinid genus *Weyla* was found within the low human occupation levels in a structure of Pukara de La Cueva, Humahuaca department, Jujuy province, Argentina. This is clearly a geologically allochthonous record, and its source should be located more than 400 km away, probably from a locality in the Main Cordillera of northern Chile or southern Perú. This evidence is part of a research project which analyzes the human interactions among the Quebrada de La Cueva sites and neighbouring productive regions, as well as the inferred interchange networks between this and other regions, both nearby and distant. In this context, the likely symbolic meaning of this record is also evaluated.

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## R É S U M É

Ce travail analyse la découverte d'un bivalve fossile du Jurassique inférieur correspondant à un pectinidé du genre *Weyla*, au sein des niveaux inférieurs d'occupation humaine d'une structure du Pukara de La Cueva, dans le Département de Humahuaca, Province de Jujuy, Argentine. Ce bivalve n'appartient pas à la formation géologique du lieu, et son origine pourrait être recherchée dans une localité de la Cordillère Principale du Nord du Chili ou du Sud du Pérou, à plus de 400 km de distance. La dite étude fait partie d'un projet qui analyse l'inter-relation entre les sites localisés dans la quebrada (la vallée) de La Cueva (grotte) et les zones productives environnantes, et elle évalue également la présence de réseaux d'interaction et/ou d'échange entre la dite quebrada et les zones proches et distantes. Pour cette raison, la découverte est intéressante à la fois pour son sens symbolique potentiel dans le registre archéologique, et que pour les réseaux d'interaction et/ou d'échange mentionnés, plus haut.

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### 1. Introduction

This article is part of a project which studies the inter-relation between human occupation sites in Quebrada de La Cueva and neighbouring productive regions, as well as interaction/interchange networks within the valley and with both nearby and distant regions. We believe La Cueva could have been a circulation passageway between different areas, and this makes it a privileged space for the study of those interactions and for regional social dynamics comprehension. Evidence based on possibly allochthonous pottery, as well as the alternative communication routes will be briefly treated, but the main purpose of this paper is to discuss the discovery of a fossil bivalve specimen belonging to the Early Jurassic pectinid genus *Weyla* Boehm within the low occupation levels of a dwelling structure in Pukara de La Cueva. This specimen is clearly allochthonous as it does not belong to any of the geological units which crop out in nearby regions. Its original locality was placed more than 400 km away, the nearest possible source being the Domeyko Cordillera in northern Chile west of Salar de Atacama.

Allochthonous fossil specimens are not frequently recorded in American archaeological sites, and thus the present discovery has a great interest. We will discuss it in relation to interchange networks, and also consider its potential symbolic meaning.

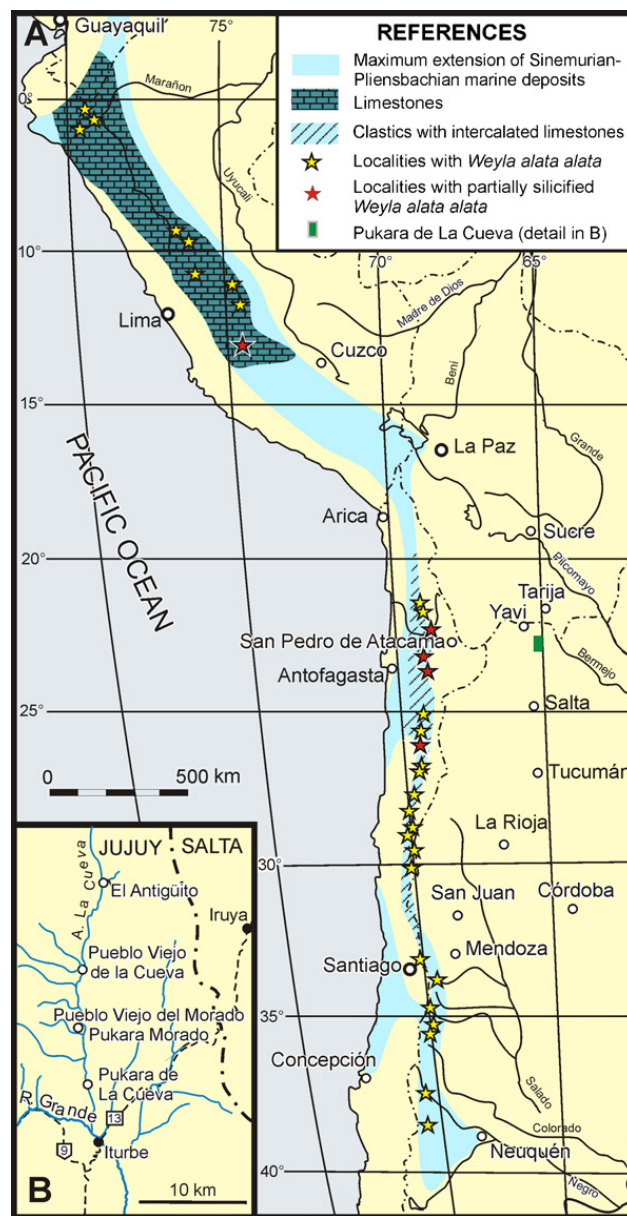
#### 1.1. Space-temporal location

The Quebrada de La Cueva is a gorge located in Humahuaca department, eastern Jujuy province (Fig. 1A, B), and is a tributary basin of the Quebrada de Humahuaca. From its source in the Sierra de Santa Victoria (22° 35'S) to the Río Grande near Iturbe (22° 57'S), it extends mainly in north-south direction for about 46 km. Its eastern and western boundaries are water divides of the Santa Victoria mountain system. North of Angosto de La Cueva (located 4 km north of Iturbe), the valley widens and receives several tributary gorges, particularly on the western margin, which provide most of the water flow. This allowed the establishment of small settlements and the development of agriculture (Basílico, 2008).

According to its geological features, the region belongs to the Cordillera Oriental. The La Cueva valley is mostly developed on fine grained rocks of Ordovician age, belonging to the Santa Victoria Group (Rubiolo et al., 2003), while on both margins these are overlain by the Salta Group (Cretaceous and Tertiary) deposits, referable to Pigua, Balbuena (including the Horizonte Calcáreo Dolomítico *sensu* Vilela, 1960) and Santa Barbara subgroups, sometimes forming steep slopes and ridges.

The studied sites are, from north to south: El Antigüito, Pueblo Viejo de La Cueva, Chayamayoc, Pukara Morado, Pueblo Viejo del Morado, Pukara de La Cueva and Angosto de La Cueva, plus several areas of archaeological agriculture (see map in Basílico, 2008: 29; Fig. 1B).

The age of the sites within the valley can be referred to the Regional Development Period, and they could reach the Inka Period (Basílico, 1992, 1994; Nielsen, 2001). Nielsen (1996, 2001) refers Pueblo Viejo de La Cueva, together with



**Fig. 1.** Regional location map (A) and detail of Quebrada de La Cueva area (B). The general map shows the maximum extension of Late Sinemurian-Late Pliensbachian marine deposits according to Vicente (2005), the carbonatic platform at that age (Riccardi et al., 1992), and clastic units with intercalated limestones. Location of *Weyla alata alata* records was personally compiled from several sources (SED).

**Fig. 1.** Carte régionale de localisation (A) et détail de la zone de Quebrada de La Cueva area (B). La carte générale montre l'extension maximum des dépôts marins Sinémurien supérieur-Pliensbachien supérieur, selon Vicente (2005), la plate-forme carbonatée à cette période (Riccardi et al., 1992), les formations clastiques à intercalations calcaires. La localisation des enregistrements de *Weyla alata alata* a été compilée par nos soins à partir de différentes sources (SED).

Pueblo Viejo del Morado and Pukara de La Cueva, to the Regional Development I Period (between 900 and 120 AD). Pueblo Viejo de La Cueva could have been inhabited since the end of the Final Formative and Pukara Morado during the Inka Period (between 1430 and 1536 AD) (Nielsen, 1996, 2001). However, only Pueblo Viejo de La Cueva was dated at 1180 ± 50 BP (770 + 50 AD [LP-142], Basílico, 1992, p. 126), which is within the Final Formative Period. The

first charcoal samples from Pukara de La Cueva were only obtained in 2010, and they are currently being subjected to absolute dating.

### 1.2. Previous research

The La Cueva valley was first mentioned at the beginning of the 20th century by Boman (1908) and Von Rosen (1924). In the thirties, Casanova (1933, 1934) began excavations at Pukara de La Cueva, Pukara Morado, Pueblo Viejo del Morado and Pueblo Viejo de La Cueva. By the end of the 20th century, the rock art found in Chayamayoc and Angosto de La Cueva was also studied (Fernández Distel, 1977, 1983a; Gentile, 1995), and several cultural chronological references were made (Fernández Distel, 1983b; González, 1977; Madrazo and Otonello, 1966; Pérez, 1968).

Basílico resumed research in the area with a regional approach around the 1980s, doing a planimetric survey at Pukara de La Cueva (Basílico, 1998), and new excavations in Pueblo Viejo de La Cueva, where she concentrated mainly on the pottery (Basílico, 1992, 1994). Under Basílico's direction, and together with her, one of the authors (P.S.R.) explored the sites at El Antigüito and Pukara de La Cueva between 2006 and 2008 (Basílico and Ramundo, 2006, 2007). Due to the unfortunate passing away of Basílico, from 2009 research goes on under the direction of Ramundo, maintaining the original objectives with the addition of some new ones, somewhat different and very localized, into which this paper is framed. In this context, we propose the study of the circulation and interchange networks of the Quebrada de La Cueva, analyzing here a peculiar finding at Pukara de La Cueva and its potential symbolic meaning.

## 2. Interaction and goods circulation in Quebrada de La Cueva

The pre-Hispanic exchange of goods in the Andean area was (and still is) extensively investigated, some of the research being referred to various general models, such as those by Berenguer Rodríguez (2004), Browman (1980), Murra (1975), Núñez Atencio (1996, 2007), and Núñez and Dillehay (1979), among others. Several authors analyzed these subjects in areas related to our study region (Berenguer Rodríguez, 2004; Núñez Atencio et al., 2007; Pimentel, 2008; Raviña et al., 2007). Particularly in relation to the Puna and Humahuaca valley, interest is evidenced through several papers ranging from the early to the late occupation by different societies (Angiorama, 2007; Aschero and Yacobaccio, 1994; Cremonte and Garay de Fumagalli, 1997; Montenegro and Ruiz, 2007; Nielsen, 2007; etc.). These provide an adequate frame and help to understand the issue, since La Cueva valley was probably in communication with distant areas from pre-Hispanic times.

The valley can easily communicate with the Puna through roads starting at Pueblo Viejo de La Cueva. One of those paths goes west, passing Abra de Cortaderas (4300 m) and reaches Cangrejillos (Dto. Yavi) and then La Quiaca; another goes north, through Abra de Casillas (4700 m) and then west to join the previous path about 10 km before Can-

grejillos; two paths to the east reach Nazareno and Iruya (Basílico, 1992, p. 108). Thus, the valley connected not only with the Puna and from there with other areas of Bolivia, Perú and Chile, but also with part of the Argentine West Forests zone.

Diverse issues related to the “contacts” between separate regions are now studied with different theoretical-methodological approaches, variously referred to as interaction, circulation and interchange, this last one meaning an economical aspect of other social activities (information and relationship networks, symbolic spheres, etc., see Korstanje, 1998, p. 34), but had already called the attention of previous authors who worked at La Cueva. Hence, Basílico (1992, p. 114) remarked that some ceramics from Pueblo Viejo de La Cueva found by Casanova (1933) and studied by Tarragó (1977), are similar to specimens of Isla style from graves at Quitor 6 site in San Pedro de Atacama (northern Chile), dated at about 800 AD.

Basílico (1994, p. 171) cites Dr Krapovickas commenting, about Pueblo Viejo de La Cueva, that the old road from Yavi to Tarija passed through that site before the railway to La Quiaca was built, and it must have had an important linking function. In the same paper, Victoria Castro also argued that Pueblo Viejo de La Cueva could have been, perhaps, a station in a traffic tour, since it has terraces, a lot of water meadows and is a very local settlement (Basílico, 1994, p. 176).

Following the interactions between regions on the basis of ceramic material, Basílico excavated at Pueblo Viejo de La Cueva and analyzed the surface and buried pottery from both the techno-typologic and techno-morphologic points of view, and she dated the site as Middle Period. She compared the ceramic record with material from the Isla collection at the Museo Etnográfico in Buenos Aires, emphasizing the presence of Isla type ceramics as a result of inter-site contacts (Basílico, 1992, p. 126). She also recognized standards and pottery types, correlating the ceramic composition according to morphology and decoration, and comparing them with those from Humahuaca and Puna as possible evidence of contact between these regions. Based on 40% of the decorated pottery, she found ceramics with white inclusions similar to those of Humahuaca (as found by Debenedetti, 1919), Puna (Krapovickas et al., 1979), and San Pedro de Atacama (Chile). Comparing with Humahuaca and Puna she stated that those from Pueblo Viejo de La Cueva correspond to the technologic tradition of ceramic materials known as Yavi with characteristic local features (Basílico, 1994, p. 161). She concluded that the ceramic composition similar to Humahuaca standards suggests the same technologic tradition and indicates relations between the areas, although local pottery has its own attributes regarding material components and manufacture. She also mentioned some morphology and painted design similarities with the Isla and Alfarcito items, but she argued that the potters made their own combination of design elements to decorate their pottery. But there are some ceramic compositions different from the Humahuaca ones, and she thus concludes that there was a local manufacture. Finally, there is also similarity with Yavi ceramics, but retaining particular and local characteristics (Basílico, 1994, p. 162).



In summary, Pueblo Viejo de La Cueva pottery has features of the Isla, Alfarcito, Yavi, and probably local styles.

After many years of research, in her last paper Basílico (2008, p. 28) argued that La Cueva, from the internal circulation point of view, is a region with easy contact: to the east the yungas (tropical forest), to the west and north the Puna, and to the south the quebrada de Humahuaca, and therefore, it had an important role for both the longitudinal and transverse traffic.

In relation with the record here reported, Casanova (1933, p. 280) mentioned a marine mollusc shell found in a grave at Pukara de La Cueva, which was referred by Dr Doello Jurado to *Concholepas concholepas* (Brug.), known from the coastal regions of Chile and Perú. He also mentioned that Salvador Debenedetti found several specimens in the Pukara in Tilcara. The specimen from La Cueva shows traces of external polishing. Casanova (1933, p. 280) comments that these Pacific mollusc valves were found in many sites in north-western Argentina, and their presence is one of the most valuable indications to confirm the commercial exchange with Pacific coast communities across the cordillera. To the north of La Cueva, Boman (1908) found in Sansana another exclusively Pacific shell.

Finally, we should mention another important clue of the circulation and exchange in quebrada de La Cueva. Angiorama (2007) mentions the traffic indicators (discussed below), such as products of certain rituals performed during long journeys, and he points to the rock art among them. The Quebrada de La Cueva has two rock art sites: Angosto de La Cueva and Chayamayoc. The first one is a wall with pictographs on the left margin of arroyo La Cueva, with well preserved motifs made exclusively in white and red. They include ornamental geometric drawings (textile patterns), human figures wearing shirts or “*unco*”, small axes (“*tumi*”), aligned points, and many ornamented or loaded camelids. Chayamayoc is a rock with well preserved very small pictographs, made with fine lines, in white and two shades of red; they represent camelids and other animals, scenes with anthropomorphic figures with costumes and special weapons, and ornamental geometric figures (perhaps textile patterns) (Fernández Distel, 1983b, p. 12).

In synthesis, based on the information obtained by previous authors on the circulation and exchange in Quebrada de La Cueva (communication roads with diverse areas; Isla, Yavi and Alfarcito styled pottery; allochthonous shell material; and rock art related to the caravan traffic), we will further discuss the subject in relation to a fossil bivalve found in Pukara de La Cueva originally from regions which are far away, but which were always integrated to its interaction area, such as the Main Cordillera of northern Chile or southern Perú.

### 3. The fossil bivalve from Pukara de La Cueva

#### 3.1. Context

The fossil mollusc was recovered in 2007 during the excavation of structure N° 50 (according to Basílico's internal code on her 1998 published map; Fig. 2). Four excavation levels were recognized within the structure (which

### Pukara de La Cueva - Structure: 50

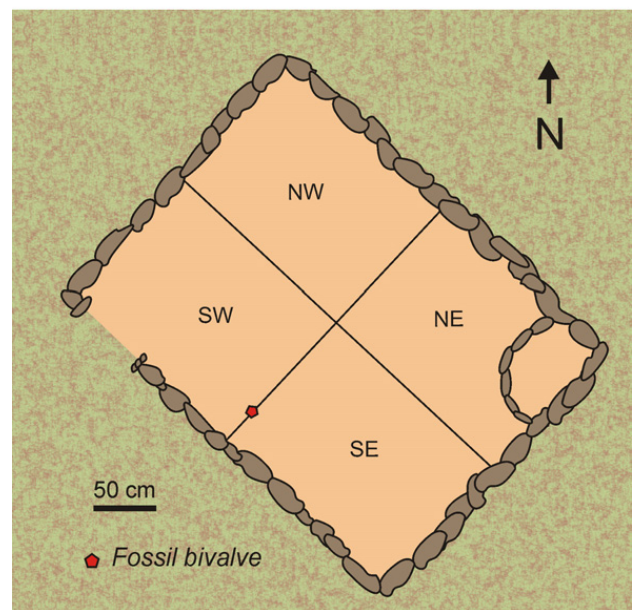


Fig. 2. Plan of structure N° 50 of Pukara de la Cueva archaeological site, with location of the finding place of the fossil bivalve discussed here.

Fig. 2. Plan de la structure N° 50 du site archéologique de Pukara de la Cueva, avec localisation de l'endroit où le bivalve fossile, dont il est question ici, a été trouvé.

is the only one with more than two levels), regarded as a rectangular room (3.70 × 2.80 m) with simple walls, one of them shared with structure N° 45. Walls were made of large (more than 0.60 m), medium, and small (less than 0.20 m) fieldstones, set in adobe mortar, and there was a 0.60 m wide aperture on the SW wall probably fitted with jambs (Fig. 3). In the eastern corner, there is a semicircular structure with six rock rows. The fossil mollusc was found in level 3 (according to Basílico's nomenclature), from the intersection of SE and SW microsectors (Fig. 2).

The associated material is pottery, especially fragments of bodies, bases and handles of large pieces. They were possibly painted in purple, but due to the abundant soot cover and superficial cementation (saltpetre and/or calcareous concretions) this cannot be assured. There are a few pots with geometric decoration in Black on Red (similar to late Quebrada de Humahuaca styles) and Black on Purple. There are also abundant fragments painted in purple (purple painted ceramics are very common at La Cueva, and are currently under study, suggesting a local manufacture) over red slip, some showing purple paint strokes on edges or inner parts, but most externally painted; and only one fragment with inner polished black. Also associated are some faunistic remains, especially camelids, malachite beads, and a possible zoomorphic rock carving (presently being studied by S. Pérez).

Unfortunately, and although one of us (P.R.) was present when the piece was found, since Dr Basílico's death we had no access to her original records about other context details of the fossil mollusc. Nevertheless, we feel that the potential interest of this finding, related to issues such as



**Fig. 3.** Field photograph of structure N° 50 of Pukara de la Cueva archaeological site, general view from the north.

**Fig. 3.** Photographie de terrain de la structure N° 50 du site archéologique de Pukara de la Cueva, vue générale prise depuis le nord.

exchange relations and symbolism, fully validates this analysis.

### 3.2. The specimen

The specimen (Fig. 4) is a fossil bivalve shell belonging to the pectinid *Weyla* (*W.*) *alata* (von Buch). This species lived in littoral environments of the Andean Early Jurassic seas, between Late Sinemurian and Toarcian times (i.e. 190–180 Ma ago) (Damborenea and Manceñido, 1979, 1988; Pérez and Reyes, 1994, and references therein). They were epifaunal to semi-infaunal organisms, similar to living *Pecten* species in life habits. The species of *Weyla* are characteristic elements of the Early Jurassic Andean faunas, and are known from Alaska in the north to Chubut province (Argentina) in the south. Probably due to their large size and abundance, they called the attention of the first explorers of the South American territory during the 19th century, such as A. von Humboldt, A. d'Orbigny, C. Darwin and I. Domeyko, who carried or sent specimens to Europe, where they were described and housed in museums in Berlin, Paris and London.

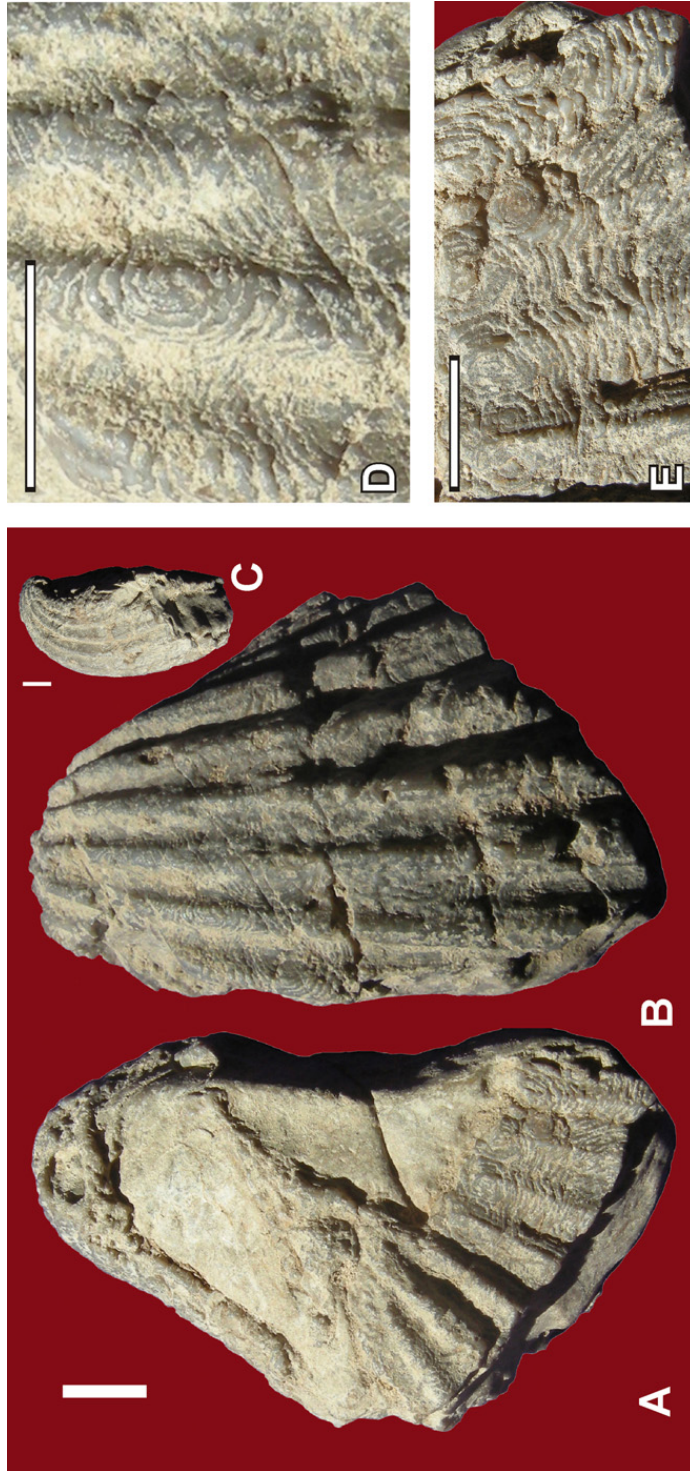
The specimen from Pukara de La Cueva is an incomplete shell, with parts of both valves slightly displaced, the convex right valve more complete than the flat left one (Fig. 4A,B). According to Damborenea's (1987) revision of the genus, the specimen can be referred with certainty to the subspecies *W. alata alata*, which had a temporal range restricted to the Late Sinemurian-Late Pliensbachian interval (Damborenea, 2002). This subspecies is especially abundant in all sedimentary deposits of that age-range in South America, Pérez and Reyes (1994) record it from at least 54 localities in Chile alone.

Trying to locate the original source of the Pukara de La Cueva specimen, we need first to analyse in detail the paleogeographic distribution of the taxon. The known geographic distribution of *W. alata alata* is very wide, from Colombia to central Neuquén (Argentina) (Damborenea,

1987, 1996 and references therein). The large known extension of marine deposits from that age-range (Fig. 1A) does not help to determine the possible source of this particular specimen; therefore, in addition to the precise systematic identification, we resort to other data, such as the taphonomic information, fortunately also provided by the specimen. The matrix around and inside the specimen is a compact dark grey micritic limestone. Within the known distribution of beds with *W. alata alata* in South America, there are two regions with this kind of limestones. The broadest one includes most Early Jurassic deposits to the north of Cuzco, belonging to an extensive carbonatic platform with a variety of limestone facies referred to the Pucará Group (Riccardi et al., 1992; Fig. 1A). Within it, *Weyla alata* is frequently found in the bioclastic and oolitic limestones of the Condorsinga Formation. In southern Perú and northernmost Chile, the prevailing lithology is quite different (mostly clastic), but limestones bearing *W. alata* are again present in northern Chile (Fig. 1A), such as in the Montandón Formation (Pérez, 1982). Coeval sequences in the Neuquén Basin in West central Argentina are mostly clastic.

Regarding the specimen preservation, the calcareous original shell material was partially silicified, as evidenced by the concentric structures known as beekite (a variety of chalcedony) rings or discs present on the shell external surface (Fig. 4D,E). These rings are superimposed on, and in part obliterate, the original shell ornamentation of strong radial ribs and thin comarginal growth lines. The replacement of the calcium carbonate of the shell by silica is a complex process, and the result not only depends on the original shell microstructure, but also on the relationship between the silica supplying rates and the calcareous dissolution rates (Carson, 1991). These conditions are locally very variable, and thus they can help us to narrow the possible geographic source of the specimen. When the silicification process is complete, no beekite rings are observed, as happens in several localities from





**Fig. 4.** Specimen of *Weyla alata alata* (von Buch) from level 3, structure N° 50, Pukara de La Cueva, Jujuy, partially silicified shell. **A.** Left valve. **B.** Right valve. **C.** Anterior view (reduced). **D.** **E.** Details of the ornamentation and superimposed beekite rings. **D.** Right valve. **E.** Left valve. Scale bars = 1 cm. Specimen temporary housed in Pontificia Universidad Católica Argentina (Buenos Aires); final repository: Secretaría de Turismo y Cultura de la Provincia de Jujuy, Departamento de Investigaciones Arqueológicas (Jujuy).  
**Fig. 4.** Spécimen de *Weyla alata alata* (von Buch) du niveau 3, structure N° 50, Pukara de la Cueva, Jujuy, coquille partiellement silicifiée. **A.** Vue de gauche. **B.** Valve droite. **C.** Vue antérieure (réduite). **D.** **E.** Détail de l'ornementation et d'anneaux superposés de beekite. **D.** Valve gauche. **E.** Valve droite. Barres d'échelle = 1 cm. Ce spécimen est temporairement déposé à la Pontificia Universidad Católica Argentina à Buenos Aires; dépôt définitif: Secretaría de Turismo y Cultura de la Provincia de Jujuy, Departamento de Investigaciones Arqueológicas (Jujuy).

Chile and northern Perú (as well as in specimens housed at the Natural History Museum London and illustrated by Damborenea, 1987, text-fig. 18–4). Unfortunately, these data are not always available, since taphonomic details are seldom mentioned. Nevertheless, a survey of the localities where *W. alata* is known to be preserved in this manner, either by personal observation or by scrutiny of illustrated specimens, shows that all of them are north of 27° S (Fig. 1A). In other words, we have never found *W. alata* partially silicified specimens in any of the numerous localities in Argentina where the species occurs.

Specimens most similar in size, morphology and preservation type were illustrated from Quebrada Asientos, Atacama region, northern Chile, aprox. 26°27'S (Pérez, 1982, pl. 19, Figs. 3, 7 and 9; Fig. 5 here). Partial silicification with beekite rings is also known further north, in the Domeyko Cordillera (Pérez et al., 2008, pl. 15, 16), at several localities in which *W. alata* is known to occur (listed in Aberhan, 1994). Specimens collected by Darwin in (probably northern) Chile and now housed in the Natural History Museum (London) also show partial silicification (see illustrations in Damborenea, 1987, text-figs. 18-1 and 2). Some specimens from further north, near Cuzco, appear to have rings (Rangel, 1978, pl. 3, fig. 7, pl. 5, figs. 4,5, pl. 6, fig. 1), though not so evident or well developed as in the material from northern Chile.

By the combined analysis of the special preservation type and of the matrix rock, we can possibly limit the source region of the La Cueva specimen to the Chilean Andes north of 27° S, or, less probably, to central Perú north of Cuzco.

#### 4. Fossil specimens in the archaeological record: some examples

The archaeological records of fossil elements, particularly molluscs, appear to be extremely rare in north-western Argentina, at least those that were published, or still unpublished results personally communicated.

Regarding fossil findings (not only molluscs), we mention as an example (they are not the only ones), a trilobite in the Márquez Miranda Collection at La Plata Museum, from Rodeo Colorado (Iruya department, Salta province) (Ventura, 2010, personal communication). Trilobites are most probably local elements, and it is interesting to note that some North American indigenous tribes used trilobites, also locally abundant, as luck tokens (Bassett, 1982; Taylor and Robison, 1976). In the Methfessel collection of the same Museum, the specimen N° 5305 from Mesada de Loma Rica (Catamarca province) is a “Petrified wood” (mentioned in p. 60, section A, in Methfessel field notebook, Greco, 2010, personal communication).

On the other hand, at an international scale, several authors recorded the presence of fossil molluscs in archaeological contexts. About the “symbolic” use of those molluscs in Europe, Álvarez Fernández (2006, p. 6–8) explained that the use of fossils as decorative-pendent objects goes back to the Upper Palaeolithic, but the determination of the source of these shells is often difficult, though in some instances there is no doubt about the appearance in archaeological sites of species from far away paleontological deposits, even between 200 and 550 km.

Furthermore, he indicated that the study of this archaeological material allowed the recognition of contacts between the hunter/gatherer groups separated by many kilometres, which is certain for some Atlantic and Mediterranean marine shells found in the interior of the European continent, up to 800 km from the sea (Álvarez Fernández, 2006, p. 15).

#### 5. Symbolic implications

A “symbolic character” is generally attributed in Europe to mollusc beads (either fossil or not) (Álvarez Fernández, 2006). In the same way, in Mesoamerica, the presence of certain molluscs in religious or funerary contexts was attributed to a symbolic function. Thus, sumptuary objects or prestige goods, which are made of exotic and thus scarce materials (as molluscs), and of restricted access, are used as symbols of ideological, political or religious power (Melgar Tisoc, 2007, p. 91).

In the central Andean area, several mollusc species [*Spondylus* spp., *Malea ringens* (Swainson), *Strombus peruvianus* Swainson, *S. galeatus* Swainson, *Conus fergusonii* Sowerby, *Pleuroploca princeps* (Sowerby) and *Fusinus panamensis* Dall] were key elements in religious and funerary rituals, and were ornamental and prestige objects for shamans and fighters, boosting the symbolic power of these social élite members. Of these molluscs, *Spondylus* played an important role, it was highly valued and object of intense traffic up to the Inka times (Gorriti Manchego and Huayta, 2002; Tufinio Culquichicón, 2005; Hocquenghen, 2010). On the other hand, the use of molluscs as *Spondylus princeps*, *Strombus peruvianus* and *Strombus galeatus* in water propitiatory rites dates from the Valdivia culture around 3200 BC (Marcos, 2002). Marcos thinks that several natural factors created the relation *Spondylus*-rain:

- cyclic rains and draughts in coasts between Manta port (Manabí) and Guayaquil gulf (Guayas);
- the fluctuations in the hot water currents which create most favourable conditions for both rains and the proliferation of *Spondylus* in the infralittoral;
- the El Niño phenomenon (ENSO: El Niño Southern Oscillation) which produces hot rains south of Tumbes and Piura (Perú) in coasts where it never rains (Marcos, 2002, p. 15, 16).

For Marcos (2002, p. 30), the fetishist character of the pair “Mullu-Pututo” (*Spondylus princeps*/*Strombus peruvianus-galeatus*) appears from its origins as an emblem of the Valdivia agricultural rite, and after two millennia it is incorporated in the central Andes as a symbol of control over water and climate, producing the irrigation of sowings and harvests.

Bonomo (2007) also suggests a possible symbolic use of molluscs in hunter-gatherer societies of the Pampean region (Argentina). But again in an environment closer to our study area, Nielsen (2007) reflects about the role of inter-regional traffic in the building of social relations among the late pre-Hispanic (ca. 900–1600 AD) societies from the Andes around the Puna, thinking on allochthonous goods that had a restricted circulation as corporative



**Fig. 5.** *Weyla alata alata* (von Buch) showing partially silicified preservation. Quebrada Asientos, Atacama region, northern Chile, aprox. 26° 27' S, Montandón Formation, Pliensbachian. **A.** Nearly complete specimen, hypotype, SNGM 7548 (977) (figured in Pérez, 1982, pl. 19, Figs. 3, 7, 9). **B.** Left view. **B.** Right valve. **C.** Detail of the ornamentation and superimposed beekite rings in other specimen from the same locality. Scale bars = 1 cm. SNGM (=Sernageomin): Servicio Nacional Geológico-Minero, Santiago de Chile. Photos Dr. A. Rubilar (Sernageomin).

**Fig. 5.** *Weyla alata alata* (von Buch) montrant une silicification partielle conservée. Quebrada Asientos, région de l'Atacama Nord du Chili approx 26° 27' S, Formation Motandón, Pliensbachien. **A.** Spécimen presque complet, hypotype, SNGM 7548 (977) (représenté dans Pérez, 1982, pl.19, Figs. 3,7,9). **A.** Vue de gauche. **B.** Valve droite. **B.** Valve droite. **C.** Détail de l'ornementation et des anneaux superposés de beekite dans un autre spécimen du même endroit. Barres d'échelle = 1 cm. SNGM : Servicio Geológico-Minero, Santiago de Chile. Photos Dr. A. Rubilar (Sernageomin).



power emblems. He considers that to conceive the value as a semiotic process is another way to understand the role of allochthonous goods – and objects in general – in the shaping of former relations, since some could have been important for building generic or social identities, not necessarily implying rank differences. Ethnographic examples are the shells of *Pecten* sp. that the Altiplano weavers use in their labours (Nielsen, 2007, p. 403). Furthermore, he suggests that due to their great value, these objects probably had special discarding patterns, appearing in the archaeological record only in exceptional contexts; and that the low frequency of some goods probably reflects the norms which restricted their legitimate use to certain persons or circumstances, rather than a limited supply.

Applying the ideas of this author (Nielsen, 2007) to the fossil pectinid here discussed, we can argue that the source could have been critical for the creation of the value, not because of the distance itself, but for changing the emblems into reference indexes of other forces or entities which shared the same locality of origin. This could have been the case of marine shells and beads made of them as related to water, and their correct handling could have been able to predict or cause rain. Their use could denote the power to propitiate fertility and the community welfare as a faculty of the ethnic authorities or the mythic agents they assumed during their functions (Nielsen, 2007, p. 406).

Also trying to find the ritual sense or meaning of the molluscs, when Angiorama (2007, p. 383) refers to the traffic indicators, such as products of certain rituals developed during long journeys, he mentions (apart from the rock art already discussed), the structures known as “boxes”, where the presence of shell beads deposited as offerings is common. This idea is also stressed by Nielsen (2006, p. 160) when commenting that Berenguer Rodríguez (2004) suggests that the walls-and-boxes were ceremonial tables where the caravan people offered appropriate “food” to the mountain gods (*Mallkus*) and *Pachamama* (i.e. copper minerals, marine shells) with the purpose to invoke or thank their protection during the journeys.

This symbolic factor was highlighted by Núñez Atencio et al. (2007, p. 295), when he commented that among the funeral contexts he studied in Tulan (Atacama), the sea shells choros (*Choromytilus* sp.), snails (*Olivia peruviana*) and scallops (*Pecten purpuratus*) were common and related to rituals, as is recorded in the Andean shepherd's ethnography. The same ritual character is indicated in Raviña et al. (2007): in La Paya grave 116 four adults were buried with a small tie-hook (element associated to caravanning and thus to interaction or mobility), together with three Pacific *Pecten*, an obsidian slate from the Puna, and a bronze pectoral ornament. They also mention that in Tilcara grave 208, an adult was buried with two wooden hooks, two mollusc valves, elements of the hallucinogenic kit and a walnut bell (*Juglans australis*).

## 6. Final words

Along this article we dealt with two aspects: first, we presented new evidence about the widely known subject of interaction, circulation and/or goods interchange in Que-

brada de La Cueva; and second, we stressed the possible symbolic character of the mentioned evidence.

Other authors already considered the interaction in the area through:

- the study of the communication channels between Quebrada de La Cueva and the Puna, Quebrada de Humahuaca and the Argentine West Forests zone;
- the presence of ceramics of a similar style to those of Humahuaca and Puna;
- the existence in Quebrada de La Cueva of indicators of the caravan traffic, such as the rock art in Chayamayoc and Agosto de La Cueva.

Moreover, we discuss here a different element, found in the low levels of occupation of a building and/or dwelling structure in Pukara de La Cueva, which implies three important aspects:

- the source of this fossil mollusc shell was far away from the studied area, but within the region always regarded as interactive with Quebrada de La Cueva. The possible source area is restricted to the Andes of Chile north of 27° S, or, less probably, to central Perú north of Cuzco. This species, its matrix type and mode of preservation are common in the Atacama region, and then we confirm through this new evidence the interaction between the two regions (Atacama – Quebrada de La Cueva) already suggested by other authors;
- the fossil nature of the specimen makes it more interesting; together with the fact that it was not modified but preserved in its original state (other molluscs were generally transformed in beads or suffered other modifications). It had no clear function apart from the symbolic one we attribute based on bibliography and similar findings. Furthermore, it is interesting to note that both the shape and size of this fossil bivalve are particularly similar to the living *Pecten* species, and this similarity was most probably noticed by the people who picked, carried and kept it. We thus have to consider an additional potential significance of this finding, i.e., the possible recognition of the relation of these fossil remains with living seashells;
- in relation to the previous point, the possible symbolic character of this specimen, probably linked to multiple (and not necessarily excluding) factors (according to research in Europe, Mesoamerica, central Andes, Puna region and northern Argentina). Molluscs were related to symbolic entities of ideological, political or religious power; to religious and funeral rituals; to ornamentation, distinction or prestige factors for elite sectors; to water (much needed in certain Andean regions) propitiatory rituals; or to their possible function as authority “corporate emblems” (*sensu* Nielsen, 2007, p. 406) significant to build generic or social identities. Concerning this last issue, as Nielsen (2007) points out, this does not necessarily mean rank differentiation, but they could instead be “referent indexes” of other powers or entities placed in the space by sharing the same origin locality (and here we come again to the marine shells as functional to water, since their use could mean the power to favour fertility

and general welfare as an attribute of ethnic authority or mythic agents). Finally, molluscs could have been used as a sort of “sacred food” (Angiorama, 2007) during long caravan journeys, to invoke or thank protection.

These considerations suggest that the Pukara de La Cueva specimen could eventually have supported the roles of certain society groups, related to their social status and the needs of a space surrounded by agricultural land. In this sense, if we consider that the Pukara de La Cueva is placed in an agricultural environment (Basílico, 2008), with hundreds of farming fields along the valley, the presence of elements linked to rituals related to favour water, and at the same time holding other associated values, is quite feasible.

The Quebrada de La Cueva still encloses many mysteries regarding its occupation and use. Current research is framed in the need to sort out these queries within a larger regional context, and this paper in particular aims at dealing with these aspects and contributing to shed some light on its complex reality.

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