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Classic Textiles from Cueva del Lazo (Chiapas, Mexico): Archaeological context and conservation issues

Davide Domenici and Gloria Martha Sánchez Valenzuela¹

Abstract

The excavation of Cueva del Lazo, a cave on the cliffs of the Río La Venta River canyon in the Zoque region of Western Chiapas (Mexico), led to the discovery of a complex Late Classic post-sacrificial context where eleven children were buried wrapped in textile bundles. The environmental conditions of the dry cave allowed an extraordinary preservation of perishable materials including textiles, cordages, botanical remains, etc.

In the first part of the paper we provide a brief introduction to the archaeology of the Selva El Ocote, as well as a description and interpretation of the Cueva del Lazo archaeological context. The second part of the text is devoted to a detailed description of manufacture techniques and of the conservation process to which the textiles were submitted. In the concluding section some comparisons with modern Zoque textiles and future research venues are commented.

Keywords: Textiles, Mesoamerica, Zoque, Classic period, Conservation

Textiles Clásicos de Cueva del Lazo (Chiapas, México): Contexto arqueológico y temas de conservación

Resumen

La excavación de la Cueva del Lazo, ubicada en la paredes del cañón del Río La Venta en la región Zoque del occidente de Chiapas (México), llevó al descubrimiento de un contexto post-sacrificial del Clásico tardío en donde se hallaron once niños envueltos en bultos textiles. Las condiciones climáticas de la cueva permitieron una extraordinaria preservación de materiales perecederos como son textiles, cuerdas y restos macrobotánicos.

En la primera parte del texto se ofrece una breve introducción a la arqueología de la Selva El Ocote, así como una descripción e interpretación del contexto arqueológico de la Cueva del Lazo. La segunda parte del texto está dedicada a una detallada descripción de las técnicas de manufactura y del proceso de conservación al cual se sometieron los textiles. En el párrafo de conclusiones se presentan algunas comparaciones con ejemplos de textilería zoque moderna, así como algunas propuestas para futuras líneas de investigación.

Palabras clave: Textiles, Mesoamérica, Zoque, Periodo Clásico, Conservación

1 Introduction

Cueva del Lazo (Ocozocoautla, Chiapas) is located in the Selva El Ocote, a tropical forest that extends along the middle course of the La Venta River, in an area that has been mostly inhabited by Zoque-speaking groups in pre-Hispanic times (figs. 1, 2). The dry cave, excavated in 1997 by the Río La Venta Archaeological Project under the direction of

Giuseppe Orefici and Thomas A. Lee, contained a Late Classic archaeological context characterized by the exceptional preservation of perishable materials, including the remains of the bundled burials of 11 children.

Having assumed the direction of the project, together with Thomas A. Lee in 1999², Davide Domenici also assumed the responsibility of the description and preservation of the cave's materials and of the organization of specific analyses³,

1. Davide Domenici (Department of History and Cultures, University of Bologna, Italy) wrote paragraphs 1-3 and 5-7 of the present paper; Gloria Martha Sánchez Valenzuela (Coordinación Nacional de Conservación del Patrimonio Cultural, Instituto Nacional de Antropología e Historia, México) wrote paragraph 4.

2. Since 1999, the Río La Venta Archaeological project has been directed by Davide Domenici and Thomas A. Lee Whiting and organized by the La Venta Exploring Team (Italy), the University of Bologna (Italy) and the Universidad de Ciencias y Artes de Chiapas (Mexico). Since 2002, the Project has been partly financed by the Italian Ministero degli Affari Esteri e della Cooperazione.

Fig. 1. Map of the Río La Venta region in Western Chiapas, with main archaeological sites (Map by Río La Venta Archaeological Project).

as well as of a reinterpretation of the whole Cueva del Lazo archaeological context, previously described only in a brief article by Orefici itself (Orefici 1999). This reinterpretation was based on the available data proceeding from Orefici's original report (Orefici 1998), from some photos of the excavation that Orefici kindly provided us, as well as by the subsequent analysis of the material carried out under Domenici's direction of the project. It was in this phase that the textiles were sent to the *Coordinación Nacional de Conservación del Patrimonio Cultural, Instituto Nacional de Antropología e Historia*, where Gloria Martha Sánchez Valenzuela coordinated their technical studies and conservation process (Sánchez 2011)⁴.

In the first part of this paper we provide a brief intro-

duction to the archaeology of the Selva El Ocote, as well as a description and interpretation of the Cueva del Lazo archaeological context. The subsequent section is more specifically devoted to the textiles found in the cave, providing a description of their manufacture techniques and of the conservation process to which they were submitted. In the concluding section, some preliminary observations on possible venues for further research are briefly commented.

2 The Archaeological context

A hypogean ritual tradition in Western Chiapas

As a result of the research carried out by the Río La Venta Archaeological Project (PARLV) we know that the El

3. Vera Tiesler and Andrea Cucina carried out the bioanthropological analysis of the skeletal remains (Tiesler and Cucina 2005, Tiesler, Suzuki and Keb 2010), Clara Paz Bautista analysed malacological materials (Paz Bautista 2011), Monica Farneti carried out a preliminary analysis of the textiles (Farneti 2004), while Davide Domenici carried out the artefacts' inventory and analysis (Domenici 2003). A preliminary bioanthropological analysis (Drusini 1999) and the paleobotanical analysis (Piacenza 2001) had been previously carried out during Orefici's direction of the project.

4. The Conservation process of the textiles has been partly financed by the Italian Ministero degli Affari Esteri and by the La Venta Exploring Team.

Fig. 2. Map of the Middle Río La Venta region with main archaeological sites (Map by Nicoletta Maestri, Río La Venta Archaeological Project).

Fig. 3. Aerial view of the karstified landscape of the El Ocote jungle (photo by Paolo Pettrignani, Río La Venta Archaeological Project).

Ocote area had two main occupation phases, respectively dated to the Late-Terminal Classic (ca. AD 600-1000) and to the Late Postclassic (ca. 1250-1500); in addition, evidence has been found of a long and continuous tradition of ritual use of caves, spanning from the Middle Preclassic to the Late Postclassic (300 BC - AD 1500)⁵. Such a long ritual tradition was due to the highly karstified local landscape, dotted by an extraordinary amount of small mountains, amazing caves, and underground bodies of water (fig. 3). Being a place where the Mesoamerican sacred geography was so graphically reproduced, the El Ocote limestone massif was thus perceived as an appropriate place to establish various forms of ritual communication with the extra-human forces associated with fertility and the watery interior of Earth.

In extreme synthesis, from the Late Preclassic to the end of the Early Classic Period, when no permanent settlements were located in the area, the local caves – usually those easily accessible in the forest – were used by peoples coming

from the neighbouring valleys in order to deposit mostly massive offerings of hundreds of differentially fired black ware bowls (fig. 4).

Fig. 4. Early Classic massive offering in Cueva de José Juan (photo by Davide Domenici, Río La Venta Archaeological Project).

5. For information regarding the researches carried out by the Río La Venta Archaeological Project, see Domenici 2009; Domenici and Lee 2012; Domenici, Campiani, Maestri and Zurla 2013; for more detailed descriptions about the local hypogean ritual tradition and more specific bibliographic references, see Domenici 2010; Domenici and Pongetti 2012.

Fig. 5. Example of Late-Terminal Classic stone-masonry architecture from the site of El Tigre (photo by Davide Domenici, Río La Venta Archaeological Project).

The beginning of the Late Classic period was marked by the first colonization of the area, as reflected by a florescence sites with of stone-masonry architecture (fig. 5) and the widespread diffusion of Fine Orange pottery that suddenly replaced the old Olmec-derived black ware tradition. The occupation of the previously uninhabited area caused a radical change in the preferential location of ritual caves. Since the Late Classic, in fact, Zoquean peoples of El Ocote began to use caves located on the canyon cliffs, only reachable by climbing or walking along the narrow ledges that run along the canyon's walls (fig. 6). In general terms, there was an apparent preference for dry caves, where pottery offerings, mainly represented by Fine Orange bowls and plates of the local Mechung phase (600-900 d.C.) continued to be deposited, often near salient speleothems or in alcoves of the cave walls (fig. 7).

After the abandonment of the area at the end of the Terminal Classic Period, a second colonization wave occurred

in Postclassic times, apparently by Zoquean groups escaping from the Chiapanec intrusion in Western Chiapas. Clear evidences of Postclassic ritual activities are scanty, but most of the abundant rock art examples in the canyon possibly date to this last phase of the pre-Hispanic occupation of El Ocote.

Historical and ethnographical information shows that the El Ocote area was known among local Zoque groups as an especially sacred area, home of the *nahuales* and that is was called Norte Ipstek, "The Twenty Houses of the North", or "The Twenty Houses of the Rain", a toponym closely matching the current name of the El Ocote mountain range, "Sierra de Veinte Casas".

*Cueva del Lazo: A description*⁶

Cueva del Lazo, located on the north cliff of the Río La Venta canyon at 250 m above the river, is actually a small

6. More in-depth descriptions and interpretations of the archaeological context of Cueva del Lazo, as well as images of the non-textile materials there excavated, can be found in Domenici et al. 2007; Domenici 2013, 2014.

Fig. 6. View of the Río La Venta canyon cliffs (photo by Davide Domenici, Río La Venta Archaeological Project).

Fig. 7. Late-Terminal Classic offering in Cueva de los Altares (photo by Luca Sgamellotti, Río La Venta Archaeological Project).

Fig. 8. Map of Cueva del Lazo (map by Elvina Pieri Orefici, Río La Venta Archaeological Project).

space, approximately 15 m deep, covering an area of roughly 170 m². On the sides of the main chamber are three alcoves (corresponding to excavation units 1, 4 and 5), where the most remarkable finds were made; the alcoves containing the bundled burials are located in the deeper and darker area of the cave (fig. 8).

The excavation of Unit 1 uncovered the remains of a hearth, over 200 *jute* (*Pachyichilus* sp.) shells, fragments of three coarse paste cooking *ollas* and an hemispherical bowl, two *yahuales* (rounded implements made up of twisted rushes in order to support concave-bottomed *ollas*),

a partially burnt tobacco cigar, human coprolites, textile fragments, a perforated seed bead, and two grey obsidian prismatic blades. Macrobotanical remains included corn-cobs (*Zea mays*), squash (*Cucurbita* sp.), *anona* (*Annona* sp.), *jocote* (*Spondias purpurea*), *coyol* (*Acrocomia mexicana*), *tempisque* (*Mastichendron capiri*) and *totoposte* (*Licania arborea*) (Piacenza 2000). Almost all of the non-coarse paste ceramic fragments were of Fine Orange ware (Tuma Orange) typical of the local Late-Terminal Classic Period. Unit 1 also contained three perforated circles of dry gourd incised with bird images (fig. 9).

Fig. 9. Perforated circles of dry gourd incised with bird images, from Unit 1 (drawing by Cristina Pongetti, Río La Venta Archaeological Project).

In Unit 4, in the northwestern alcove, the remains of a child burial (Burial 2) were found inside an intrusive pit excavated into an earlier floor. The pit was filled with earth and grass, while the alcove access was enclosed by a semi-circular row of stones. The child, between four and six years old (Tiesler and Cucina 2005: 9), was originally wrapped in a textile bundle whose fragments were found nearby. The remains of the burial were resting over a grass circle tied with grass fibers. In proximity to the burial were a partially burnt tobacco cigar, a fragment of an incised and painted gourd, a fragment of a polished and perforated *Spondylus princeps* valve, a small ring of vegetal fibers, a green obsidian prismatic blade, human coprolites, and macrobotanical remains including maize (*Zea mays*), beans (*Phaseolus* sp.), chile (*Capsicum* sp.), jocote (*Spondias purpurea*), gourd (*Cucurbita* sp.), tempisque (*Mastichendron capiri*), mamey (*Mammea americana*), anona (*Annona* sp.) and to-toposte (*Licania arborea*) (Piacenza 2000). Two of the textiles fragments associated to Burial 2 show some kind of decoration, one of them with a motif depicting architectonical features (see below, fig. 45). In the outer part of the enclosing row of stones, the poorly preserved remains of the burial of a six to eighteen month old child (Burial 1B) were associated with small textile fragments and fibre cords, obviously the remains of another burial bundle.

Unit 5, within the northeastern alcove, contained the richest remains. An intrusive pit measuring approximately 3 x 2 m had been excavated in antiquity through an earlier stuccoed floor, and was partially covered on its southern side by a thick layer of grass. The intrusive pit was filled with earth containing typical Late-Terminal Classic Mechung pottery fragments, and a huge quantity of macrobotanical remains including maize (*Zea mays*), beans (*Phaseolus* sp.), gourd (*Cucurbita* sp.), jocote (*Spondias purpurea*), tempisque (*Mastichendron capiri*), mamey (*Mammea americana*), avocado (*Persea americana*), and anona (*Annona* sp.). The maize was found in the form of dry cobs (totalling 1265 g) and analysis showed that their grains had been eaten when tender, and had probably been boiled (Piacenza 2000: 28).

At the level of the grass covering rested a bone awl, a deer antler, a partially burnt tobacco cigar (fig. 10), a fragment of a vegetal fibre child's sandal, a small wooden zoomorphic sculpture (fig. 11), a mat fragment, and small, child-size bracelet composed of an S-plied cord, seven bird-bone tubular beads, and three stone beads (fig. 12). In addition, an interesting item was a stone plaque with a still unidentified resinous coating holding six small reptile (lizard?) teeth, probably used as a scarification or bloodletting tool (fig. 13). The pit also contained human coprolites (Montes de Paz and Linares Villanueva 2015).

Fig. 10. Partially burnt tobacco cigar from Unit 5 (drawing by Cristina Pongetti, Río La Venta Archaeological Project).

The pit excavation revealed a group of children in very different states of preservation. The excavation began in the area not covered by the grass cap, where five very superficial and badly disturbed burials were found (1A, 3, 4, 5A and 5B).

Burial 1A corresponds to the highly incomplete remains of a 1 to 2 year old child, whose cranium presented tabular oblique modification. Fragments of textiles and fibre cords indicated the existence of a burial bundle.

Fig. 12. Bracelet from Unit 5 (drawing by Cristina Pongetti, Río La Venta Archaeological Project).

Fig. 11. Wooden zoomorphic sculpture from Unit 5 (drawing by Cristina Pongetti, Río La Venta Archaeological Project).

Fig. 13. Scarification or bloodletting tool from Unit 5 (drawing by Cristina Pongetti, Río La Venta Archaeological Project).

Burial 3 contained the remains of a 12-18 month old child. The burial was in close proximity to vegetal remains and was associated with a very fine mat with fringed edge (fig. 14) and fragments of two knotted brown textiles, one of them with geometric decoration (see below, fig. 43).

The highly perturbed Burial 5A consists of the skull and mandible of a 3 to 4 year old child, with evidence of tabular oblique modification. Associated fragments of textiles show that the body had been originally bundled.

Burial 5B comprised approximately 90% of the skeleton of a 5 to 6 year old child. The cranium was absent, while the mandible was *in situ*. The skeleton was partially wrapped in a textile formed by three cream-colored bands sewn together, almost identical to the one associated to Burial 5A. The child was originally placed in a seated position, with flexed arms and legs.

Burial 4 was composed of approximately 90% of the skeleton of a 1 to 2 year old child. The remains of cotton textiles nearby the skeleton, obviously part of its burial bundle, contained human coprolites.

The grass cap on the southern side of the pit was then removed and two underlying burials (6 and 7) were found.

Burial 6 was composed of approximately 90% of the skeleton of a 1 year old child, including the mandible but not the skull. The burial was bundled and the child was wearing a cotton turban, found in the vicinities.

Fig. 14. Mat with fringed edge from Unit 5 (photo by Davide Domenici, Río La Venta Archaeological Project).

Burial 7 was composed of 95% of the skeleton of an 18 month to 3 year old child, whose cranium shows tabular oblique modification in its intermediate form. Bones were partially wrapped in a textile and associated to a bracelet composed of an S-plyed cord and a tubular shell (*Spondylus princeps*) bead (fig. 15; Paz Bautista 2011).

North of these two burials, in an area originally not covered by the grass, two other individuals (Burials 8 and 9) were found. Burial 8 contained 95% of the skeleton of a six month to 1 year old child, whose cranium shows tabular oblique modification in its pseudo-rounded form. A necklace composed of an S-plyed cord attached to a subrectangular shell pendant (*Pinctada mazatlanica*) (Paz Bautista 2011) was associated to the burial (fig. 16).

Fig. 15. Bracelet associated to Burial 7, Unit 5 (drawing by Cristina Pongetti, Río La Venta Archaeological Project).

Fig. 16. Necklace associated to Burial 8, Unit 5 (drawing by Cristina Pongetti, Río La Venta Archaeological Project).

Finally, Burial 9 consisted of the still bundled body of a child – it was the best preserved bundle in the cave – with remains of a turban (see below, figs. 38-42). The bundle, resting on a sediment layer covering a grass circle, was composed by two different textiles and was associated with a hemispherical dried gourd (*jícara*) containing a corn cob (whose grain had been eaten when tender). On of the textiles show a geometrical decoration (see fig. 42). The bone remains made up of 90% of the skeleton of a 1 to 2 year old child, which included the mandible but not the skull. The child wore a necklace almost identical to the one found in Burial 8 (fig. 17).

South of burials 8 and 9 two big textiles were found, maybe originally part of one of the two bundles.

The characteristics of the burials in Unit 5 suggest that they were placed into the intrusive pit on different occasions, leading to various acts of re-excavation and re-filling of the pit that caused the disturbance of the earlier burials,

Fig. 17. Necklace associated to Burial 9, Unit 5 (drawing by Cristina Pongetti, Río La Venta Archaeological Project).

whose bundles were often completely destroyed, thus explaining the very fragmentary conditions of most textile remains and the lack of skulls in otherwise well preserved burials. Such repeated use of the deposit is further supported by the AMS dating of the textiles (see below), distributed in a time span of over two centuries. The superficial remains of previously displaced burials later suffered additional disturbance by animals that left their traces on the surface of the bones. A similar situation appears in Unit 4, where Burial 1B was probably disturbed during the disposal of Burial 2. The spatial pairing of Burials 6-7 and 8-9, as well the similarity between the necklaces of these last two, suggest that in these two cases the children could have been buried in pairs.

Though there is no direct evidence of *perimortem* trauma on the skeletons, various elements of the context are consistent with archaeologically and historically documented sacrificial behaviour, suggesting that the archaeological context of Cueva del Lazo could be described as a post-sacrificial deposit.⁷ A first one is the age of the children, all of them under six years old (eight of them under two), obviously not matching to a normal death curve and suggesting some form of cultural selection. Moreover, paleopathological evidence identified by on the bones of most individuals (such as *cribra orbitalia* and porotic hyperostosis) points to a lifelong history of stress resulting from weaning, food deficiency, and infections (Tiesler and Cucina 2005: 18). Similar stress indicators were commonly noted among other sacrificed children in Mesoamerica.

The location of the burials in a cave is obviously another meaningful trait, since local caves were used as places of offering deposition for almost two thousand years. From this perspective, it is interesting to note that the Cueva del Lazo child burials were located in cave alcoves, that is in places usually devoted to offering deposition and probably

7. Iron oxides particles identified on some textiles (see below) could proceed from blood stains, thus suggesting some kind of sacrifice involving blood shedding, such as throat silting. Admittedly, the evidence is too weak to make it a strong case.

perceived as transitional spaces, as shown by their role in the various Chicomoztoc-like Mesoamerican caves. Interestingly, two of the bundled corpses (Burials 2 and 9) were located on top grass circles and both the burial pits in Unit 4 and 5 had grass coverings. As shown by G. Olivier (2006), in Aztec rituals the grass (*zácatl*) had a specific telluric symbolic significance and was used as an earthly base for offerings; moreover, the grass circles strongly resemble those used as bases of the *tzoalli* children-mountains “sacrificed” during the Aztec festival of Tepeilhuitl, as described by Bernardino de Sahagún. If the vertical stratigraphy of the burial pit in Cueva del Lazo reflects the syntactical sequence of ritual action, the deposition of the grass circles would have constituted the first act of the construction of a layered ritual deposit, sealed with a grass covering as in an earthly matrix.

Even more significant is the fact that children in Cueva del Lazo were buried together with a huge amount of food remains: maize, squash, beans, chile, *anona*, *jocote*, *mamey*, *coyol*, *tempisque* and *totoposte*, among others. The presence of tender maize, apparently partly consumed *in situ*, is interesting because, apart from fitting with the “green”, “unripe” semantic sphere, it suggests some form of “first fruit” offering. This evidence must be connected with that coming from Unit 1, where the presence of over 200 *jute* (*Pachylicus* sp.) shells with broken tips indicating their use as food, together with a hearth and cooking pottery remains, suggest the preparation and consumption of a soup or broth.

The elements so far summarized seem to characterize the Cueva del Lazo interments as a cyclically renewed ritual deposit involving the offering of a complex set of “green”, unripe, elements. These elements fit closely within the Mesoamerican practice of child sacrifices as transformative processes of mutual consumption/exchange with water-earth-fertility gods. Admittedly, a similar meaning could have been associated with a special funerary treatment, but traits such as the suggested interment of some of the children in pairs could be viewed as strong evidence in favour of the sacrifice hypothesis, since dual sacrifices of children are mentioned in several colonial sources. In sum, even with due caution, contextual evidence strongly suggests that Cueva del Lazo functioned in Late Classic times as a ritual space devoted to the performance of cyclical child sacrifice in which the bundled corpses of children were deposited as offerings to the food-laden interior of mountains, the abode of the gods of rain and fertility.

3 Perishable materials’ technical analysis and conservation issues

Research and conservation strategies

In Mesoamerica, archaeological contexts characterized by environmental conditions allowing the preservation of perishable materials are extremely rare, so that the corpus of known pre-Hispanic textiles is extremely reduced (see Filloy Nadal, this volume); even more reduced is the corpus of specimens still preserving their original shape and dimensions. For this reasons, the perishable materials proceeding from Cueva del Lazo are unique both in terms of quantity and general state of preservation. In fact, the materials recovered in the cave and then transferred to the *Coordinación Nacional de Conservación del Patrimonio Cultural* include unspun fibres, yarns, hard fiber textiles such as mats, ropes, and a huge variety of soft fibres textile fragments, some of them almost complete. We counted at least 68 textile fragments, a few of them preserving more than 50% of its original extension and thus providing precious information about manufacture techniques, proportions, and function. Twelve of them stand out for their uniqueness: two turbans, a burial bundle, a ritual bundle, a mantle composed of various sewn clothes, a strip, a net, three embroidered textiles, and two orange-dyed ones.

Due to the high number of specimens submitted to conservation treatment, in the following lines we will only resume the general process, stressing some specific method used in particular instances.

In general terms, the employed methodology included the following steps:

- A. Evaluation and diagnosis of the state of preservation of the specimens.
- B. Photographic record before, during, and after every process, at times with transmitted and oblique light.
- C. Sampling and analysis of warp and weft yarns.
- D. Dyes identification
- E. Dating of sampled textiles.
- F. Conservation process
- G. Mounting and storage

Fibres identification

The identification of the fibres (fig. 18) has been carried out on 112 samples, whose observation with a biological microscope gave the following results: 36% cotton, 6% agave, and 58% a combination of cotton and agave. The high percentage of textiles composed of a combination of cotton and agave (fig. 19) is quite unusual in the known pre-Hispanic corpus; the combination of different fibres could have been

Fig. 18. Fibers identified in the 112 analyzed textiles samples from Cueva del Lazo (Gloria Martha Sánchez, CNCPC-INAH).

aimed at reducing costs or at providing more strength or a specific texture to the cloth. Central Mexican early colonial sources refer that the use of cotton garments was restricted to the nobles, while agave fibres were used for commoners' cloths. In this sense, it is interesting to note that in our sample most of the textiles composed of pure agave or of a mixture of cotton and agave textiles are plain and undyed, while the decorated textiles (both with brocade or dyeing) are made of pure cotton.

Type of weaving

Most of the 55 analysed textiles, that is 88% of the collection, showed a simple plain weave, or taffeta (1 warp yarn for each weft yarn), technique. 14.5% showed a *taletón* type (2 warp yarns for each weft yarn), while only two textiles showed a combination of the two types; only one specimen was woven with warps and wefts used in pairs, the basket weave technique (fig. 20).

Type of decoration

The analysed corpus showed a great diversity of decorative techniques, such as brocade, kilim, gauze, multiple warps, and dyed yarns (figs. 21-27).

Dyes identification

The analysis of the fibres showed that they were dyed with two different colours: blue, and orange, while blackish and brownish areas are the product of the decomposition of organic matter and, maybe, of blood stains. The dyes identification, by means of Scanning Electron Microscope (SEM) and Energy Dispersive X-ray Spectrometry (EDS), was carried out by Gustavo Martínez on six fiber samples (Table 1).

M1 showed to be dyed with indigo (*Indigofera suffruticosa*), while the adhering brown particles are iron oxides; the red particles adhering on the undyed M2 are also iron

Fig. 19. Cotton and agave fibers from specimen 59-05/06 seen at biological microscope 40X (Gloria Martha Sánchez, CNCPC-INAH).

Fig. 20. Weaving techniques identified in the Cueva del Lazo textile corpus (Gloria Martha Sánchez, CNCPC-INAH).

oxides, maybe blood stains; M3 is dyed with a carotenoid, most probably achiote or annatto (*Bixa orellana*) while the adhering particles are iron oxides, calcium sulphates (gypsum) and earth deriving from the excavation sediment; M4 is dyed with indigo, while the adhering brown particles are iron oxides; M5 showed a high carbon content (47.79141843% of total weight), probably deriving from the corpse decomposition since it is not evenly distributed on the fiber; M6 is an undyed cotton fiber containing small amounts of silicon oxide, reddish iron oxide, white calcium sulphate and clay.

Sample dating

Four fibre samples were submitted to AMS (Accelerator Mass Spectrometry) dating, carried out by BETA ANALYTIC INC., in order to obtain absolute dates that could be compared with the dating of the archaeological context based

Table 1. Samples of fibres submitted to Scanning Electron Microscope (SEM) and Energy Dispersive X-ray Spectrometry (EDS) for dye identification (Gloria Martha Sánchez, Fototeca CNCPC-INAH).

Sample number	Sample	Photo
M1 60-11-06	Blue cotton fiber with small brown particles adhering to it.
M2 60-35-06	Light brown cotton fiber with small red particles adhering to it.
M3 60-05-06	Undyed cotton fiber with orange/ochre particles adhering on it.
M4 60-25-06	Plaited, cotton fiber with blue dye on some areas.
M5 60-11-06	Dark cotton fiber treated with methocel. Some black areas could be due to the putrefaction of the bundled corpse.
M6 60-30-06	Undyed cotton fiber with small red stains.

on ceramic types, assigned to the local Late-Terminal Classic Mechung phase (AD 600-1000). The four samples were taken from representative specimens of the collection (Table 2), that is, an orange dyed textile, two turbans, and textile decorated with the combined techniques of *taletón* and multiple threads, a unique technique that could suggest a different temporality of the specimen.

The dating provided the results presented in Table 3.

All the obtained dates squarely fall within range (1120-1370 +/- 40 BP) fully compatible with the temporality assigned to the Late-Terminal Classic Mechung phase (AD 600-1000) proposed on the base of pottery sequence.

State of preservation of the collection

Despite the general exceptional conditions of perishable materials from Cueva del Lazo, a specific diagnostic revealed physical, chemical and biological alterations affecting the integrity of the specimens. These alterations occurred both during the centuries in which they remained into the cave as well as during the excavation and the subsequent storage prior to the beginning of the conservation work. Being part of mortuary bundles, the textiles stayed in contact with substances deriving from the decomposition of the bodies; moreover, the sequential excavation and refilling of

Table 2. Samples submitted to AMS dating (Gloria Martha Sánchez, Fototeca CNCPC-INAH).

N	Sample	Photo
1.	60-35/06 252 LAV97 Y2 EXP1 N16 02 02/09/97 TAL W N-1
2.	60-06/06 18 LAV97 Y2 EXP1 N13/14 E7/8 ESQUELETO6
3.	60-22/06 INT 31 LAV 97 Y2 EXP 1 N16 E8-9 FARDO B ESQ 9 CAPA A/B
4.	60-05/06 2 LAV97 Y2 EXP1 N15-E6 CAPA SUPERIOR ASOCIADO A ESQ.1

the burial pit in ancient times, as well as the activity of animals, caused mechanical alterations of the specimens. Consequences of all these factors can be observed in specimens whose dried fibres show signs of progressive disaggregation.

Conservation

The conservation process included several different steps:

- 1) Photographic record, carried out before, during, and after the conservation. In some cases photos with transmitted light, grazing light and UV light were taken.
- 2) The specimens were inventoried and catalogued when they entered the CNCPC, assigning a progressive entry number that was added to the original key assigned during excavation.
- 3) Filling of a clinic sheet for every specimen, recording main characteristics, preservation conditions, etc. in order to obtain a general diagnostic of the whole collection and to plan further conservation actions.
- 4) Mechanical cleaning of earth particles deposited on the surface of the specimens; the cleaning was carried out with soft brushes and low-power micro-vacuum cleaner on specimens protected by a tight nylon net permitting the extraction of the earth particles but not that of textile fragments.
- 5) Physico-chemical cleaning, aimed at removing elements adhering to the specimen surface, carried out by means of solvents that induce the suspension, solubilisation, or elimination of the adhering materials. In this case, a surfactant diluted in water gave excellent results. During the cleaning process, the specimens were protected between two basted nylon nets in order to avoid any movement or deformation.

Table 3. Sample treatment, dating procedures and results.

Sample Data	Measured Radiocarbon Age	$^{13}\text{C}/^{12}\text{C}$ Ratio	Conventional Radiocarbon Age(*)
Beta - 285873 SAMPLE : 1 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (textile): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 650 to 780 (Cal BP 1300 to 1170)	1300 +/- 40 BP	-25.3 0/00	1300 +/- 40 BP
Beta - 285874 SAMPLE : 2 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (textile): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 680 to 890 (Cal BP 1270 to 1060)	1190 +/- 40 BP	-22.5 0/00	1230 +/- 40 BP
Beta - 285875 SAMPLE : 3 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (textile): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 610 to 690 (Cal BP 1340 to 1260)	1320 +/- 40 BP	-22.0 0/00	1370 +/- 40 BP
Beta - 285876 SAMPLE : 4 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (textile): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 810 to 1010 (Cal BP 1140 to 940)	1110 +/- 40 BP	-24.2 0/00	1120 +/- 40 BP

- 6) Flexibilization and consolidation. Since most of the textiles showed signs of dryness inducing structural weakness that impeded proper manipulation, it was necessary to submit them to a treatment aimed at providing strength and stability. For this purpose, the specimens were treated with a combination of three different polymers: rice amid (1%) and methylcellulose (0.2%) as consolidants and low molecular weight polyethylene glycol 200 (20%) as flexibilizer. Since the complete submersion and the subsequent drying of the specimens could have induced changes in the textiles' texture, the polymers were sprinkled on them, obtaining satisfactory results.
- 7) Relocation of warp and weft yarns. Since most specimens are small fragments, many yarns appeared out of place, so that we took advantage of the humidification process to relocate the yarns in their original positions, avoiding their loss and giving the specimens their original shape.

- 8) Auxiliary support. The creation of an auxiliary support has been necessary both for manipulation and storage of four specific specimens and for public display of those selected to be exhibited in the Museo de los Altos de Chiapas, in San Cristobal.

- a) A textile of huge dimensions (59-05/06) (fig. 28), which was mounted in a red cedar frame in order to help its manipulation and preservation. The textile was sewn (with cotton yarns) on a movable boiled cotton panel, dyed with a neutral colour and attached to the wooden frame by means of Velcro, in order to permit its removal and transportation to the Museum, where it is today on exhibit.
- b) Specimen 60-05/06-A (fig. 29) was divided in two parts that were joined onto a raw silk cushion in order to restore the original shape and to allow the visibility of the brocade decoration. The process required to remove the ancient yarn used to sew the textile

Fig. 21. Types of decoration: brocade and kilim techniques on specimen 59-01/06 (Fototeca CNCPC-INAH).

margins, in order to extend, clean, and relocate its yarns. Then the specimen was mounted and resewn (with the original yarn and following the original sewing pattern) on the raw silk crepline cushion, sustained by a support composed by an ethafoam® surface, covered with Tyvek ® in order to make the decoration visible. Where the original sewing yarn was lost, it was integrated with a silk yarn in order to make it distinguishable from the original one.

- c) Specimen 60-01/06 (fig. 30), an annatto-dyed cotton textile, was originally enrolled over a palm rope. It was necessary to separate the two elements to extend the textile and to submit it to the usual cleaning and consolidation treatment. Then the textile was mounted on a dyed silk crepline and relocated around the consolidated palm rope.
- d) All the specimens selected for being exhibited in the Museo de los Altos de Chiapas were mounted on a silk

Brocade

Fig. 22. Brocaded decoration on specimen 59-03/06 (Fototeca CNCPC-INAH).

Fig. 23. Brocaded decoration on specimen 60-36/06 (Fototeca CNCPC-INAH).

Fig. 24. Gauze, brocade, and taffeta techniques on specimen 60-05/06-A (Fototeca CNCPC-INAH).

Fig. 25. Multiple warps and kilim techniques on specimen 60-11/06-E (Fototeca CNCPC-INAH).

Taffeta & red dyeing

Taletón y multiple warps

Sewing yarn

Fig. 26. Taffeta, red dyeing, taletón and multiple warps decorations on specimen 60-35/06 H (Fototeca CNCPC-INAH).

Fig. 27. Different examples of use of differently dyed yarns (Fototeca CNCPC-INAH).

crepline tensed in red cedar frames through which light can pass, in order to make their brocaded decoration visible when present (fig. 31). The undecorated specimens were put in a frame on whose back a white cotton mantle was mounted with Velcro in order to enhance their visibility, to reduce the dust accumulation and to allow future cleaning.

9) Storage. Most of the textiles (except specimen 59-05/06, mounted in a frame, and specimens 60-05/06-A - 60-01/06, stored in independent polypropylene boxes) were located in black polypropylene folders, internally lined with a cotton cloth and provided with an identification tag. Such folders allow easy storage and manipulation, avoiding the need to touch the specimens.

Fig. 28. Different phases of the conservation process of specimen 59-05/06 (Fototeca CNCPC-INAH).

Fig. 29. Different phases of conservation process of specimen 60-05/06-A, from original conditions to final exhibition in the Museo de los Altos de Chiapas (Fototeca CNCPC-INAH).

Fig. 30. Final exhibition of specimen 60-01/06, an annatto-dyed textile enroled over a palm rope (Fototeca CNCPC-INAH).

Fig. 31. Examples of two specimens mounted on silk crepeline within cedar frames in order to be exhibited in the Museo de los Altos de Chiapas (Fototeca CNCPC-INAH).

Fig. 32. Mechanical cleaning process of textiles from the mortuary bundle 60-02/06 (Fototeca CNCPC-INAH).

Three specific specimens required a specialized treatment:

- a) Mortuary bundle (60-02/06) (fig. 32). The mortuary bundle of Burial 8 had been stored together with an earth block from the excavation. It required a careful cleaning following the method described above, allowing the recuperation of three different textile fragments, two of them parts of the bundle itself. Two of the textiles (one of them from the bundle) were submitted to the usual cleaning and consolidating process and were mounted in the red cedar frames as described above. The first (60-02/06 A), not pertaining

to the bundle, is a fragment of a band, with side borders (fig. 33). The second one, pertaining to the bundle (60-02/06 B), was a mantle composed of four different textiles sewn together, highly affected by the decomposition of the bundled corpse (fig. 34): it was mounted in the same way adopted for the abovementioned large textile 59-05/06.

The third fragment (60-02/06 C) was especially interesting, since it corresponded to the upper part of the bundle, covering the head of the children and being tied around the neck (fig. 35). After the usual cleaning and consolidation process, carried out

Fig. 33. Cleaning, yarns relocation and storage in polypropylene folder of specimen 60-02/06 A (Fototeca CNCPC-INAH).

Fig. 34. Final mounting in frame of specimen 60-02/06 B (Fototeca CNCPC-INAH).

Fig. 35. Conservation process of specimen 60-02/06 C, involving mounting of dyed silk crepeline (Fototeca CNCPC-INAH).

avoiding any deformation of the original shape, we decided to sew it on a dyed silk crepeline providing strength to the specimen and then to mount it on a support that could show its original function as part of a funerary bundle. So, an ethafoam® structure covered by an elastic cotton cloth, resembling the shape of a child's body was prepared (fig. 36) and the textile was mounted over it (fig. 37). We also devised an acrylic base for its eventual exhibition in the future. At the moment, nevertheless, the bundle is stored in a polypropylene box, protected by a Tyvek® bag and held in place by ethafoam bars avoiding movements of the specimen within the box.

- b) Turbans. The two turbans had lost most of their original shape during post-excavation storage (fig. 38), so that a special cleaning process was carried out in order to minimize further deformations (fig. 39), using a special vacuum cleaner, a mixture of water and alcohol 1:1. After the usual flexibilization and conservation treatment by means of the abovementioned polymers, once the fibres had recuperated strength and flexibility, the turbans were sewn with dyed silk threads in order to avoid the loss of broken fragments. Four nylon supports were used to maintain the turban's shape and the specimens were further were sprinkled four

times with a solution of klucel at 1% in alcohol (allowing fast evaporation). Then a resin *Ren Paste 177* support was prepared in order to maintain the original shape; during the preparation of the resin support the turbans were protected with an egapack plastic film, later removed (fig. 40). Finally, a head-shaped base (fig. 41) was prepared in order to properly transport and store the turbans without further deformation. For public display, the turbans could be mounted on a more realistic head-shaped support.

4 Conclusions

The textiles' corpus from Cueva del Lazo is by far the richest group of Classic textiles ever found in Mesoamerica. Its uniqueness relies on various elements such as its dimensions, its exceptional state of preservation, its possible procedance from a post-sacrificial context and, last but not least, its origin from one of the least known regions of ancient Mesoamerica, that is, the Zoquean region of Western Chiapas. The reconstruction and reinterpretation of the original Cueva del Lazo archaeological context, as well as the proper conservation process and exhibition of some of the textiles, have been the first two, fundamental, steps in the study of such a unique textile corpus. Much more can be

Fig. 36. The ethafoam® structure in the shape of a child's body, covered by an elastic cotton cloth (Fototeca CNCPC-INAH).

Fig. 37. Mounting of specimen 60-02/06 C on the ethafoam® structure (Fototeca CNCPC-INAH).

Fig. 38. Conditions of the two turbans when first stored after excavation (left) and prior to our conservation treatment (right) (Fototeca CNCPC-INAH).

Fig. 39. Different phases of the cleaning and consolidation process of one of the turbans (Fototeca CNCPC-INAH).

Fig. 40. Preparation of the resin support for the turban (Fototeca CNCPC-INAH).

Fig. 41. The consolidated turban mounted on a head-shaped support for handling and storage (Fototeca CNCPC-INAH).

Fig. 42. Specimen 50-1/06 from Burial 9, decorated with *xicalcolihqui* or stepped-frets motifs (Fototeca CNCPC-INAH).

done in the future, and we want to conclude this paper with some brief comments on possible further research lines.

We still not have carried out an in-depth iconographical analysis of the textiles' decorative motifs, but some initial suggestions are in order. A fragment from Burial 9 is decorated by two horizontal bands containing a series of interlocking stepped frets, or *xicalcolihqui* (fig. 42). This widespread Mesoamerican symbol, probably representing sectioned conch shells, is generally assumed to allude to watery and wind symbolism. Its use as a decorative motive on garments is witnessed by various pre-Hispanic and colonial examples, such as various individuals on Mixtec codices, the Ix-Chel Goddess as represented on Codex Madrid, two of the aztec mantles depicted on Codex Magliabechiano, one of the Tlaxcallan women on the Lienzo de Tlaxcala, as well as from contemporary indigenous textiles.

The same interlocking stepped frets motif appears on another textile from Cueva del Lazo Burial 3 (fig. 43), contained inside two horizontal bands, whose outer parts are decorated with motifs resembling stepped mountains. The central part of the textile shows a complex, and strangely asymmetric motif of unknown meaning.

Another textile deriving from the unusual "pyramid-like" bundle (fig. 44) shows three parallel bands: while the central one contains elusive, maybe zoomorphic elements, the side-bands contain toad-like motifs. Toads were usually associated to rain and the watery underworld in ancient Mesoamerica (as well as to caves in modern Tzotzil lore), and their use as decoration on garments is witnessed by the famous Yaxchilan Lintel 26, as well as by various contemporary Maya textiles. Obviously, the presence of symbols related with the water and the underworld, such as stepped frets, mountains and toads, seems to be coherent with their

Fig. 43. Specimen 59-7/06 from Burial 3, decorated with *xicalcolihqui* motifs, stepped "mountains" and an unidentified central motif (Fototeca CNCPC-INAH).

use on textiles used during hypogean sacrificial practices probably related with the petitioning of rain and fertility.

One beautiful textile from Burial 2 (fig. 45) shows the images of what seem to be two different buildings with span roofs. The upper one, faced by a fret-like motif, could even represent an anthropomorphic profile, but such interpretation is far from being secure. Interestingly, the elements protruding from the façade, as well as the geometric panel on the façade of the lower building, show some resemblance with the geometrical friezes decorating the façades of monumental buildings in coeval Late Classic sites in Selva El Ocote.

Fig. 44. Specimen 60-5/06-A with brocaded decoration representing toads (outer bands) and unidentified, maybe zoomorphic motifs (central band) (Fototeca CNCPC-INAH).

An especially intriguing problem regards the “pyramid-like” small bundle shown before (fig. 46), whose function still eludes us. Anyway, it is worth noting that its shape closely resembles that of two equally enigmatic fibre objects found in the Cueva de Ejutla, another important pre-Hispanic ritual cave in Oaxaca (Moser 1975).

The quality of the textiles found in Cueva del Lazo, in a context not characterized by the presence of luxurious objects, is a good evidence of the skills of the ancient Zoque weavers. Actually, the quality of Zoque textiles must have been reknown at least in Postclassic Mesoamerica, as suggested by the fact that, according to Codex Mendoza, the Zoque-Popoluca province of Tochtepec was the one providing the highest amount of textiles to the Aztec imperial capital. A positive appreciation of Zoquean textile production in colonial times was expressed by authors such as Thomas Gage, who mentioned their being famous for their high quality silk and for the production of cochineal dye, the best in the Americas (Cordry and Cordry 1988: 139).

Modern Zoque weaving has been studied in 1940 by Donald and Dorothy Cordry (Cordry and Cordry 1988), who described several interesting technical aspects that, even if not exclusive of the Zoque region, are worthy to be mentioned here. Beside the use of cotton, the authors recorded the use of palm fiber and *ixtli* or agave, stating that agave fibre of especially good quality was produced in the Chimalapas area, in a region neighbouring selva El Ocote; they also described how the *huipiles de tapar*, that is the “false” huipils used by women to cover their heads, were composed by three different cotton bands sewn together (Cordry and Cordry 1988: 126), as we saw in a Cueva del Lazo mantle. As for the modes of decoration, the Cordrys witnessed the ample use of indigo, cultivated in the Suchiapa region (Cordry and Cordry 1988: 120, 138, 168) and described three main techniques used in the Zoque region: if the brocaded plain weave is not represented in Cueva del Lazo, embroidery and gauze are instead present. Especially interesting is the case of the gauze, or lace, also attested in the Cueva del Lazo corpus,

Fig. 45. Textile 50-1/06 from Burial 2 with brocaded decoration representing architectonical features (photo by Paolo Pettrignani, Río La Venta Archaeological Project).

because according to the Cordrys it was an especially important technique in the Zoque region, locally known with the name of *renque*, a term of unknown etymology that could derive from the Spanish *renquear*, or “to limp”, alluding to the interruption of the normal textile pattern (Cordry and Cordry 1988: 165-166). According to Thomas Lee, *renque* would be one of the fundamental concepts of Zoque aesthetics, both ancient and modern (Lee 2003).

Without any intent to trace too strict a continuity, we can nevertheless say that if the archaeological remains of ancient ritual activities in Selva El Ocote do represent the pre-colonial origin of the modern Zoque perception of Norte Ipstek as an especially sacred area, the Cueva del Lazo textiles represent a unique and exceptional evidence of the antiquity of the renown colonial and modern Zoque weaving tradition.

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Fig. 46. The pyramidal “bundle” 60-5/06-A (Fototeca CNCPC-INAH).

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