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RESEARCH ARTICLE

CHARACTERIZATION OF CERAMIC FRAGMENTS FROM CUYPUQUIÓN CAVE: EVIDENCE OF A PRE-HISPANIC OCCUPATION BY THE CHACHAPOYAS IN THE TRITA DISTRICT, PERU

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ABSTRACT. *This research focuses on the characterization of ceramic fragments discovered at the Cuypuquión Cave, located in the Trita District, Amazonas Region, Peru, with the aim of identifying evidence of pre-Hispanic occupation by the Chachapoyas culture. The methodology employed included* in situ *observation and detailed photographic documentation of ceramic fragments and bone remains, analyzing their morphology, decoration, and archaeological context. The findings reveal fragments of utilitarian, coarse pottery decorated with hatched and geometric motifs, such as zigzags, rhombuses, and high-relief designs, alongside human bone remains scattered across the surface of extensive platforms, indicating the cave's funerary use. Characteristics of the ceramic fragments, such as the use of local clay with symbolic decorations, reflect the advanced skills and techniques of a rich cultural worldview. Additionally, the high humidity conditions within the cave have caused deterioration of the materials. The study concludes that the Cuypuquión Cave served as a significant ceremonial and funerary space for the Chachapoyas and establishes a foundation for future archaeological research integrating advanced approaches to expand knowledge of cultural and technological dynamics in the northern Andes.*

KEYWORDS. *Pottery, ceramics, Cuypuquión, cave, Chachapoyas, Peru, conservation, culture, cultural heritage.*

1. INTRODUCTION

Ceramics represent one of the primary material legacies attesting to ancient civilizations during the pre-Hispanic period. The analysis of these artifacts has provided valuable insights into various social dynamics associated with these objects (Coronel *et al.* 2024). Studies focusing on the composition, decoration, and form of ceramics, spanning different regions and historical periods over recent decades, have led to significant advancements in understanding the techniques and resources employed by ancient potters (Centeno *et al.* 2012; Freire *et al.* 2016).

One such civilization, which flourished in the Andes of the Amazonas Region between 800 and 1570 AD, is the Chachapoyas culture, distinguished by its stone architecture, textiles, and ceramics (Culturas Peruanas n.d.). They constructed impressive fortresses, mausoleums, and sarcophagi in elevated and inaccessible lo-

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cations, where they buried their dead with offerings and personal belongings. Their pottery was typically globular, with short necks and handles, predominantly black or gray due to the use of dark clay, and decorated with incised geometric patterns such as triangles, rhombuses, and spirals. This civilization was conquered first by the Incas and later by the Spanish, yet it retained its identity and resilience (Brachetti-Tschohl 2013).

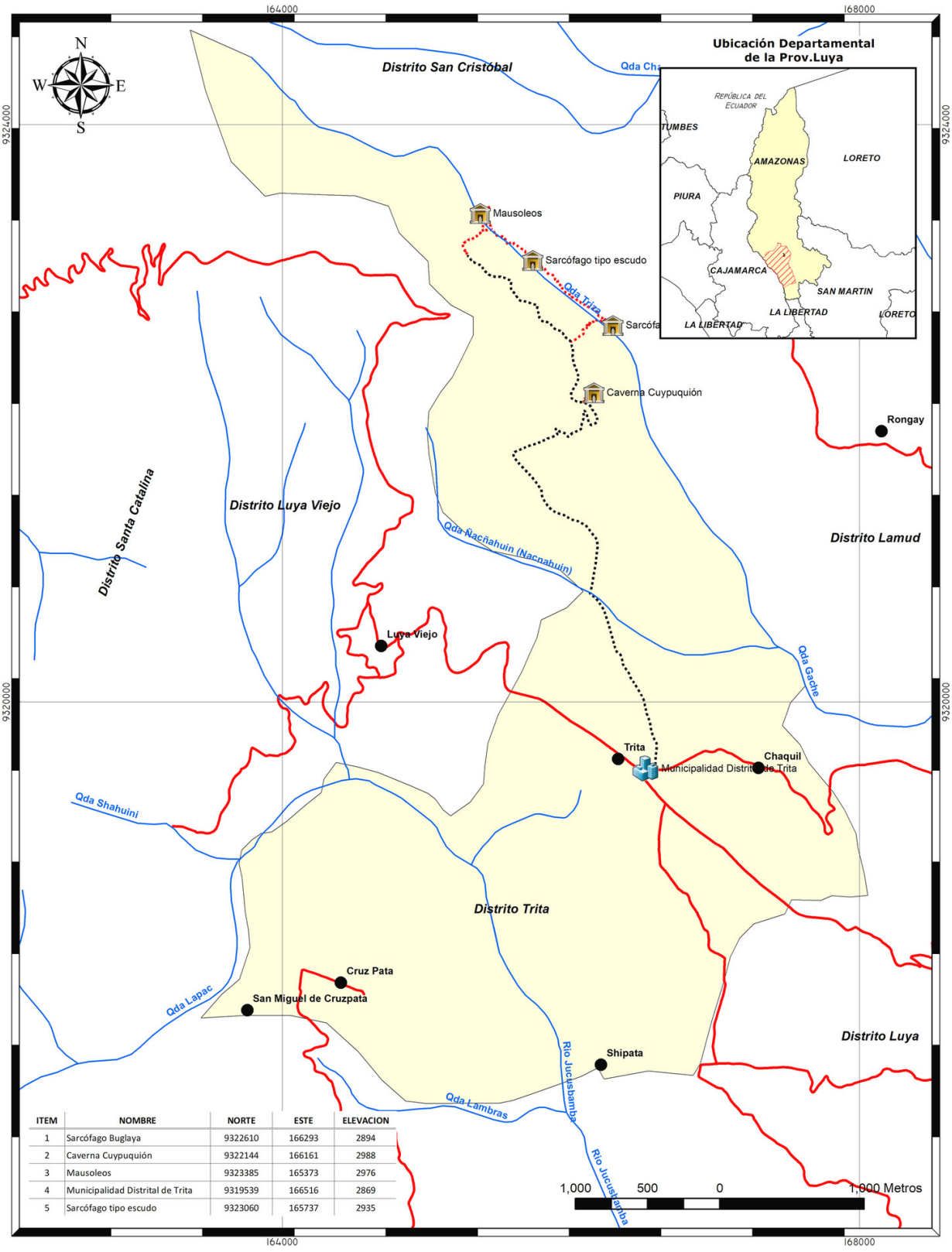
The Chachapoyas, also known as the "Warriors of the Clouds," are renowned for their funerary practices, which reflect a profound connection with death and the afterlife. Their elaborate cave tombs and cliffside sarcophagi functioned as commemorative monuments, where bodies were accompanied by offerings such as ceramics, textiles, and food (Urban 2021). These practices indicate deeply rooted beliefs in the continuity of existence beyond earthly life, offering a fascinating glimpse into a culture deeply embedded in spirituality, which endures in our understanding of pre-Columbian civilizations (Carpenter 2024).

Caves were utilized by the Chachapoyas for offerings and burials, as they regarded them as sacred spaces such as pottery cave paintings that show their life, tastes, and beliefs (Diaz *et al.* 2023). Examples include the Quiocta Cave, which extends over 500 meters in depth and contains red rock paintings depicting animals, warriors, and abstract forms (Epstein & Toyne 2016). These paintings provide insights into the lives, preferences, and beliefs of the Chachapoyas. They believed caves were sacred places where they could communicate with spirits and nature (Ruiz 2008). Consequently, they also used caves to bury their dead, placing personal belongings such as vessels, tools, and food alongside the deceased, demonstrating their care for the departed and their journey to the afterlife (Crandall & Risco 2024).

The characterization of ceramics allows for the analysis of specific chronologies based on technological innovation rather than solely on decorative techniques, as traditionally applied. Furthermore, sites exhibiting multiple phases of occupation date back to prehistoric and protohistoric periods, with areas and enclosures comprising diverse structural typologies. Researchers argue that understanding the organization of pottery production in these communities requires an analysis of technological choices, alongside knowledge of pre-Hispanic and colonial ceramic technology. Geochemical and colorimetric analyses of ceramic remains reveal that orange, red-burnished, and black-polished objects contain titanomagnetites and hematite (García *et al.* 2020). Additionally, the materials used in ceramic production help determine whether there was an exchange of raw materials within a study area. Morphological studies of metallurgical ceramics found at archaeological sites show significant similarities in form and proportion, while ceramic petrography reflects a wide range of variability in terms of size and nature, indicating local geological influences (Scaro 2022). Petrographic characterization of pastes reveals the extent to which traditional materials were used and identifies when additional materials were incorporated. Similarly, Carosio & Ots (2022) assert that analyzing paste composition, technology, distribution networks, and heterogeneous petrographic composition can lead to greater geological correlation between sectors, enabling the determination of production within a specific timeframe.

Ceramic remains have also been found in funerary urns, interpreted as a ritual material practice with a long tradition reflecting the Andean worldview and human interaction with material objects and landscapes (De la Fuente & Vera 2023). The decorative designs and forms of ceramics in various collections allow for the evaluation of social processes and interactions between different groups, while also conveying a distinct cultural identity (Ramundo & Malkevicius 2022). Miniature *mestizo* pottery, considered part of Andean material heritage, is linked to intangible heritage, embodying concepts of well-being, fertility, and abundance; ceramic characterization also identifies stylistic discontinuities and modifications throughout Andean history (López 2024).

Contextualizing ceramic remains within a specific space enables the evaluation of potential social processes and cultural exchanges between regions, as well as the determination of a region's unique identity. Other research findings indicate that thermoluminescence dating of ceramic remains offers greater reliability than traditional radiocarbon dating, providing a better understanding of settlements and sociocultural interactions (Torres *et al.* 2023). Through the reconstruction of typical shapes, have been observed continuities and ruptures in pottery production during the Late Period, with greater variability in pastes during this time and homogenization throughout the Inca Period. This reflects stricter control over raw material sources and production processes (Schjellerup 2017; Vera *et al.* 2019). Comparisons of different ceramic groups reveal internal similarities and significant differences, indicating the existence of distinct pottery traditions and learning practices (Carbonera & Loponte 2020). Other re-



ITEM	NOMBRE	NORTE	ESTE	ELEVACION
1	Sarcófago Buglaya	9322610	166293	2894
2	Caverna Cuypuquión	9322144	166161	2988
3	Mausoleos	9323385	165373	2976
4	Municipalidad Distrital de Trita	9319539	166516	2869
5	Sarcófago tipo escudo	9323060	165737	2935

Leyenda
- Centro poblado
- Sitio arqueológico
- Municipalidad distrital
- Ríos
- Red Vial Vecinal
- Trocha carrozable
- Acceso peatonal
- Distrito Trita

DATOS TÉCNICOS

Límites políticos y ubicación de centros poblados son los proporcionados por el INEI , año 2013.

Para las delimitaciones de la micro cuenca se ha tomado como referencia las Cartas Nacionales 13g y 13h, publicadas por el IGN.

Los datos correspondientes a los puntos de interés han sido tomados en campo utilizando receptor Oregon 630 de la marca Garmin.

Caracterización de fragmentos de cerámicos en la caverna de Cuypuquión: Evidencias de una ocupación prehispánica de los Chachapoyas en el distrito de Trita, Perú.

Tema: Ubicación a nivel distrital de los sitios arqueològicos investigados.

Responsable de Investigación: Doctora Maritza Revilla Bueloth

Proyección y Elipsoide: UTM, WGS-84, Zona 18 Sur

Mapa Nº: 01

Escala: Gráfica

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Figure 1. District-level map showing the location of the Cuypuquión Cave, sarcophagi, and mausoleums.

searchers, aiming to understand the traditions and origins of ceramic artifacts, collect remains from specific sites to evaluate their influence and dispersion (Carpenter 2024). In this context, the objective of this research was to identify evidence of pre-Hispanic cultural presence within the Cuypuquión Cave. This includes utilitarian ceramics with *appliqués* or geometric designs associated with a significant ceremonial space and funerary practices of the Chachapoyas culture.

2. METHODOLOGY

2.1 Location

The district of Trita is one of the twenty-three districts that make up the province of Luya, located in the Amazonas Region in northern Peru. It is situated at an altitude of 2,300 meters above sea level and is bordered to the north by the district of Lámud, to the east by the district of San Juan de Lopecancha, to the south by the district of Luya, and to the west by the district of Inguilpata. The district covers an area of 12.68 km^2 and has an estimated population of over 1,000 inhabitants, according to the National Institute of Statistics and Informatics (INEI 2019). Its terrain is rugged, featuring hills, ravines, and valleys; the primary economic activity is agriculture, with the cultivation of maize, potatoes, wheat, and barley being prominent; livestock farming, particularly of sheep and cattle, is also practiced (Puican *et al.* 2024).

The district also includes several towns and hamlets, such as Cruzpata, Chaquil, Cohetashon, and Chuchirita. Some of these locations preserve archaeological remains of the Chachapoyas culture, such as the archaeological site of Trita Viejo, located on the hill of the same name. Additionally, the area boasts natural landscapes of great beauty, including the eucalyptus forest of Chaquil and the Cohetashon Lagoon.

Figure 1 shows a district-level map indicating the location of the Cuypuquión Cave and other archaeological sites within the Trita District. The map highlights the Cuypuquión Cave as the focal point of the research, along with three pre-Hispanic sites corresponding to two sarcophagi, one of the Purumacho type and another of the Escudo type. Both are located to the north of the Trita District. Further, at the jurisdictional boundary, a third archaeological site is identified, featuring the foundations of funerary architecture corresponding to mausoleums. These archaeological sites date back to the pre-Hispanic era of the Chachapoyas and are situated in the Trita Ravine, which also serves as the boundary with the Lámud District, both of which are part of the Luya Province.

To document the archaeological sites, a route was followed starting from the municipal palace. Heading northwest, the Cuypuquión Cave was located, accessible via a dirt road (3,657.18 m) followed by a pedestrian path (125.07 m). The Buglaya Sarcophagus ar-

Figure 2. Interior of the cave where the study was conducted.

Figure 3. *In situ* data collection inside the Cuypuquión Cave.

Figure 4. Photographic record and identification of diagnostic material.

chaeological site is reached by continuing along the dirt road northwards (493.38 m north) and then descending via a pedestrian path into the Trita Ravine (441 m). From this site, following a pedestrian path northwest (3,017.76 m), the Escudo-type Sarcophagus archaeological site is found. Continuing upstream along the Trita River for 424.26 m, the foundations of pre-Hispanic funerary architecture corresponding to mausoleums are located. To the south of the district lies the Karajía archaeological site.

2.2 Research Design

This archaeological research focuses on the observation, documentation, and characterization of diagnostic ceramic fragments in the Cuypuquión Cave, located in the Trita District, Luya Province, Peru. The primary objective was to identify evidence of pre-Hispanic occupation by the Chachapoyas in this area. This is a reconnaissance study aimed at providing a detailed description of archaeological findings, patterns, and relevant characteristics of cultural artifacts, such as ceramics (figures 2–4).

Additionally, it has an exploratory focus, as it is an introductory investigation seeking to generate basic information about the potential Chachapoyas occupation without conducting excavations. The research is exploratory in nature, aiming to achieve an initial and in-depth understanding of the ceramic fragments located in the Cuypuquión Cave without the need to intervene in the archaeological site. It is important to note that this research does not aim to provide definitive conclusions but rather to establish a database and knowledge base that can support future, more specific and detailed investigations.

The research design is based on the *in situ* observation of ceramic fragments in the Cuypuquión Cave and is divided into several stages. First, access was gained, and an archaeological survey of the cave was conducted to examine the archaeological remains *in situ*. Flashlights were used to ensure adequate lighting, enabling detailed photographs of the findings to be taken. Next, a photographic record was made of each ceramic fragment found on the surface, along with human bone remains scattered across the surface, which were also documented from multiple perspectives and at optimal resolution to capture their essential attributes. The ceramic pieces were classified and described according to their form, decoration, manufacturing technique, and other relevant characteristics. Descriptions of the conditions and peculiarities of the human bone remains were also prepared, including the identification of bones, size, shape, and color. The archaeological materials were recorded *in situ*, analyzing the contextual environment in which the ceramic evidence and human bone remains were found, which suggests a close relationship between the two elements within the cave.

Furthermore, based on observation, comparison, the principle of recurrence, and the characterization of the ceramic fragments, it is interpreted that the pre-Hispanic occupation within the Cuypuquión Cave corresponds to the ancestral Chachapoyas culture. The cave served as a Chachapoyas funerary pattern during the Late Intermediate Period (800–1470 AD). These interpretations are derived from the analysis and characterization of the pottery, which support this hypothesis.

3. RESULTS

The description of the pottery material aimed to understand the characterization of pre-Hispanic occupation and to comprehend spatial relationships over time during the development of the Chachapoyas culture. In this regard, the photographic record of diagnostic ceramic fragments and skeletal remains located inside the Cuypuquión Cave corresponds to a small sample, which has made it possible to analyze and describe the findings at a superficial level.

Regarding the ceramics, surface-level evidence of rims, handles, bases, and vessel bodies was identified, categorized as both undecorated and decorated fragments. Upon examining the ceramic fragments, it was observed that the pottery is utilitarian, primarily for domestic use, with a composition of local clay containing a high amount of limestone pebbles, giving it a coarse texture. This pottery also features decorative elements such as applied zigzag bands, bands forming small faces in high relief, and dotted patterns that create figures.

In the case of human skeletal remains, the identification of bones as well as their size, shape, and color was considered. Generally, the bones are fragmented, with the femur, hip bones, clavicle, and some skulls being the most frequently found, all in a fair state of preservation. The bones were found on the surface in a disturbed state, lacking soft tissue or hair. Based on their association with utilitarian ceramics, it is likely that their death occurred during the pre-Hispanic era of the Chachapoyas culture. Their state of preservation is fair.

Additionally, well-preserved dental remains have been found. In other cases, a femur belonging to an individual with a prominently curved femoral diaphysis was identified, suggesting a fetal or squatting position, consistent with the way the Chachapoyas positioned their deceased. These findings of human skeletal remains inside the cave imply that it was a funerary site, another method used by the Chachapoyas to store their dead. This is characteristic of an archaeological context where skeletal remains are associated with cultural objects such as vessels and other elements, as is the case in the Cuypuquión Cave.

It is important to note that, due to the high humidity inside the cave, the bones and ceramic materials are in poor environmental conditions, and the level of deterioration could lead to the disappearance of these cultural materials. Therefore, urgent intervention is needed to carry out conservation activities, research, and social utilization initiatives for the benefit of the community.

The ceramics of the Chachapoyas culture are characterized by their geometric designs and finish in black and gray tones, using techniques such as slip application, burnishing, and painting to decorate their pottery. The main forms include large oval-bodied vessels, flat-based pots with horizontal handles, and globular bodies. These vessels are associated with funerary rituals and offerings.

In the Cuypuquión Cave, a series of ceramic remains resembling those of the Chachapoyas culture were found, along with skeletal remains, which are detailed below.

Various types of pre-Hispanic ceramic fragments discovered in the Cuypuquión Cave are displayed. The fragments are dark brown and have a globular shape with a short neck and a flared rim. They were photographed and edited against a white background. The fragment in Figure 5 is the most complete, featuring an excellent gray finish with a handle and a length of approximately 17 cm. All the pieces shown in Figure 6

Figure 6. Ceramic remains with circular rims and globular shapes found in the Cuypuquión Cave.

and Figure 7 have a similar shape, corresponding to the type of vessels used for storing, cooking, serving, or consuming liquids or food. The pieces have a smooth and shiny finish, achieved through techniques such as slip application and burnishing. Slip application involves applying a layer of diluted clay to the surface of the vessel to give it a uniform color, while burnishing involves rubbing the surface with a smooth object to create a polished appearance. These pieces are associated with funerary rituals and offerings, which were conducted in sacred places such as the Cuypuquión Cave. In this cave, ceramic remains were found alongside human skeletal remains, indicating the practice of collective burials and sacrifices.

The fragment in Figure 8 has a circular shape with an oval mouth and a round base. The rim features snake-like designs encircling the mouth of the fragment. The fragment is reddish, with a smooth and shiny surface. According to Figure 9, the fragment has a circular shape and two rims on the upper part. On the left side, it features a crescent-shaped handle that connects to the upper rim and the body of the fragment. The fragment is light brown, with a smooth and shiny surface and no visible decoration except for some dark spots. It measures approximately 7 cm in width and 3 cm in thickness. The fragment in Figure 10 has two crescent-shaped handles on opposite sides, connecting to the rim

Figure 5. Ceramic remains with circular rims and globular shapes found in the Cuypuquión Cave.

Figure 7. Ceramic remains with circular rims and globular shapes found in the Cuypuquión Cave.

Figure 8. Fragments of pre-Hispanic pottery from Cuypuquión Cave with decorative rims.

Figure 9. Fragments of pre-Hispanic pottery from Cuypuquión Cave with handles and decorative rims.

Figure 10. Fragments of pre-Hispanic pottery from Cuypuquión Cave with handles and decorative rims.

Figure 11. Fragments of pre-Hispanic pottery with zigzag decorations.

Figure 12. Fragments of pre-Hispanic pottery with zigzag decorations on the rims.

Figure 13. Fragments of pre-Hispanic pottery with zigzag decorations on the upper rim.

and the body of the vessel. The vessel is dark brown and measures about 7 cm in width.

In Figures 11, 12, and 13, pre-Hispanic ceramic fragments found in the Cuypuquión Cave can be observed, featuring zigzag decorations on the rims. The zigzag decoration is a type of geometric design consisting of parallel lines, which could represent the movement of water or snakes, both important elements in Andean cosmology. According to some studies, this type of decoration may have pre-Inca origins and be related to the iconography of Chavín culture. The pre-Hispanic ceramics found in the Cuypuquión Cave may be associated with the Chachapoyas culture, known for its stone constructions, sarcophagi, and ceramics, which share similar characteristics to those shown in the figures above.

Figure 14. Ceramic fragment found in the Cuypuquión Cave with traces of paint.

Figure 16. Human remains of an adult skull.

In Figure 14, another type of pre-Hispanic ceramic fragment found in the Cuypuquión Cave is shown, featuring traces of paint in the form of thick black lines. The decoration on these pieces stands out, with painted designs on the external surface of the ceramics. The predominant colors are red on cream and brown on cream. The fragments in Figure 15 correspond to diagnostic ceramics that were fired in open or outdoor kilns, allowing the fire to escape and resulting in the pottery seen here. Additionally, they were crafted using a modeling technique, with some with external linear decoration in red paint and some with external cream-colored paint.

Figure 15. Ceramic fragment found in the Cuypuquión Cave with traces of paint.

In Figure 16, human skeletal remains are shown, detailing a fragment of an adult skull, missing the lower jaw and central incisors. In Figure 17, a jaw with incomplete dentition is observed, lacking premolars, canines, and incisors. Figure 18 displays a set of human skeletal remains, highlighting leg bones such as a femur, fibula, tibia, and talus, which is part of the foot bones, along with a fragment of the upper part of the skull.

4. DISCUSSIONS

The analysis conducted in the Cuypuquión Cave reveals distinctive ceramic characteristics of the Chachapoyas culture, such as the use of zigzag and band decoration techniques, as well as the production of utilitarian vessels using local clay. These findings reinforce the conclusions of previous studies that highlight the relationship between pottery traditions and cultural identity in pre-Hispanic societies (Carosio & Ots 2022; López 2024).

Figure 17. Human remains of a jaw with incomplete dentition.

Figure 18. Human remains of a femur, fibula, tibia, and talus.

The petrographic and morphological characterization carried out in this study aligns with the observations made by García *et al.* (2020), who suggest that geochemical analyses can reveal details about the composition and origin of raw materials used in ceramic production. Additionally, the geometric decoration identified in the fragments found in Cuypuquión shows similarities with patterns described in other Andean regions, as proposed by Ramundo and Malkevicius (2022), which may indicate cultural exchanges or shared stylistic influences.

Furthermore, the association of ceramic remains with funerary contexts supports the hypotheses proposed by De la Fuente and Vera (2023), who describe the practice of accompanying the deceased with vessels as a way to perpetuate funerary traditions and express spiritual beliefs. This element also aligns with the interpretations of Torres *et al.* (2023), who argue that the dating and functional analysis of ceramic fragments can provide a better understanding of ancient settlements and social interactions.

The comparison with other researchers underscores the importance of integrating multidisciplinary approaches in ceramic archaeology. While previous studies, such as that of López (2024), emphasize stylistic and symbolic aspects, this work contributes to the debate by providing specific contextual data from the Amazonas region, thereby broadening the understanding of the Chachapoyas culture and its interaction with the environment.

From a methodological perspective, the research in Cuypuquión stands out for its emphasis on surface analysis and ceramic characterization as primary tools for inferring cultural patterns. This method, although limited by the absence of controlled excavations, preserves the archaeological context intact and provides a starting point for future interventions. Such an approach aligns with current ethical principles in archaeology, where the conservation of cultural heritage and minimal site alteration are fundamental priorities (De la Fuente & Vera 2023). However, the challenge lies in complementing this strategy with more advanced techniques, such as mass spectrometry or isotope analysis, to gain a deeper understanding of the provenance and chronology of the materials.

The relationship between ceramic fragments and skeletal remains found in Cuypuquión highlights the importance of considering the archaeological landscape, as noted by López (2024) and Torres *et al.* (2023). Funerary contexts often reflect complex networks of social and spiritual interaction, linking the living with their ancestors through rituals and offerings. In this sense, the cave functioned as both a funerary space and a site of symbolic significance, representing the worldview of the Chachapoyas. The arrangement of cultural objects and human remains suggests a recurring ritual pattern, also evidenced in other Andean cultures, such as the Incas, where pottery played a dual role, both functional and ceremonial.

The use of manufacturing and decoration techniques identified in the ceramics of Cuypuquión highlights the influence of local geology on pottery production. The textural composition, characterized by a high content of calcareous inclusions, points to the use of resources available in the immediate environment, consistent with the findings reported by García *et al.* (2020). Nevertheless, the decorative analysis, particularly the geometric zigzag patterns, indicates stylistic connections with other Andean traditions, suggesting the possibility of broader cultural exchanges. This type of analysis

allows for the identification of the uniqueness of Chachapoyas ceramics and situates them within a broader regional framework, contributing to the understanding of pre-Hispanic cultural interaction dynamics.

5. CONCLUSION

The ceramic characterization in the Cuypuquión Cave provides conclusive evidence of the pre-Hispanic occupation by the Chachapoyas culture, identified through ceramic fragments decorated with geometric patterns and characteristic textures that reflect their cultural identity and technological skill. Decorative designs, such as zigzags and high-relief geometric patterns, demonstrate advanced technical abilities and a rich cultural worldview, where geometric patterns symbolize elements of nature and spirituality. These attributes indicate a stylistic connection with pre-Inca traditions, expanding the possibilities for investigating cultural exchanges between regions.

The association of ceramic remains with human bones, arranged in ritualized positions such as the fetal position, suggests the ceremonial use of the cave as a funerary space. However, the high humidity conditions in the cave have caused significant deterioration of the ceramic fragments and skeletal remains, underscoring the urgency of implementing preventive conservation strategies to safeguard these invaluable cultural assets, which could be lost if not addressed in time.

The research in the Cuypuquión Cave enhances knowledge about the Chachapoyas culture and highlights the importance of integrating archaeology with local development strategies. By linking the findings to cultural heritage conservation and valorization initiatives, this study can contribute to the design of public policies aimed at preserving cultural heritage, promoting sustainable tourism, and strengthening regional identity. This interdisciplinary approach positions the research as a reference model for future archaeological studies seeking to generate both academic and social impact in local communities.

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