KEYWORDS: ***Painted stone tablet – Iconographic design – Mobiliary art – Pampacolca – Peru***

MOBILIARY ART OF PAMPACOLCA, PERU: A PALAEOART UNIQUE IN THE WORLD

Jesus E. Cabrera

Abstract. Rock art, as typically conceived, comprises cupules, geoglyphs, petroglyphs, and other features executed on permanent landscape features. Mobiliary palaeoart also occurs on rock, and this study describes a painted stone tablet-style from southern Peru called Antimpampa. The typical iconographic pattern of these designs is very simple, yet orderly, neat and precise. This Antimpampa style appears to follow a strict iconographic convention, though each tablet is unique. The main motifs depict anthropomorphs and zoomorphs. There is a persistent pattern involving 'human' and 'animal' figures, generally denoting one zoomorph for each anthropomorph. Assorted abstract symbols, located around the central motifs, complete the pictorial frame. All tablets were painted using a variety of pigments made from ochre and other ground minerals mixed with an undetermined binder. Preliminary dating suggests that the Antimpampa style corresponds to the Formative Period (c. 3800 – 2200 BP).

Introduction

This article discusses the painted stone tablets of Pampacolca, a region located near Nevado Coropuna, South America's second-highest peak, in the remote Andean mountains of southern Peru. Pampacolca's tablets are part of a broader regional tradition that has been called mobiliary art, mobiliary art of rupestrian tradition and rupestrian mobiliary art. The paint was applied, always only on one side, to four types of support: (1) flat stones, (2) river cobbles, (3) broken ceramic pots, and (4) broken ceramic roof tiles. All tablets were painted using a variety of pigment colours that were made of ochre and ground minerals, then mixed with an undetermined binder. The stone tablets are called '*lajas*', commonly referred to as painted stone tablets or '*lajas pintadas*'. The ceramic tablets are '*tejas*', both commonly referred to as painted plaques or '*cerámica pintada*'. Painted tablets are also commonly found in Viraco, Uñón, Machahuay, Chuquibamba, Cotahuasi, Andaray, and elsewhere in southern Peru (Fig. 1).

Painted stone tablets are often found in secondary contexts, likely excavated by curious land users over the millennia. Original contexts are rare. Some have been documented by Renata Faron-Bartels (2011) at

Figure 1. *Location of the painted stone tablets of Pampacolca in southern Peru.*

Figure 2. *Untouched painted stone tablets in original context at the remote site of Huacllapunco mountain, Pampacolca. Three piles of painted stone tablets are visible in the cave. Photo JC, 2017.*

Antaura, Puca, Huayaja and Chocquemarca in Pampacolca, and in 2017 this author found another context on the remote and hardly accessible hillside of the Antaunco mountain of the same valley. Several piles of painted stone tablets were found stacked in a natural cave. The tablets appear to have been displayed, perhaps to the gods, spirits, ancestors, and a forensic study of the cave, as well as other undisturbed contexts is warranted (R. G. Bednarik, pers. comm. 2017).

This mobiliary art has received relatively little attention by outside scholars, with researchers often surprised by their sophistication and frustrated by how little we know of them. Robert G. Bednarik's recent reaction to the Pampacolca tablets is typical (pers. comm. 2017):

> We don't know who made them. We don't know how old they are. We don't know to which culture they belong. We don't know the purpose of these tablets. All we know is they are beautiful, and they are absolutely unique, they don't occur anywhere else in the world; so, they are a real cultural treasure.

This article has been written to introduce the tablets to a broader audience.

Previous research on Peruvian painted tablets

The painted tablets have been the focus of study during the last century mostly by Peruvian researchers and, over the last twenty years, an influx of foreigners from Australia, the United States, Poland, Belgium and other European countries. The following researchers have contributed since 1905 to the research and conservation of this little-known palaeoart material:

1905: The Belaunde de la Romaña brothers find the first pieces of painted ceramics in the Majes valley.
1918: Max Uhle mentions the painted pebbles from the cemeteries of Arica, Chile (Espada 2001).
1932, 1940: Edmundo Escomel reports on the painted stone tablets from the tombs of the Majes and Chuquibamba valleys. The subject was presented in the XXV Americanistic International Congress (Escomel 1940).
1968: Hans Disselhoff carries out studies on funerary offerings of multi-coloured river gravel wrapped in leaves of *achira* (*Canna edulis*) in the Majes and Camaná valleys that he dates to the first millennium CE (Disselhoff 1968).
1970: Roger Ravines; 1969, 1970, 1973, Eloy Linares Málaga; and 1978, 1979, Toribio Mejia Xesspe report on the collection compiled by Escomel in the Majes Valley (Ravines 1970).
1973: Eloy Linares Málaga publishes an article classifying the painted ceramic plates as a type of 'mobiliary rock art', distinguishing them from pictograms, petroglyphs and geoglyphs (Linares Málaga 1973, 1988).
1988: Linares Delgado discovers artefacts of small size (8–15 cm) in Sonccoquilla (Huanca valley).
1988: De la Vega Cruz finds artefacts in Jayaquima, a site in the Cabanaconde of the Colca valley.
1989: Federico Kauffmann Doig, led by the journalist and traditionalist Luis Llerena, carries out three weeks of field investigations at the site of Chucu, in the Cupara part of the Chuquibamba valley. There he finds multi-coloured clay plaques, orderly piled on the ground or against cave walls. He recovered in situ a valuable collection of tablets from an undisturbed underground original context. From the studies of these ceramic, and much more rarely, stone tablets, he concludes that they were elaborated in a ritual context associated with rainmaking beliefs. Based on Nazca stylistic influence on the tablets' iconography, he associates them with complex farming societies from the late first millennium (Kauffmann Doig 1989).
2000: Jose Antonio Belmonte Espada reports the surface collection of painted tablets on the 'adoratory' of Mound 2 on Pariaviri, a mountain near Nevado Coropuna.
2001, 2002: Renata Faron-Bartels identifies several archaeological sites in Pampacolca containing painted tablets. The intact and disturbed contexts allowed her to compare locations, iconography and styles between different locations in the valley (Faron-Bartels 2006, 2011).
2003: Justin Jennings seeks out painted tablets in the archaeological site of Oshpacullta in the Cotahuasi valley. Surveying the extant literature, he concludes that the painting of the stone tablets in southern Peru stopped being a tradition during the Inca Empire because of the empire's different conceptualisation of divine beings. Gold and silver offerings, along with animal, including human, sacrifice replaced painted

tablet offerings (Jennings 2003, 2015a).
2011: Renata Faron-Bartels presents a dissertation on the results of the analysis of the collected painted tablets and ceramics in Pampacolca during her fieldwork of 2001 and 2002.
2012, 2014: Jesus E. Cabrera, a native from Pampacolca, publishes the results of his in-depth study of the painted stone tablets, reviewing their pictorial technique, pigment composition, stone support petrography and iconographic content. Starting in 2009, he removed the tablets from disturbed contexts that lay in open fields to be preserved and displayed at the Archaeological Museum of Pampacolca, for future generations (Cabrera 2012, 2014).
2017: Robert G. Bednarik visits the painted stone tablets site of Campanáyoc earth mount in the Antimpampa archaeological complex. He takes a charcoal sample that yields a conventional radiocarbon age of 2490 ± 30 years bp.
2018: Jesus E. Cabrera creates the Patronato Lajas Pintadas de Pampacolca, a privately held, non-profit organisation to promote the investigation and conservation of painted stone tablets.
2018: Jesus E. Cabrera presents the paper 'The mobiliary art of Pampacolca — a palaeoart unique in the world' at the 20th International Rock Art Congress IFRAO 2018 in Italy.
2019: Jesus E. Cabrera designs the microtopography Model MT1, a portable and mechanic system to map a palaeoart surface on a small scale (Cabrera 2019).

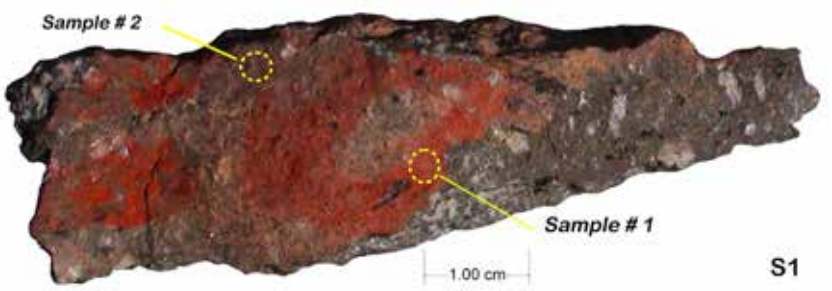

Figure 3. *A painted stone tablet from Peña Blanca, Pampacolca, Peru. A high-viscosity paint was applied to the porphyritic texture and smooth surface dacite volcanic rock. The sampled pigments (sample #1 and #2) were chosen because there is a notable difference in the red colour of the two pigments. Photo JC, 2013.*

Elemental profile and phase/ mineral identification of the pigments

One objective of this study was to determine the elemental profile and phase identification of the ancient coating/pigment material on the rock substrate (Chemir Evans Analytical Group 2013). Two areas on a painted stone tablet from Peña Blanca, Pampacolca, Peru (S1, Fig. 3), marked as sample #1 and sample #2; and one area on painted stone tablet 13 from Morro Chicota, Pampacolca, Peru (S2, Fig. 4), marked as sample #1, were analysed using SEM/EDS and XRD. The XRD (x-ray diffraction) analysis results detected the presence of various crystalline phases in the two samples, which are summarised in Table 1:

The SEM/EDXA (scanning electron microscope/ energy-dispersive x-ray spectroscopy) analysis results indicate that both areas of sample S1 contain a silicon-rich material primarily, and sample S2 contains a calcium-rich material primarily. The complete elemental profiles of the two samples are summarised in Table 2.

Sample	Area	Major phases present / minerals identified	Minor or trace phases present / minerals identified
S1	Sample #1	Cristobalite - SiO_2 Haematite - Fe_2O_3 Anorthite - $(Ca,Na)(Si,Al)_4O_8$ Enstatite - $(Fe,Mg)SiO_3$	Dolomite - $CaMg(CO_3)_2$ Maghemite - C - Fe_2O_3
	Sample #2	Cristobalite - SiO_2 Anorthite - $(Ca,Na)(Si,Al)_4O_8$ Enstatite - $(Fe,Mg)SiO_3$	Dolomite - $CaMg(CO_3)_2$ Maghemite - C - Fe_2O_3 Haematite - Fe_2O_3
S2	Sample #1	Aragonite - $CaCO_3$ Calcite - $CaCO_3$	Haematite - Fe_2O_3

Table 1. *XRD analyses of three samples from painted stone tablets from Peña Blanca (S1) and Morro Chicota (S2).*

Sample	Area	Elements detected
S1	Sample #1	oxygen (O), sodium (Na), magnesium (Mg), aluminium (Al), silicon (Si), potassium (K), calcium (Ca), titanium (Ti), iron (Fe) and sulphur (S)
	Sample #2	oxygen (O), sodium (Na), magnesium (Mg), aluminium (Al), silicon (Si), potassium (K), calcium (Ca), titanium (Ti) and iron (Fe)
S2	Sample #1	oxygen (O), magnesium (Mg), aluminium (Al), silicon (Si), phosphorus (P), sulphur (S), potassium (K), calcium (Ca), manganese (Mn) and iron (Fe)

Table 2. *SEM/EDXA analyses of three samples from painted stone tablets from Peña Blanca (S1) and Morro Chicota (S2).*

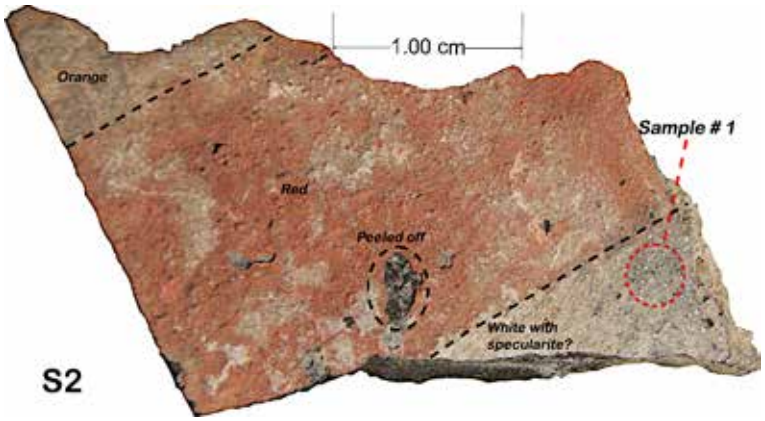

***Figure 4**. Painted stone tablet 13 from Morro Chicota, Pampacolca, Peru. A low viscosity paint was applied to an aphanitic texture slate rock, giving the appearance of stucco. The sampled pigment (sample #1) is indicated in the figure, also note the small 'peeled off' area where paint was detached from the stone. Photo JC, 2013.*

Painted stone tablet substrate and rock type

The pictograms are painted onto the surface of a local igneous, igneous-volcanic and sedimentary stone slabs. It appears there was no strong preference on the kind of stone to be painted; however, the porous and rough surface of the volcanic rock may have been most desired because it better retained the paint even though painting was more difficult (Figs 3, 6, 7, 8 and 10). On the smooth surface of the delaminated sedimentary rocks, the paint was exposed to the open air and is mostly diffused and hardly visible.

The relationship between the stone surface and paint was established on the tablet from Peña Blanca by micro-topographic mapping of the stone surface (Cabrera 2019) (Fig. 5). The dimensions of the painted volcanic stone tablet are 7.8 cm long × 2 cm wide. An area 4.7 cm long of this length is painted, the rest (partially seen in Fig. 5) is broken. The contour interval in Fig. 4 is 0.5 mm, starting from the lowest point (-0.2 mm) to the highest point (3.7 mm, which is the maximum relief). The roughest surface is on the left; most of the area to the right side is seemingly smooth. The topographic relief shows depressions and promontories, which is the original stone tablet's surface, as it was formed along a natural rock fracture, mostly by geomorphic fissure and exfoliation. According to this research, the rough surface area of the stone required low-viscosity paint to fill the voids and hard-to-paint areas. The smoother surface area of the stone required high-viscosity paint. The adjustment of the viscosity of paint used on the varied surfaces of the stone tablets helped to determine how the paints adhered to the stone over time.

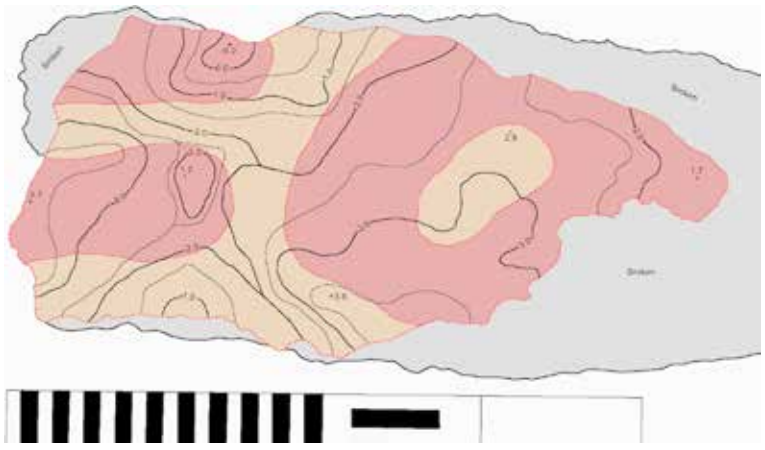

***Figure 5.** Micro-topographic map of the painted stone tablet from Peña Blanca. IFRAO millimetre graphic scale, contour interval 0.5 mm.*

Quantity and size

1. Quantities:

How many painted stone tablets have been found? An exact number is difficult to determine because many have been removed from their original context and broken into small pieces. A gross inventory reveals 1053 pieces of all sizes in the region, intact and broken, collected as loose material from the open fields and their original context:

Proyecto Condesuyos: estimated 100. Renata Faron-Bartels: 517. Jesus E. Cabrera: 200. Federico Kauffmann Doig: 27. Others: estimated 100. Municipality of Uñón: 25. Municipality of Chuquibamba: 44. Municipality of Andaray: 40. It is known that many local people have a few pieces in their possession.

As a child in the late 1950s, the author used to collect and play with tablets. All of them have disappeared from a former family farmhouse in Chicota, Pampacolca.

2. Sizes:

Being portable, the sizes of the painted tablets was limited to what could be carried elsewhere by one on two people. The size range varies according to the pictographic design, from a few cms to 1 m. The iconography on the larger examples tends to be more complex, while on the small ones, the icons are more simplistic. The most typical size is 50 cm high × 40 cm wide with a 5 cm thickness and rock density of 2.6. The average weight of each painted tablet is therefore about 26 kg.

Iconography

The typical iconography on the stone tablets is very simple, yet orderly, neat and precise. This style, called Antimpampa, appears to have followed a strict iconographic canon. Each tablet was nonetheless unique; there was no serial production. One motif or several ones can be used on a stone. A stone was sometimes divided in half (left and right side, upper and lower side), in four quadrants, in rows or lines.

The main motifs are anthropomorphous and zoomorphic figures. There is a persistent

Figure 6. *Typical 'T' head shape with splayed hands and three-finger anthropomorphous motifs. Painted stone tablet 6684 from Peña Blanca, Pampacolca. Photo JC, 2013.*

Figure 7. *Top part: animals with a schematic head like a horizontal letter 'H'. Bottom part: a pair of female 'human' motifs with a circular/ovoid head shape, breasts and vulva. A painted stone tablet from Yato, Pampacolca. Photo JC, 2017.*

pattern pairing 'human' and 'animal' figures, generally with one animal per each human. The motifs are placed very close to each other with the animals appearing to accompany the humans. Additionally, there are assorted abstract symbols, located around the central motifs. The iconographic design can be organised by level of complexity from typical (simple and easy to paint iconography) to atypical (complex and especially difficult, challenging iconography) versions.

The motifs classified by shape are:

1. Schematic figurative: anthropomorphous and zoomorphic

Anthropomorphs are drawn in frontal view standing up. According to head shape, the anthropomorphous motifs are divided into two groups: The 'T'-shaped head (Fig. 6) and the ovoid head shape. The 'T' head shape denotes a tendency to represent the head schematically, resembling the shape of the capital letter 'T'; perhaps it indicates that a generation, tradition or community wore or covered their head with an article of distinctive clothing. The ovoid head shape is a more realistic way to depict the human head, albeit with two enormous eyes.

T-shaped anthropomorphs can have their arms up or down, while the ovoid-headed anthropomorphs are shown with arms down. Hands and feet are splayed with three or five fingers (Jennings 2015a), and the gender-identifying detail (penis, vulva and breasts) is typically shown in all anthropomorphs. Both styles of human representations differ in their body frame. The 'T' head shape human body is shorter and fatter, whereas the ovoid head shape is taller and thinner.

The two kinds of anthropomorphs are prevalent in Pampacolca. Since no tablet mixes the two kinds, each may indicate a different tradition, generation or social class. Both anthropomorph forms can be found at the same sites, nevertheless. There are compositions of one human figure painted on the entire stone tablet, though two and three human figures side by side are also commonly found.

Zoomorphs are drawn standing up, in side-view with all four legs depicted. The animal's head is rendered in an 'H' shape (Fig. 7). They are drawn looking to the right or left, although sometimes they are awkwardly drawn in a vertical position with the head or tail up. In some of the zoomorphic icons, the penis is indicative of their gender.

The animals appear to be canines. Recently a forest dog that resembles the pictorial zoomorphs was discovered in the jungle of southern Peru (in Bahuaja Sonene National Park, Puno, in 2016). Their reoccurring depiction by the artists on the painted stone tablets is likely an indication of the strong daily interaction that existed between the humans and presumed canines. Further investigation is needed to determine if the forest dog was domesticated in ancient times.

The 'T'-shaped anthropomorphs are painted in monochrome, whereas the ovoid-shaped anthropomorphs are polychrome, painted to denote the eyes, breast and vulva. The more fully rendered bodies on the tablets are noteworthy in light of the absence of body parts such as hands and heads in rock art iconography found elsewhere in much of the world.

2. Abstract:

Geometric figures include circles, dots, curves, zigzags, radial lines, wide parallel bands and square checkerboards. There is also a series of nonfigurative icons such as the likenesses of the #, U-shapes and others. Note that there are no phytomorphic motifs on the known painted stone tablets of Pampacolca, although some of the abstract motifs might be interpreted in this manner. A columnar 'cactus' and a' corn plant'

Figure 8. *'T'-shape head anthropomorphous motifs with raised arms and three splayed fingers enclosed by numerical-like symbols. The icons on the upper half are negative painted, and the lower half are painted positive. Painted stone tablet 6707 from Peña Blanca, Pampacolca. Adobe Photoshop CS6 Extended computer-enhanced photo filtering and colour adjustment by JC, 2013.*

Figure 9. *Two rows of six 'human' and two rows of six 'animal' motifs, one on top of another, are the main iconographic icons distributed on the 2/3 main pictorial frame. Note the radial symbols around the central 'human' figure of the upper row and the six out-of-the-ordinary icons around its head. At the bottom, there are eight vertical sets of three coloured stripes. A painted stone tablet from Piscopampa, Pampacolca, 61 cm high × 30 cm wide. Adobe Photoshop CS6 Extended computer-enhanced photo filtering and colour adjustment by JC, 2018.*

are depicted on ceramic clay plaques from Chucu, Chuquibamba (Kauffmann Doig 1989). There is also no apparent iconography representing the surrounding mountains such as the Nevado Coropuna.

3. Amorphous:

This group includes any paint without a recognisable shape that could be perceived as realistic or abstract. Generally, the whole tablet is entirely painted with one colour.

Painting technique

The first step in preparing a painted tablet was to choose a slab and an iconographic design (Cabrera 2014: 12). Painted stone tablet 6651 from Peña Blanca (Fig. 10) was left unfinished. It can be used to demonstrate a technique of tablet painting that starts from the upper right corner to the left, and from top to bottom (yellow arrows in Fig. 10). This basaltic-andesite stone tablet shows no macro and micro-exfoliation and cleavage; a critical characteristic assuring us that the unpainted surface was not the result of peeling paint. Moreover, the 'human' figures in the lower row are painted to encompass an entire body but include only the head to the chest. In the upper row, the motifs are tinted greenish. In the lower row, the motifs are without the greenish tint. In both rows, the negative space is red. It is unclear if the upper row icons are tinted green contrary to the lower row by design or if the lower row was not yet tinted green. This may indicate the order of how each space was painted with the red colour of the negative space painted initially, and then the upper row motifs painted green or both in a progressive way. The lower-row motifs were not painted the same green colour as the upper motifs, possibly to avoid any confusion between the motifs as both rows are close together. The technique described above cannot be generalised to all stone slab paintings. Techniques may vary according to the painter's preference, skills or other factors typical of the Antimpampa stone tablet painting style.

Age of the painted stone tablets

Since the binder used to attach pigments to the stone substrate is unknown, it is hard to determine their age. Among the elements detected on two painted stone tablets from Pampacolca, carbon (C) was not identified. The absence of carbon suggests that there is no organic material present in each sample, rendering the tablets undatable using radiocarbon analysis (Chemir Evans Analytical Group 2013). Previous work described above has provided dates ranging from the mid-first millennium CE to the onset of the Inca Empire based on

associated contexts (e.g. Faron-Bartels 2006; Jennings 2015a; Kauffman Doig 1989), with some portable art related to the tablet tradition appearing as early as 2000 BCE (Jennings 2015b: 107). Two recent analyses provide a tentative age of the Pampacolca painted stone tablets that is significantly older than those previously demonstrated:

1. Charcoal from the Campanáyoc earth mound:

The Campanáyoc earth mound is located in the main Antimpampa archaeological complex. The following are some of the mound's technical specifications:

Coordinates: longitude 72º34'11'' W, latitude 15º42'07''S, elevation 3075 m a.s.l.

Size: Perimeter 234 m at the base and 106 m on top. Radius 35 m at the base and 15 m on top. Volume, considering 40 m height, 84 000 m^3.

Shape: a bell or a truncated cone shape, with the truncation perhaps caused by natural erosion and illegal profanation over the years.

Structure: stone and earth. Exposed areas of the mound contain ash, charcoal, bones, broken ceramic, semi-precious minerals (such as malachite, azurite and quartz), and painted stone tablets.

To test the age of the Campanáyoc earth mound, a charcoal sample was taken from the south side, near the base of the mound where there were many more charcoal fragments in that lower stratum of the structure (R. G. Bednarik, pers. comm. 2017). Radiocarbon measurement from the Beta Analytic Radiocarbon Dating Facility (2017) is 2490 ± 30 BP, conventional radiocarbon age.

2. Thermoluminescence analysis of a sample from Morro Chicota:

The Morro Chicota location at the north end of Antimpampa site (longitude 72º34'42''W, latitude 15º41'56''S, elevation 3052 m a.s.l.) is a rocky outcrop covered with earth. This earth contains several painted stone tablets all over its surface that were collected (Cabrera 2012). One of these, number 1, was analysed by the Laboratory Ralf Kotalla (2012) using thermoluminescence, resulting in an age of 2800 ± 20 years based on the standard methods and techniques used in the thermoluminescence process.

These two preliminary age results correspond to the Formative Period (c. 3800 – 2200 BP).

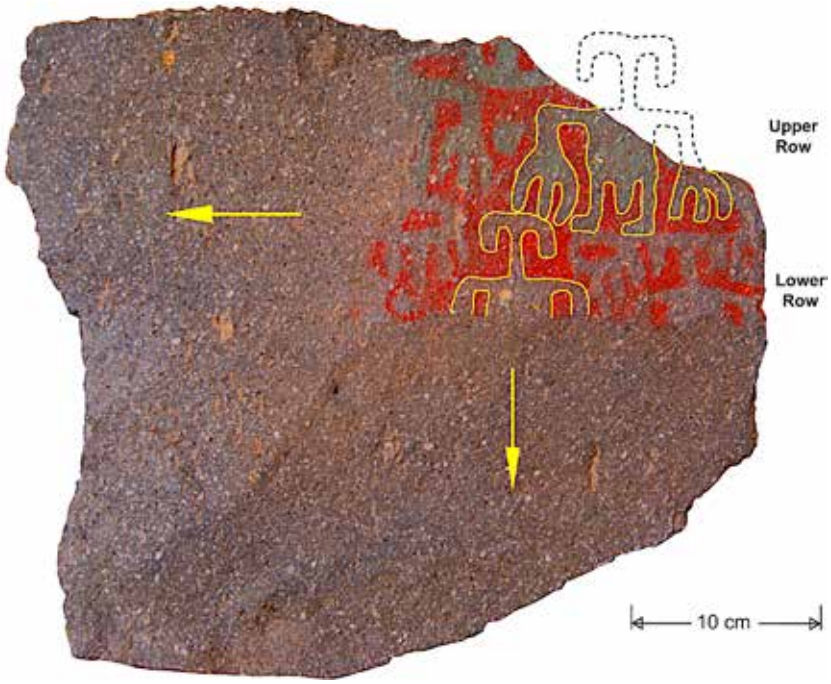

Figure 10. *Painting technique demonstrated on the painted stone tablet No. 6651 from Peña Blanca, Pampacolca. Size 40 cm wide, 35 cm high and 2 cm thick. Adobe Photoshop CS6 Extended computer-enhanced photo filtering and colour adjustment by JC, 2013.*

Conclusion

Painting a stone tablet was done on one side of the stone slab only, even where the opposite side presents the better surface. It provides a clue that the tablet shape was a defining factor. The use of microtopography to map the stone tablet surfaces on a small scale led to the conclusion that paint viscosity was used according to surface roughness or smoothness; this was an important factor for preserving the paint over the millennia. It is evident that the painting of stone tablets was a tradition that followed a typical graphic design, adjusted to the specific purpose of each tablet; there was no replication, neither were they reused for overpainting. The iconography of geometric, anthropomorphous and zoomorphic motifs shows a recurring structural pattern of paired oppositions within the Antimpampa style discussed here.

In an earlier publication (Cabrera 2014), the author suggests that the painted stone tablets were a tradition meant to bring a visual, written message (quantities, hierarchy, organisation) from the transmitter (elite, authority, painter) to the receivers (administrators, priests, leaders, community). The design, iconography, icon colour and quantity, size and shape of the tablet, nature of the stone and other features could have encoded information, raising the possibility that these stones were part of an administrative or accounting system.

Whatever the case, the Pampacolca painted tablet tradition appears to be part of a mostly unknown cultural fluorescence in the region. The two analytical lab test results of 2490 ± 30 years BP (C^{14}) of charcoal from the Campanáyoc earth mound, and 2800 ± 20 years (TL) of a painted stone tablet from the Morro

Chicota, correspond to the Formative Period. Very little is known from this period, but the tablets, along with the monumental contexts associated with them in Antimpampa, demand further research. As Robert G. Bednarik notes (pers. comm. 2017), with these dates:

> We have a chronological anchor point. It doesn't provide a secure age for the painted tablets, but it does offer an initial framework. The first thing this evidence tells us is that 2500 years ago, there was a large population, large enough to provide the surplus-labour for creating such huge non-utilitarian structures. They were able to produce a food surplus; the irrigation system was then operational; therefore, Pampacolca has a long history, and since it is so deeply in the mountains, we can speculate that there must have been dense population elsewhere.

Jesus E. Cabrera
Australian Rock Art Research Association (AURA)
Asociación de estudios de arte y paisaje rupestre del Perú (ASEARP)
Patronato Lajas Pintadas de Pampacolca, Perú
jesuscab33@cs.com

REFERENCES

Beta Analytic Radiocarbon Dating 2017. Report on radiocarbon dating analyses. Laboratory number: Beta – 473951, Miami, FL.

Cabrera, J. 2012. *La cultura Antimpampa. Arqueología milenaria de Pampacolca en el sur Andino del Perú*. Signature Book Printing, Gaithersburg, MD.

Cabrera, J. 2014. *Diseño gráfico arcaico. Testamento histórico de Antimpampa, Perú*. Signature Book Printing, Gaithersburg, MD.

Cabrera, J. 2019. Palaeoart microtopography. *Rock Art Research* 36(23): 224–227.

Chemir Evans Analytical Group 2013. *Elemental profile and phase identification of ancient coating*. Analytical report, Chemir Job # V1DJV544, 29 p., Maryland Heights, MO.

Disselhoff, H. 1968. Bemalte Geröllsteine, Steinplatten und dem Brande bemalte Tonscherben in Süd-Peru. *Tribus* 17: 69–80.

Escomel, E. 1940. *Estudios científicos*. Lima, Perú.

Espada, J. 2001. *Huamanmarca: de la investigación a su revalorización.* Proyecto Arqueológico Condesuyos, Vol. I, pp. 61–125. Warsaw, Poland.

Faron-Bartels, R. 2006. *El poder de los símbolos. Lajas pintadas en Pampacolca. Nuevos datos sobre lajas pintadas del sur del Perú.* 21 p., Warsaw, Poland.

Faron-Bartels, R. 2011. Piedras votivas de Pampacolca. Nuevos datos sobre las lajas pintadas del sur del Perú. Unpubl. PhD thesis, Free University, Berlin.

Jennings, J. 2003. The fragility of imperialism ideology and the end of local traditions, an Inca example. *Cambridge Archaeological Journal* 13(1): 107–120.

Jennings, J. 2015a. Wari imperialism, bronze production, and the formation of Middle Horizon: Complicating the picture. *Journal of Anthropological Archaeology* 39: 63–75.

Jennings, J. 2015b. *Tenahaha and the Wari State. A view of the Middle Horizon from the Cotahuasi valley*. The University of Alabama Press, Tuscaloosa, AL.

Kauffmann Doig, F. 1989. *The plaques of Chucu with painted inscriptions of a magical character*. Instituto de Investigaciones Antropológicas, Lima, Peru.

Laboratory Ralf Kotalla 2012. Report on thermoluminescence authenticity test. Analysis result, Report No. 06270312, 11 p., Haigerloch, Germany.

Linares Málaga, E. 1973. Anotaciones sobre cuatro modalidades de arte rupestre en Arequipa. *Anales científicos* 2: 133–267. Universidad Nacional del Centro del Perú, Huancayo.

Linares Málaga, E. 1988. Arte mobiliar con tradición Rupestre en el sur del Perú. *Rock Art Research* 5(1): 54–66.

Ravines, R. 1970. *Arte rupestre. Pueblos y culturas de la Sierra Central del Perú.* P. 128-139. Lima.

RAR 37-1317