

Prehistoric Fine-Line Rock Engravings in Tamanart (Morocco): Tachokalt and Anou L'haj

Martí Mas (UNED), **Abdelkhalek Lemjidi** (INSAP), **Rafael Maura** (UNED), **Mónica Solís** (UNED), **Ahmed Oumouss** (CNR), **Guadalupe Torra** (EASDA, L'H, Barcelona), **Eloísa Bernáldez** (IAPH), **Esteban García-Viñas** (IAPH), **El Mahfoud Asmahri** (IRCAM), **Javier Pérez** (Wellrounded 360° fotografía), **Pedro Pablo Pérez** (DACITEC), **Begoña González** (USC)¹

Abstract: In this article we isolate and analyse different graphic expressions executed with incised fine and very fine lines (stone blocks or vertical walls) in the Tamanart valley (South Morocco) which are located in two of its prehistoric art sites: Tachokalt and Anou L'haj. These present extremely patinated motifs, some zoomorphous figures whose species can not be identified, and some other ones depicting gazelles, aurochs, antelopes, ostriches and sinuous shapes (meanders) that have nothing to do with the rest of depictions registered in the area of our study (Tamanart valley) and which, at the same time, present a certain techno-stylistic and conceptual uniformity according to their conventionality and iconographic structures. From the graphic sequence that we propose for this area, which is in turn based on thematic, typological, technical and stylistic parameters, and also taking into account other aspects such as taphonomic processes, superpositions or spatial distribution, we consider these motifs to be the oldest of the series and we point out graphic parallelisms with the prehistoric art of the Iberian Peninsula, contemplating both the possibility of contacts between the south of Europe and the north of Africa as well as the achievement of similar results independently on both sides of the Strait of Gibraltar.

Keywords: Rock art, Prehistoric engravings, Fine-line, Tamanart, Morocco.

1. Introduction

The Tamanart valley is located in the Tata and Tiznit provinces (Middle East of Morocco). The oued Tamanart runs from north to south and flows into the oued Draa. Twenty nine rock art sites have been located and documented in the

1. Martí Mas, Departamento de Prehistoria y Arqueología, Universidad Nacional de Educación a Distancia-UNED, Madrid. Co-director *Tamanart Team*; Abdelkhalek Lemjidi, Institut National des Sciences de l'Archéologie et du Patrimoine-INSAP, Rabat. Co-director *Tamanart Team*; Rafael Maura, Grupo de Investigación Paisajes, arquitecturas y cultura material en la Iberia antigua, Universidad Nacional de Educación a Distancia-UNED, Madrid; Mónica Solís, Departamento de Prehistoria y Arqueología, Universidad Nacional de Educación a Distancia-UNED, Madrid; Ahmed Oumouss, Centre National du Patrimoine Rupestre-CNPR, Agadir; Guadalupe Torra, Escola d'Art i Superior de Disseny Serra i Abella, Barcelona; Eloísa Bernáldez, Laboratorio de Paleontología y Paleobiología, Instituto Andaluz del Patrimonio Histórico-IAPH, Sevilla; Esteban García-Viñas, Laboratorio de Paleontología y Paleobiología, Instituto Andaluz del Patrimonio Histórico-IAPH, Sevilla; El Mahfoud Asmahri, Institut Royal de la Culture Amazighe-IRCAM, Rabat; Javier Pérez, Málaga; Pedro Pablo Pérez, DACITEC Desarrollo y aplicaciones científicas y tecnológicas, Avila; Begoña González, Grupo de Estudio para la Prehistoria del Noroeste Ibérico. Arqueología, Antigüedad y Territorio-GEPN-AAT, Universidade de Santiago de Compostela, Santiago de Compostela, Spain.

valley so far where thousands of engravings of different styles and formats appear combined and sometimes superimposed on more or less patinated and/or altered surfaces. Incision, scraping, abrasion, pecking; fine, deep or thick marks are the engraving techniques used in the production of these open-air rock art depictions on stone blocks or rock walls. The prevailing theme is zoomorphic: elephants, rhinoceros, giraffes, aurochs or bulls, gazelles, antelopes, barbary sheep, birds, carnivores, etc. Geometric shapes are also abundant, especially sinuous or round ones. Anthropomorphs, less abundant, are depicted in a schematic way and appear associated to axes, chariots and linear geometric motifs.²

In the late nineteenth century H. Duveyrier³ published the discovery of some rock engravings found by rabbi Mardochée in south Morocco, in the context of

2. This paper provides some results from the *Tamanart Team* field works. The *Tamanart Project* was subsidised between 2011 and 2016, in five consecutive calls, by the Instituto del Patrimonio Cultural de España of the Dirección General de Bellas Artes y Patrimonio Cultural of the Secretaría de Estado de Cultura of the Ministerio de Educación, Cultura y Deporte of the Gobierno de España (*Ayudas en régimen de concurrencia competitiva para proyectos arqueológicos en el exterior*). This project is carried out in the framework of the agreement DPC/UNED signed in 2011 between the Direction du Patrimoine Culturel (Rabat), represented by the Centre National du Patrimoine Rupestre (Agadir), of the Ministère de la Culture, de la Jeunesse et des Sports of the Kingdom of Morocco and the Universidad Nacional de Educación a Distancia-UNED (Madrid). In 2018, 2019 and 2020 the *Tamanart Team* has funded the fieldwork campaigns with the continued support of the *Fundación Palarq. Paleontología y Arqueología*. We must be grateful to Amanda Caro for the revision of the English text.

M. Mas Cornellà et al., "Proyecto Tamanart. Prospección y documentación de yacimientos con arte rupestre del Valle de Tamanart (provincia de Tata, región de Guelmin Smara, Marruecos). Campaña de 2011-2012," in *Excavaciones en el exterior 2011*, ed. C. Martín Morales, Informes y Trabajos, 9 (Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2013), 490-507, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>;

M. Mas Cornellà et al., "Proyecto Tamanart (Marruecos): Documentación de yacimientos con arte rupestre," in *Excavaciones en el exterior 2012*, ed. C. Martín Morales, Informes y Trabajos, 11 (Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2014), 11-30, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>;

M. Mas Cornellà et al., "Proyecto Tamanart 2013-2014," in *Excavaciones en el exterior 2013*, ed. C. Martín Morales, Informes y Trabajos, 12 (Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2015), 15-34, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>;

M. Mas Cornellà et al., "Proyecto Tamanart 2014-2015," in *Excavaciones en el exterior 2014*, ed. C. Martín Morales, Informes y Trabajos, 14 (Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2016), 12-27, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>;

M. Mas Cornellà et al., "Proyecto Tamanart 2015-2016," in *Excavaciones en el exterior 2015*, ed. C. Martín Morales, Informes y Trabajos, 17 (Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2019), 88-102. <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>.

3. H. Duveyrier, "De Mogador au Djebel Tabayoudt. Par le rabbin Mardochée Abi Serour. Résumé du journal de voyage," *Bulletin de la Société de Géographie*, December (1875): 3-15 (offprint); H. Duveyrier, "Sculptures antiques de la province marocaine de Sous," *Bulletin de la Société de Géographie*, August (1876): 129-46.

the scientific field work requested by the Société de Géographie (Paris).⁴ In these articles H. Duveyrier describes tracings the rabbi had sent to that institution. Soon after, O. Lenz also visits one of these sites, Tigzi, in Foug El Hisn.⁵ It is very difficult to interpret these texts given the complexity of the toponyms, brief references and the absence of illustrations. A. Ruhlmann collects the sites discovered by rabbi Mardochée in the Foug El Hisn area (Tigzi and Ida ou Taltas) and he adds Oukas, another previously unpublished site located north of the Tamanart valley.⁶ M. Sénones and O. du Puigauveau start new surveying and documenting works and add a site also near Foug El Hisn that they call *mountain of Icht*.⁷ Thanks to the numerous tracings they present it can be identified as the site currently known as Tircht, as Puigauveau and Sénones subsequently stated.⁸ Certain articles have dealt with some specific sites, analyzed the depicted fauna or mentioned the Tamanart valley but, until now, full documentation of the rock art engravings of the area has not been available: that is precisely the aim of the *Tamanart Team*. In the sixties of the last century, H. Lhote published the Tachokalt and Tanzida sites, identifying 36 and 17 figures respectively.⁹ Tachokalt and Anou L'haj (subjects of the present study) have also been partially synthesized,¹⁰ without forgetting the catalogue of A. Simoneau¹¹ and the publication of S. Searight.¹²

The *Tamanart Team* is set up within the framework of the agreement signed between the Direction du Patrimoine Culturel (Rabat) and the Universidad Nacional de Educación a Distancia (Madrid). Its aim is the study of the rock art in the oued Tamanart (engravings) and in Aouinet Azguer (paintings), both of them in the surroundings of the lower Draa. The scientific team that conducts this study is based on an interdisciplinary concept that combines several branches of

4. Y.D. Sémach, "Un rabbin voyageur marocain: Mardochée Aby Serour," *Hespéris* VIII (1928): 385-399; G. Evin, "Dans le Sud Marocain. Sur les traces du Rabbin Mardochée," *Bulletin du Comité de l'Afrique française*, January (1936): 16-20.

5. O. Lenz, *Timbuktu. Reise durch Marokko, die Sahara und den Sudan* (Leipzig: F. A. Brockhaus, 1884).

6. A. Ruhlmann, *Les recherches de préhistoire dans l'extrême sud Marocain* (Rabat-Paris: Publications du Service des Antiquités du Maroc, 1939).

7. M. Sénones and O. du Puigauveau, "Gravures rupestres de la montagne d'Icht (Sud marocain)," *Journal de la Société des Africanistes* 11 (1941a): 147-56; M. Sénones and O. du Puigauveau, "Gravures rupestres de la vallée moyenne du Draa (Sud marocain)," *Journal de la Société des Africanistes* 11 (1941b): 157-68.

8. O. du Puigauveau and M. Sénones, "Gravures rupestres de l'Oued Tamanart (Sud marocain)," *Bulletin de l'Institut Français d'Afrique Noire* 15 (1953): 1242-61.

9. H. Lhote, "Gravures rupestres de Tachoukent et de Tan Zega (Sud marocain)," *Libyca* XII (1964): 225-45.

10. A. Rodrigue, "Les gravures rupestres de Tighert et d'Anou el Hadj (Fam el Hisn, Maroc)," *Les Cahiers de l'AARS* 16 (2013): 231-3; A. Rodrigue et al., "Tachokalt et Tanzida revisités," *Les Cahiers de l'AARS* 17 (2014): 195-201.

11. A. Simoneau, *Catalogue des sites rupestres du Sud marocain* (Rabat: Ministère d'État Chargé des Affaires Culturelles, 1977).

12. S. Searight, *The Prehistoric Rock Art of Morocco. A study of its extension, environment and meaning*. BAR International Series, 1310 (Oxford: Archaeopress, 2004).

knowledge such as prehistory, archaeology, anthropology, geography, geology and petrology, topography, paleobiology, physicochemical analysis, photography, etc.¹³ Since then and to this day, six fieldwork campaigns have been carried out (2012, 2013, 2014, 2015, 2016 and 2018) in which the following rock art sites in the Tamanart valley, listed from south to north, have been studied:

Southern Tamanart			
1.	Tachokalt 1		
2.	Tachokalt 2	16.	Mouchaouf
3.	Tachokalt 3	17.	Moumersal 1
4.	Tachokalt 4	18.	Moumersal 2
5.	Tanzida 1 (Moul Admoze)	19.	Tissefriouine 1
6.	Tanzida 2 (Tagadirte)	20.	Tissefriouine 2
7.	Anou L'haj 1	21.	Ighire
8.	Anou L'haj 2	22.	Kasba Ait Harbil
9.	Boutamait	23.	Ighir Ighnain
10.	Tighirte	24.	Amgrd N'Taayaline
11.	Ouzouzoun	25.	Agadir N'Tabsist
12.	Sidi Abdessamad	26.	Imi Ouzlag
13.	Tamlalt	27.	Imi N'Tart 1
14.	Timlalin	28.	Imi N'Tart 2
15.	Tircht	29.	Oukas

2. Objectives and Methods

The objective of this article is to define and determine the possible cultural approach of some engravings that, due to their technical characteristics, are radically different from others. Based on an established chronostylistic sequence, all the motifs known in Tachokalt and Anou L'haj are considered from the perspective of different variables.

We have carried out petrological studies of the stone blocks or vertical walls in their geological framework,¹⁴ establishing technical, stylistic, thematic

13. Ibid., footnote 1; M. García Algarra, "Las inscripciones rupestres tiffinagh en Aouinet Azguer 9 (Tan Tan, Marruecos)," *Revista Otarq* 3 (2018): 7-22; F.Z. Mbarki, "Stratégie de communication digitale pour la promotion du patrimoine rupestre dans le cadre d'un tourisme durable: cas de la vallée de Tamanart," (Rapport de projet de fin d'études, Master spécialisé en Marketing et Management Touristique, École Nationale de Commerce et de Gestion à Agadir, 2018); A. Skounti et al., "Cupules et rituels: art rupestre et ethnoarchéologie dans la vallée de Tamanart (Maroc)," *Hespéris-Tamuda* LIV (3) (2019): 183-204.

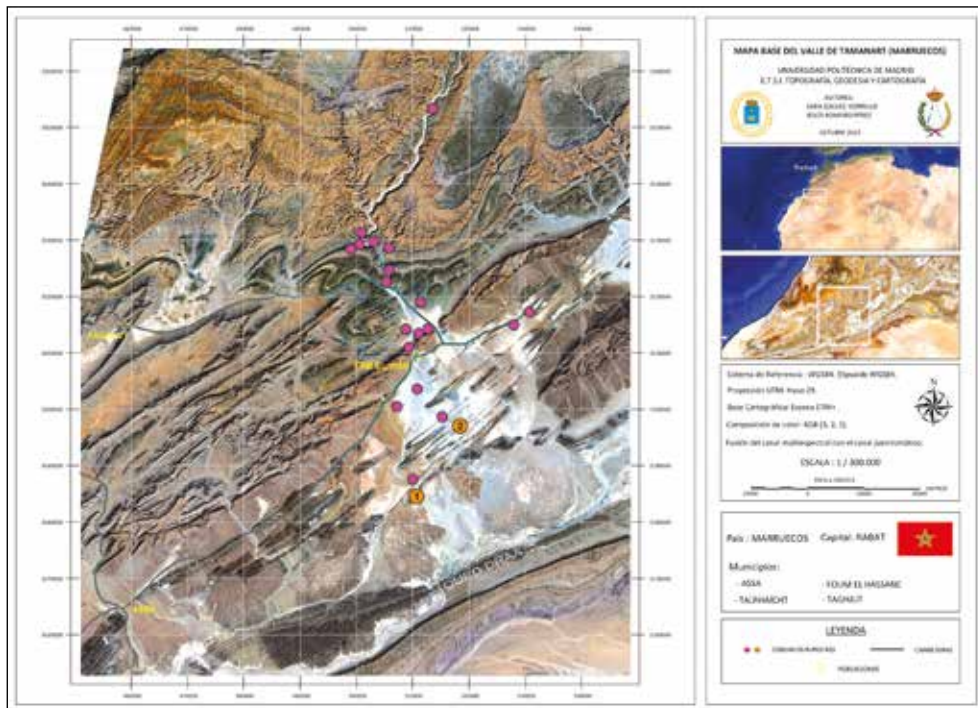
14. Mas et al., "Proyecto Tamanart (Marruecos): Documentación," 14-18.

and typological criteria to order all the iconographic documentation and also paleobiological criteria to identify animal species.¹⁵

Previously, during the fieldwork, the sites were mapped topographically locating the stone blocks or decorated vertical walls of each one, that had been defined following a systematic survey. Each panel was photographed considering its orientation and introducing the IFRAO scale,¹⁶ using different types of lighting [ambient (nuanced, reflected...) or artificial] and resorting to macro and microphotographs in some cases. All motives were observed, analyzed and documented. In the laboratory, all the graphic information has been processed using image treatment programs such as *Photoshop*, also employed to create the reproductions of the panels.¹⁷

3. Tachokalt and Anou L'haj

We will focus on these two sites, both of them located in the southern Tamanart valley (fig. 1) by analysing their graphic sequence.



15. E.B. Sánchez et al., "Palaeobiodiversity versus biodiversity. Animal representations in Tamanart and Azguer rock art (Morocco)," in *15th Congress of PanAfrican Archaeological Association for Prehistory and Related Studies. Sessions and abstracts book. Rabat, 10-14 September 2018* (Rabat: Pan-African Archaeological Association, 2018), 62.

16. R.G. Bednarik, "The IFRAO standard scale," *Rock Art Research* 8 (1991): 78-79.

17. Ibid., footnote 1; M. Mas Cornellà et al., "Reproducción digital, microfotografía estereoscópica y fotografía esférica aplicadas a la interpretación del arte rupestre prehistórico," *Cuadernos de Arte Rupestre* 6 (2013): 77-83.

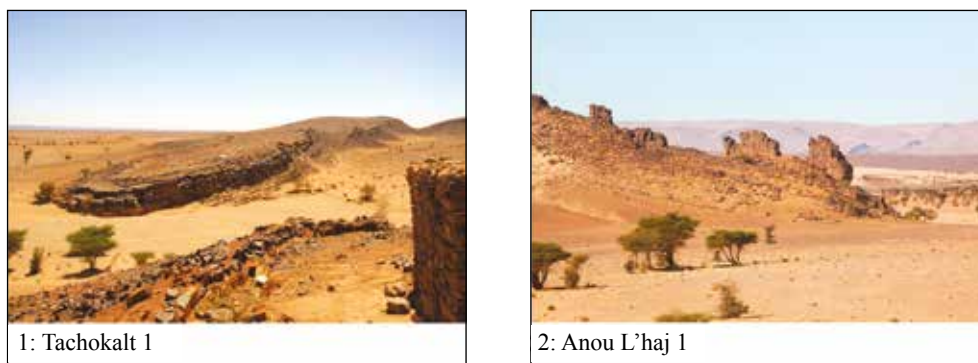


Fig. 1: Indicative map of the distribution of the rock art sites in the Tamanart valley that have been analysed up until now. The two sites subject of this study are marked and numbered. The upper Tamanart is boxed in by gorges and then opens in several branches to its mouth in the Draa, where it created wetlands ideally suited for human settlement at certain prehistoric times. Adapted from: S. Gálvez Horrillo and J. Romero Pérez, “Elaboración de cartografía temática de usos de suelo del valle de Tamanart (Marruecos) a partir de imágenes Landsat,” (Trabajo fin de carrera, Universidad Politécnica de Madrid, Escuela Técnica Superior de Ingenieros en Topografía, Geodesia y Cartografía, 2013). University Degree Project directed by Mercedes Farjas Abadía, in collaboration with the *Tamanart Project*.¹⁸ Morocco maps: *Google Earth*.

3.1 Tachokalt 1

Tachokalt 1 and 2 are two hills facing each other, with a general northeast-southwest orientation. The Tamanart flowed between them at about 10 km north of its confluence with the Draa. These outcrops are formed by an alternation of sandstones, slates and limestones from the Devonian. The rocks outcrop with a direction 30° NE and a dip angle 15° SE. In the sedimentary succession the dominant lithology is sandstones, from fine-grained to very fine-grained, brown, violet or greenish, compact and quite massive in general, although these locally present cross stratification and are fossil enriched. A fundamental goal of the *in situ* study of the site was to establish relationships between the engravings and the lithology where they appear. The comprehensive analysis of the site is conclusive in this way: all the engravings are executed on sandstones, never on siltstones or mudstones. Another fundamental point was to analyse the type of surface on which these engravings were carried out; in this case, we observe two different situations: engravings that appear on a surface with a reddish shade caused by oxidation, and engravings that appear on a blackish patina known as *desert varnish* that usually presents high concentrations of manganese.¹⁹

By the number of stone blocks or vertical walls with engravings (265), superior to any other site in Tamanart, numbered according to their spatial distribution in ten sectors (fig. 2), and because of its wide typological, technical

18. Mas et al., “Proyecto Tamanart 2013-2014,” 30.

19. Mas et al., “Proyecto Tamanart (Marruecos): Documentación,” 14-18.

and stylistic variety, Tachokalt 1 is the paradigmatic rock art site in this area since, quantitatively and qualitatively, it offers possibilities of analysis unparalleled in all the valley. The place was repeatedly used for artistic activity over an extended period of time thus allowing us to recognise, through art, significant changes in the mind and behavior of the people who settled down on that area.

The methodology for the documentation and the study of rock art, integrated in the interdisciplinary scientific process and applied to this site, facilitated the thematic, stylistic and technical analyses (table 1) as well as the analysis of the superpositions and infrapositions noticed between the different typologies, whose ultimate goal is to define the chronocultural framework that articulates their graphic sequence.²⁰

Small zoomorphous (naturalistic tendency quadrupeds) and abstract motifs, made by very fine linear incision, are exclusive to this place. For the moment, the same technique and style have only been documented in another site of the valley, Anou L'haj (two ostriches and a possible gazelle).

Subsequently, we find gazelles and aurochs in relatively thicker lines than the previous ones although also fine, in linear technique, firm marks and naturalistic tendency appearance.

Linear designs are also achieved by abrasion. With this technique, the elephant, the gazelle, the aurochs, the antelope and the ostrich are depicted. These figures move away from the naturalist tendencies of the first motifs, since their shapes are less proportionated and realistic.

Later, we notice procedures documented in the entire valley. In a good many cases, pecking techniques are probably applied from previous sketches made by soft scraping. Elephants, rhinoceros, giraffes, barbary sheep, antelopes, scimitar-horned oryxes, ostriches, etc. were engraved using this technique but in the end, the most largely represented animal is the aurochs or bull which tends to large formats. Pecking is also used to design anthropomorphs, which appear associated to the representation of axes.

It has been noted, nonetheless, that many of these depictions have been retouched and recycled after their execution, either by modern peckings or by deep and thick linear incisions which makes our technomorphological evaluations considerably more difficult. This also applies to most of the rock art sites in the valley, together with other anthropic aggressions (table 2).

20. Ibid. footnote 1.

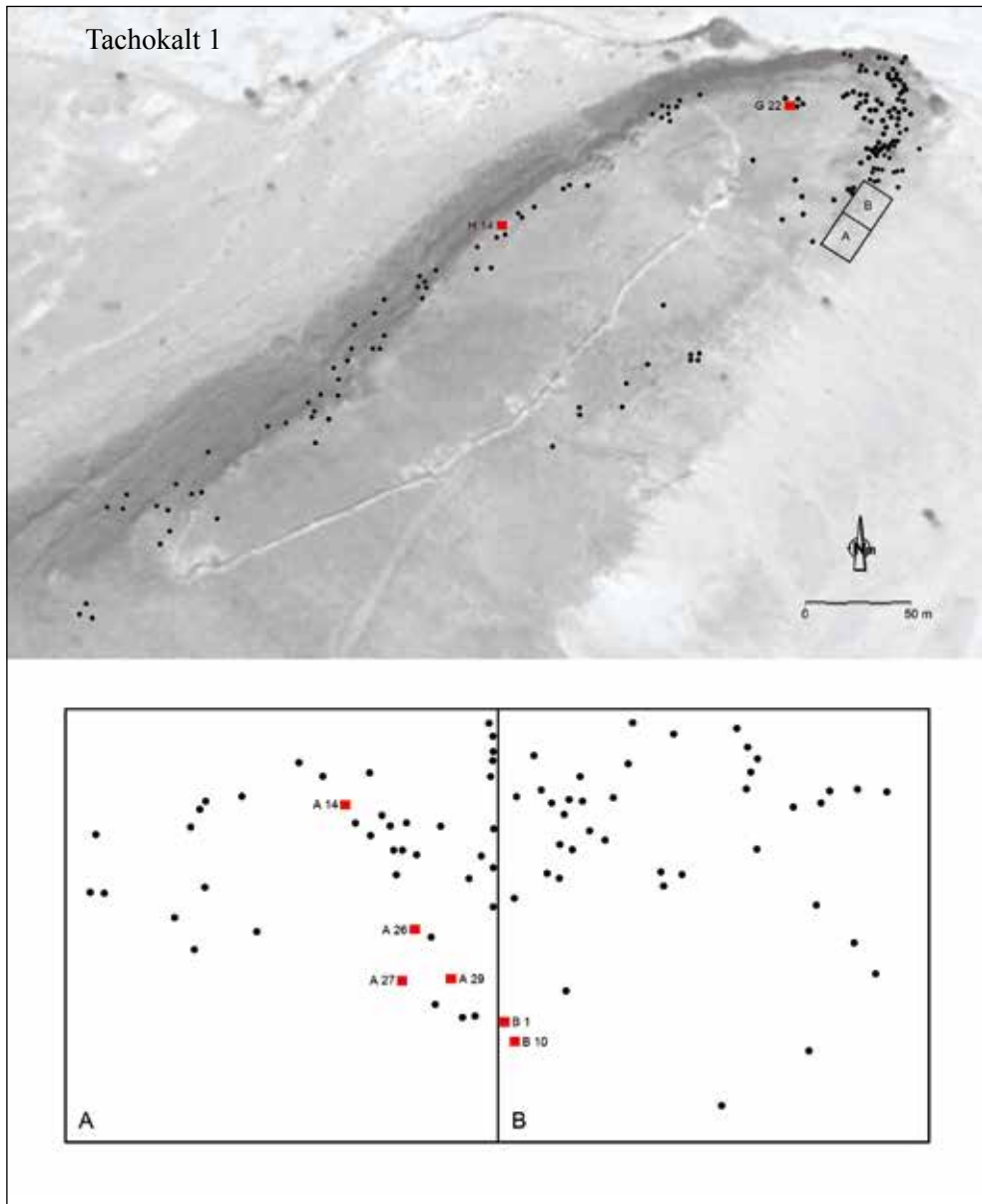


Fig. 2: Spatial distribution (*Google Earth*) of the documented stone blocks or vertical walls engraved in Tachokalt 1. Panels assigned to phases 1 and 2 (very fine and fine linear marks) are highlighted with red squares. The locations with engravings delimit the contour of the hill and a higher concentration of them can be noticed in the SE slope, sectors A and B (*Tamanart Team*).

Style	Theme	Typology
Figurative	Zoomorphs	Elephant
		African wild ass
		Giraffe
		Gazelle
		Aurochs
		Bull
		Antelope
		Barbary sheep
		Goat
		Scimitar-horned oryx
		Cheetah
		Ostrich
		Bustard
	Anthropomorphs	
	Tools	Axe
Abstract	Geometrics	Circular
		Angular
		Meander
		Spiral
		Grid
		Globular
		Group of lines
		Group of dots
	Polymorphs	

Table 1: Stylistic, thematic and typological relationships in Tachokalt 1.

		Incision		Scraping	Abrasion		Pecking	
		Very fine linear marks (< 2 mm)	Fine linear marks (2-5 mm)	Superficial	Medium linear marks (4-10 mm)	Thick linear marks (> 10 mm)	Superficial	Deep
Z O O M O R P H S	Elephant			√		√	√	√
	African wild ass						√	
	Giraffe						√	
	Gazelle	√	√		√		√	√
	Aurochs		√	√	√			
	Bull						√	√
	Antelope			√	√		√	√
	Barbary sheep							√
	Goat							√
	Scimitar-horned oryx			√	√			√
	Cheetah						√	
	Ostrich					√	√	√
	Bustard							√
	Unidentified quadruped	√	√		√		√	√
Anthropomorphs			√				√	√
Tools	Axe							√
G E O M E T R I C S	Circular						√	√
	Angular							√
	Meander	√	√		√			√
	Spiral							√
	Grid		√		√			
	Globular							√
	Group of lines	√	√		√			
	Group of dots						√	√
Polymorphs							√	√
Undefined Remains		√	√	√	√		√	√

Table 2: Thematic, typological and technical relationships in Tachokalt 1, which bring us closer to more accurate formal variants.

3.2 Anou L'haj 1

It is located on a rocky ridge next to a well, on the bed of a small tributary of Assif n'Boùlharcha. Up to 55 panels were found in this site, not only on stone blocks but also on vertical walls, and were organised in two sectors (A and B). The depicted animals are the elephant, the gazelle, the bull, the antelope, the scimitar-horned oryx, the warthog, the lion and the ostrich. There are also geometrics: circular, meander, grid lines and group of lines. All the engraving techniques observed in Tachokalt 1 are used. Two panels with very fine linear marks and several stones engraved by fine-line incision, similar to the previously mentioned ones in Tachokalt 1, stand out. The anthropomorphs in this site show special features (table 3).

		Incision		Scraping	Abrasion	Pecking	
		Very fine linear marks (< 2 mm)	Fine linear marks (2-5 mm)	Superficial	Medium linear marks (4-10 mm)	Superficial	Deep
Z O O M O R P H S	Elephant				√		
	Gazelle	√	√		√		√
	Bull				√	√	√
	Antelope	√	√				
	Scimitar-horned oryx				√		√
	Warthog			√			
	Lion					√	
	Ostrich	√					
	Unidentified quadruped	√	√		√	√	√
Anthropomorphs				√		√	√
G E O M E.	Circular					√	√
	Meander						√
	Grid		√				
	Group of lines		√		√		
Undefined Remains				√		√	√

Table 3: Thematic, typological and technical relationships in Anou L'haj 1, which bring us closer to more accurate formal variants.

The Anou L'haj 1 site is the essential complement to Tachokalt 1 when it comes to understanding the first execution phases of the engravings in this valley, just as Tircht, a site located further north, is to the last ones.

4. Graphic sequence proposal

The dichotomy linear incision-pecking clearly appears in Tachokalt 1. Since the linear techniques used to represent the fauna (defined as wild or hardly identifiable due to a lack of distinctive features) always appear under the pecked motifs and not the other way round, we may infer that the latter are more recent than the former (fig. 3).

In Tachokalt 1 some very fine engravings (less than 2 mm) have been found, which were unknown up to now and appear extremely patinated, clearly indicating their antiquity. The zoomorphs in this group don't show features that allow us to identify them as specific species more than just quadrupeds, maybe gazelles. Although there are not superpositions to irrefutably corroborate this, their concise tracings and primary designs lead us to hypothesise that these could be the oldest ones, further considering taphonomic evidences (blackish patina, reddish eroded surface...) and their technical and formal similarity with the fine-line engravings.

Next to these very fine-line engravings there is an interesting group of zoomorphs of naturalistic tendency and fine-lines (2 to 5 mm) that also appear in some other places in the site. It is quite a heterogeneous set of figures related technically and thematically to each other. They don't show formal elongations nor the polished strokes typical of the Tazina style²¹ nor do they reach its thickness (between 4 and 10 mm). Consequently, and based on some superpositions, for instance, the one located in Anou L'haj 1 (A 21), we understand that these motifs would be older.

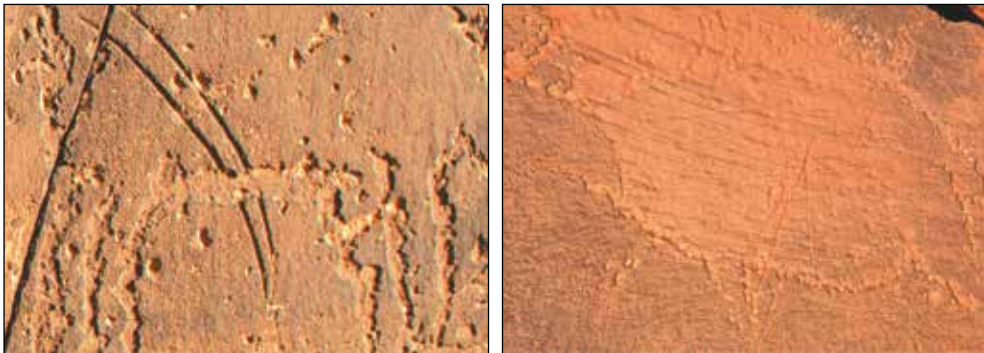


Fig. 3: Linear engravings (incision) appear under other ones made by pecking in Tachokalt 1 (F 14), above, and Anou L'haj 1 (A 32), below (*Tamanart Team*).

Based on these observations and taking into account the rest of the motifs made with other techniques, predominantly pecking, it has been possible to compose the graphic sequence of Tachokalt 1.

21. W. Pichler and A. Rodrigue, "The 'Tazina style'," *Sahara* 14 (2003): 89-106; J.L. Le Quellec, "De quoi Tazina est-il le nom?," *Les Cahiers de l'AARS* 17 (2014): 151-60.

Our overall proposal for the periodization starts from the consideration that the outlined drawings carried out by incised linear techniques and abrasion, corresponding to the first three phases, would be older than those carried out with other techniques and that pecking would be a more recent technique. Incised techniques representative of, for example, Tircht (central Tamanart), would be recovered at the end of the series (although with evident taphonomic and formal differences: the morphology of the stroke, patina, typologies, etc.). We have organised this sequence into 8 phases, as was advanced in a previous article, we now reaffirm based on new observations.²² (table 4; table 5; fig. 4):

Phase 1

It is composed of zoomorphous motifs with outlined designs and naturalistic tendency (perhaps gazelles) (A 26, A 27, A 29), and abstract motifs of geometric tendency (lines and meandering forms) (A 14a, A 26), small format and with a very dark patina, made by very fine linear incision and concentrated on the SE slope (sector A).

Phase 2

It is made up of zoomorphous figures also very patinated, of naturalistic tendency, with outlined designs (gazelles, aurochs and an unidentified quadruped) (B 1, B 10, G 22 y H 14) and meandering forms (A 14b) whose incised technique produces slightly thicker strokes than those present in the previous phase figures, being these also bigger than those. In many cases, figures in phase 2 spatially relate to phase 1. However, the gazelles in panel B 1, while from a technical point of view they coincide with the rest of the motifs assigned to this group, present a certain formal difference mainly because of their meticulous execution and the endings of the extremities.

Phase 3

It would technically and/or stylistically correspond to the figures traditionally classified as Tazina. Two gazelles, two antelopes, a possible young aurochs, a scimitar-horned oryx and another zoomorph of unidentified typology are represented. Their technique is linear, with firm and deep strokes made by abrasion producing outlined designs. Some corporal elements occasionally appear unfinished or disproportionate. Sometimes, they are associated with supplementary rectilinear marks. We also include in this phase a great elephant carried out by abrasion with very thick strokes and associated with an ostrich.

Phase 4

In phase 4 we group scraped or softly pecked motifs. Their location in this sequence is relative, given that they would be subsequent to the incised zoomorphs and prior to the pecked motifs. They are mainly figures which were subsequently

22. Mas et al., "Proyecto Tamanart 2014-2015," 17-20.

retouched with a very faint pecking that allows us to observe the original technique. There are several designs, contoured, partially or totally filled, that tend to a large format. The zoomorphous typologies are depicted in a naturalistic manner (elephant, giraffe, antelope, scimitar-horned oryx, ostrich, etc.).

Phase 4-5

It is constituted of zoomorphous figures carried out with deep pecking. Because of its theme, typology and format this phase is closely linked to the previous one. We understand that these figures are the result of retouching over phase 4 motifs made in phase 5 and subsequent phases. The depicted fauna takes us back to a similar moment, in terms of climate, to that of phase 4 (elephant, antelope, scimitar-horned oryx, aurochs or bull, barbary sheep, ostrich, etc.). In many cases, they are filled with massive pecking.

Phase 5

It is composed of lightly patinated zoomorphous figures made with pecking technique (more compact at the beginning of the phase and looser towards the end), of variable sizes and less accurate anatomical proportions than in the two previous phases. There are some partial representations focused on the forequarters: this stylistic trait does not appear in the other phases. But what predominates are the bulls, full-length and contoured by hard pecking whose most representative core is located in the surroundings of the northwestern slope (sector J), although antelopes, goats and ostriches are also documented in addition to an african wild ass, a bustard and a cheetah.

Phase 6

A series of engravings made by pecking and with scarce patina are included in this phase. Their designs are rougher and smaller in size than in the previous phase, and are identified by the presence of male anthropomorphs that can appear frontally or profile. These are also associated with the elements interpreted as axes. Similarly, we place in this time frame most geometric motifs (circular, angular, meander, meanders in series, spiral, grid, globular, group of lines and group of dots) as well as polymorphs. Concentrations are observed in the NE area of the site (sectors C, D and E).

Phase 7

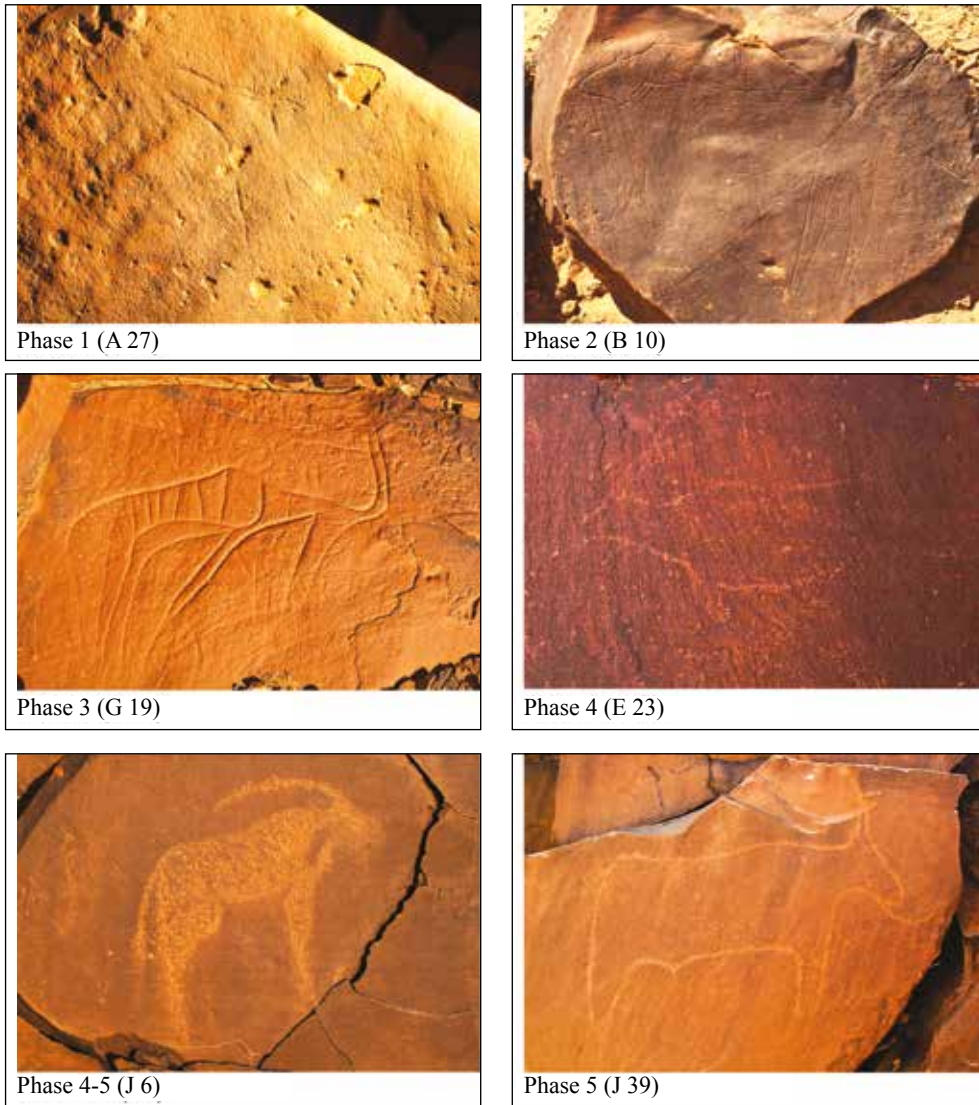
It would be composed of geometric engravings and undefined shapes, for which abrasive and incised techniques whose strokes show scarce patina, are recovered.

Phase 8

It includes very recent engravings that consist of graffiti, recurrent motifs and rough copies of antique figures without any patina, all of them made by pecking. This phase will not be taken into account from now on.

G E O M E T R I C S	Circular							√	
	Angular							√	
	Meander	√	√					√	
	Spiral							√	
	Grid							√	√
	Globular							√	
	Group of lines	√	√						√
	Group of dots							√	
Polymorphs								√	

Table 5: Relationships among phases, themes and typologies in Tachokalt 1.



The first four phases, where only wildlife species are depicted, would relate to groups of hunters whereas in phase 5, domestication seems already evident (fig. 5).

The phases obtained in Tachokalt 1 are thus aligned with the Anou L'haj 1 graphic sequence.

Phase 1

We assign to this phase two panels where two ostriches (B 4) and the head of what might be a gazelle (A 26) are depicted; both carried out with very fine linear incisions whose strokes present darker patinas than the rock surface.

Phase 2

It is composed of zoomorphs made with fine linear incisions, very patinated as well. The infraposition of a gazelle assigned to this phase in relation to another one included in phase 3 has been registered (A 21). An antelope, also assigned to this phase, appears under an undefined pecking zoomorph of phase 5 (A 32). It is surrounded by smaller figures, one of them also infraposed to the described zoomorph. They cannot be individually identified with certainty but all of them, except one, share the same iconographic structure with the larger antelope, which gives place to consider them as the same species, although made with a more schematic design. A single motif would define the scene, a recurring artistic resource in many cases.²³ It could be a synchronous composition of the first phase that was recycled widening the line in the second phase, totally in the great antelope and partially in some of the smaller zoomorphs. Finally, another antelope was roughly retouched with fine linear incisions in phase 7 or later (A 37).

Phase 3

It is composed of a few gazelles, a scimitar-horned oryx with disproportionate and excessive antlers and long beard, and an elephant that appears under an anthropomorph of phase 7. The engraving technique is abrasive and tends to be linear, deep, wide and very retouched. It corresponds to a very specific chronostylistic phase in southern Tamanart.

Phase 4

Except for the depiction of a rough warthog, with scarce subsequent retouching, no other remains of the previous scraping characteristic of Tachokalt 1 phase 4 have been noticed in this site.

Phase 4-5

The hard recycling to which many figures of Anou L'haj 1 have been subjected, prevent us from defining if they were carried out over previous scraping motifs,

23. M. Mas Cornellà, *La Cueva del Tajo de las Figuras* (Madrid: UNED, 2005), 161-203; M. Mas Cornellà, "Producción y usos del arte rupestre e implicaciones cronológicas. Algunos ejemplos en Andalucía, España," in *Tramas en la piedra. Producción y usos del arte rupestre*, ed. D. Fiore and M.M. Podestá (Buenos Aires: Sociedad Argentina de Antropología-Asociación Amigos del Instituto Nacional de Antropología-World Archaeological Congress, 2006), 33-41.

which makes it very difficult for us to assign them to this phase. Nevertheless, certain naturalistic features of the depicted possible wildlife, in particular a rampant gazelle, would bring these zoomorphous figures closer to the current group.

Phase 5

Soft pecking techniques were employed to carry out zoomorphous motifs with a tendency towards disproportion (bulls that can show inner quartering, a possible lion to which pointed ears were subsequently added, etc.) and other abstract motifs (concentric circles and meanders).

Phase 6

The possible representation of five warriors sheltering behind their shields could be assigned to this phase.

Phase 7

Figures carried out in fine linear incision, on fresh fracture, such as an anthropomorph whose body is filled with a grid (superimposed to the elephant of phase 3) and other strokes and tangles hard to identify typologically, would be integrated in this group.

The analysis of the rock engravings in Anou L'haj 1 would therefore confirm the validity of Tachokalt 1 as the paradigmatic site in the Tamanart valley, as the documented motifs are susceptible to be related to the phases defined in its graphic sequence, and in addition, it would also confirm some points that would support their relative chronologies (table 6; fig. 6; fig. 7).

		Phase 1	Phase 2	Phase 3	Phase 4	Phase 4-5	Phase 5	Phase 6	Phase 7
Z O O M O R P H S	Elephant			√					
	Gazelle	√	√	√		√			
	Bull						√		
	Antelope	√	√						
	Scimitar-horned Oryx			√		√			
	Warthog				√				
	Lion						√		
	Ostrich	√							
Anthropomorphs								√	√
G E O M E.	Circular							√	
	Meander							√	
	Grid								√
	Group of lines								√

Table 6: Relationships among phases, themes and typologies in Anou L'haj 1.



Fig. 6: Anou L'haj 1. To the left, naturalistic zoomorph made using fine linear incision (phase 2) infraposed to another one of phase 3 in panel A 21. To the right, typical zoomorph of phase 3 (panel A 27) (*Tamanart Team*).



Phase 4 (A 22)



Phase 4-5 (A 2)



Phase 4-5 (A 2)



Phase 6 (A 6)



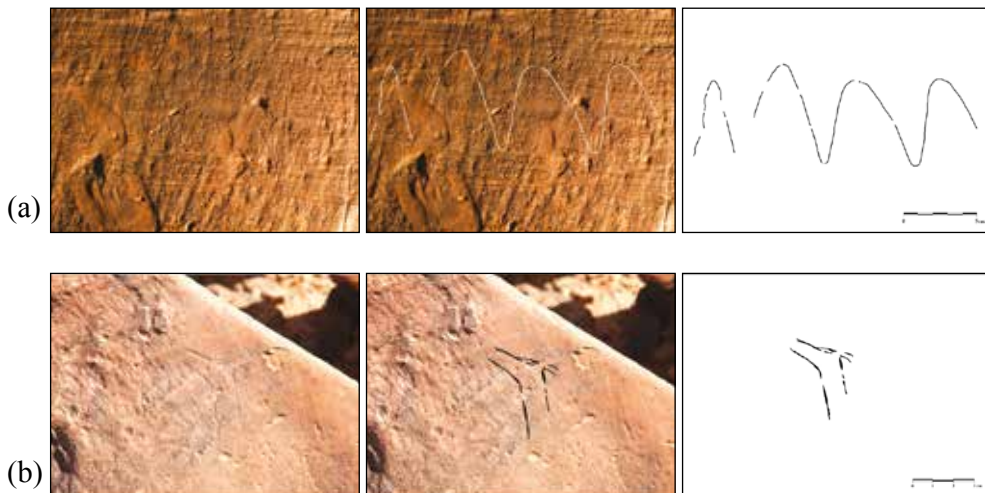
Fig. 7: Representative motifs of the last phases of Anou L'haj 1. The anthropomorph of phase 7 is superimposed to an elephant assigned to phase 3 (*Tamanart Team*).

5. Incised very fine line and fine line engravings (phases 1 and 2)

Fine line and very fine line engravings are hardly noticeable during the daytime. We have documented them at night using artificial indirect lighting to capture all the details and we also have taken macro and microphotographs. We consider these to be the oldest evidences of the sequence (Tachokalt and Anou L'haj).

5.1 Tachokalt 1

With the incised linear engraving techniques, very fine lines (less than 2 mm) (fig. 8) and fine lines (2-5 mm) (fig. 9; fig. 10) are obtained. The former present a dark patina whereas the latter have nearly the same shading as the rock surface. In Tachokalt 1 the linear incision is in a minority in comparison with other techniques such as pecking (subsequent phases), and the motifs made in very fine line are concentrated in the southeastern slope of the promontory (sector A).



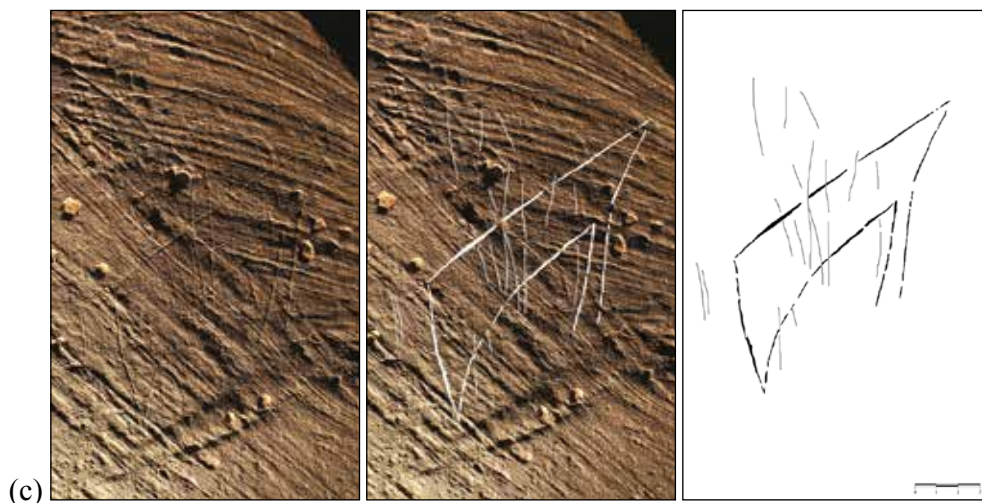


Fig. 8: Motifs carried out in very fine line in Tachokalt 1: a: A 26; b: A 27; c: A 29 (*Tamanart Team*).

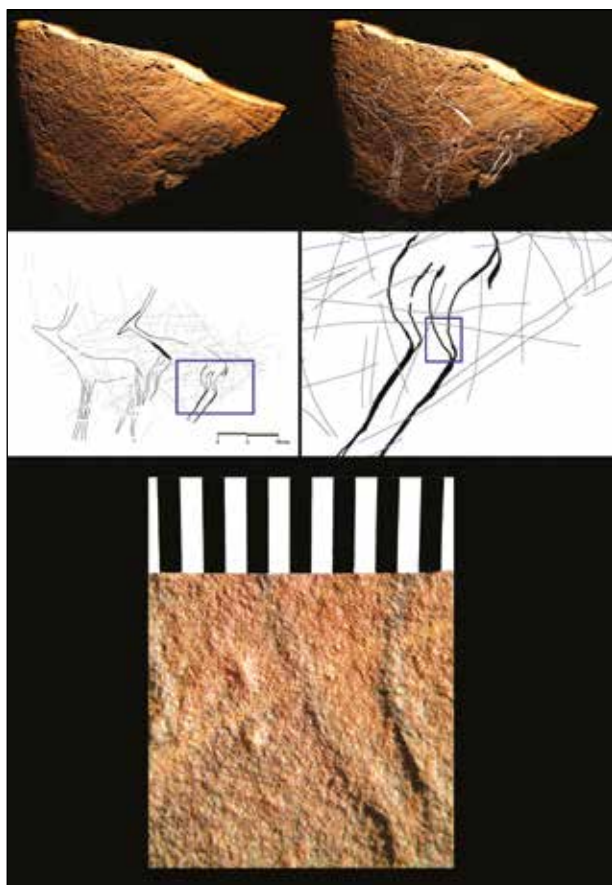


Fig. 9: Microphotograph of the hindquarters of one of the gazelles engraved in fine linear incision in panel B 1 of Tachokalt 1 corresponding to phase 2. Superposed, recent lines with scarce patina are noticed in contrast with the dark tones of the lines of the motif (*Tamanart Team*).

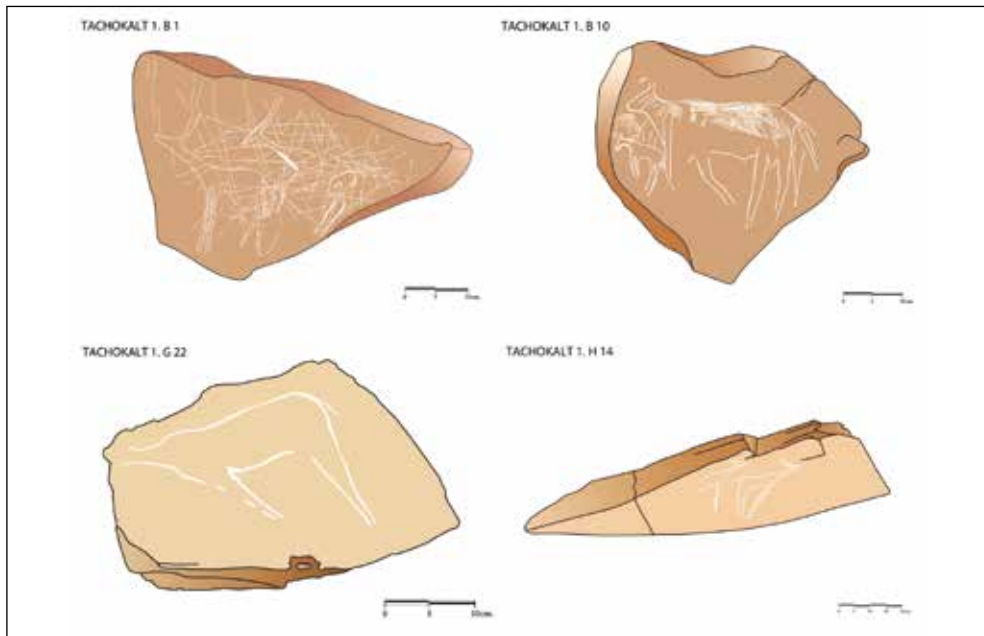


Fig. 10: Digital tracings of some motifs in fine line in Tachokalt 1, including the support (phase 2) (*Tamanart Team*).

5.2 Anou L'haj 1

The very fine line engraving technique (phase 1) is represented in Anou L'haj 1 by the ostriches panel (fig. 11) and the possible gazelle head (fig. 12). For their part, the fine line figures (phase 2) are located in several motifs, some of them hard to identify. Three of these latter figures appear infraposed to other motifs: a gazelle of naturalistic tendency under another one of phase 3 (A 21) (fig. 6), a pecked figure superimposed to an antelope (A 32) (fig. 13) and another antelope that, despite having been very altered by retouching, still retains its head in its original condition (A 37) (fig. 14).



Fig. 11: One of the ostriches engraved in very fine linear incision in Anou L'haj 1 (panel B 4) that would correspond to Tachokalt 1 phase 1. Photograph and digital tracing (*Tamanart Team*).



Fig. 12: Possible gazelle head made by very fine linear incision in Anou L'haj 1 (A 26) that we link to Tachokalt 1 phase 1. Photograph and digital tracing (*Tamanart Team*).

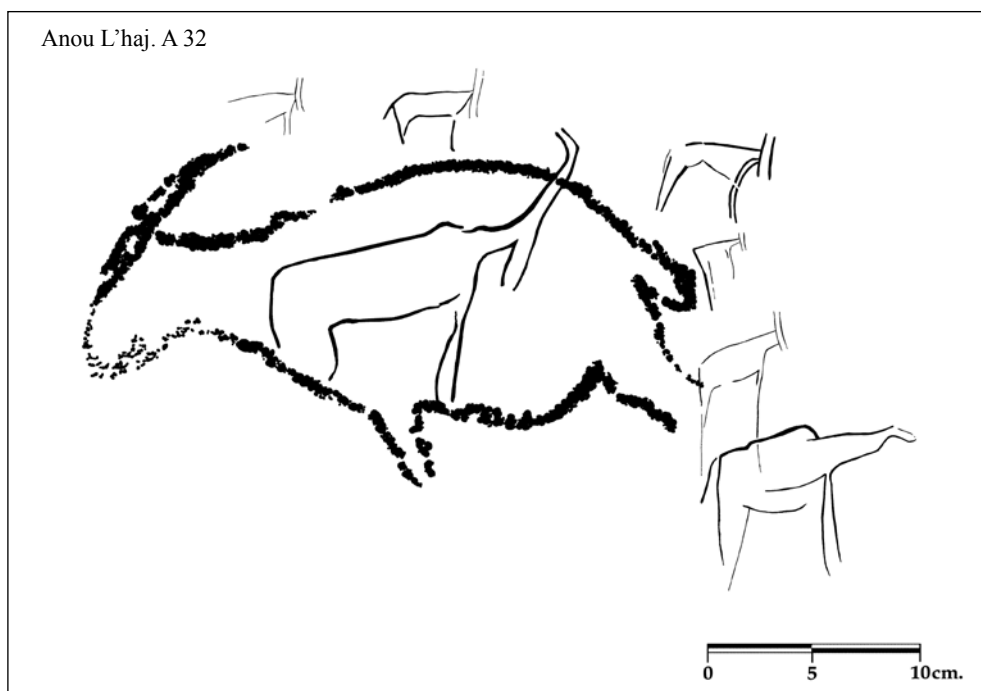


Fig. 13: Anou L'haj 1 panel A 32. The pecked animal (phase 5) is superimposed to the great antelope made with fine linear incision technique (phase 2) and to one of the smallest quadrupeds. These solve their heads with two parallel lines representing the horns and an open mouth in a similar way to that of the antelope (*Tamanart Team*).



Fig. 14: Anou L'haj 1 panel A 37. Antelope whose original technique can only be seen in its head (note the uniformity of the patina between the stroke and the support). This figure has been severely damaged, distorting its proportions at first glance. Nevertheless, based on the horns and face, a certain parallelism with Tachokalt 1 phase 2 can be found (*Tamanart Team*).

6. Typology and technique

In Tachokalt 1 (table 7) 408 motifs have been documented. Many of these (137) do not conform to clear typologies. Another 74 are quadrupeds whose anatomical features are not explicit enough to define the depicted species. Consequently, the typological analysis is based on 197 motifs that were arranged in five thematic categories:

Zoomorphs

113 figures have been registered, identifying 13 species. The most depicted animal is the bull (34), followed by barbary sheep (20), ostrich (14), gazelle (11), elephant (8), goat (7), scimitar-horned oryx (6) and antelope (6). These typologies, carried out almost entirely using pecking techniques, are characteristic of the intermediate phases (4, 4-5 and 5), and their high incidence indicates that they correspond to the moments of greatest artistic activity in this site. The gazelles, the elephant, the scimitar-horned oryx and the antelope have also representatives in the early stages, in which they are made by incision or abrasion. Aurochs (3) are only depicted in the initial phases. Finally, african wild ass, giraffe, cheetah and bustard, with a single representative each, have a testimonial presence in Tachokalt 1. Zoomorphs have not been included in the final stages (6-7) (Table 5).

Anthropomorphs

Five individuals were documented, all of them carried out using pecking techniques and assigned to the final stages (phases 6-7).

Axes

The 4 representations of axes located are limited to two panels and are associated with two anthropomorphs (2) and a bull (2). They are carried out by pecking and would correspond to phase 6.

Geometrics

The geometric motifs have been classified into 8 typologies that, ordered according to their numerical incidence, would be: meander (18), solo or in series, group of lines (12), circular (12), group of dots (10), globular (6), angular (5), grid (4) and spiral (2). With the exception of the meanders and some group of lines, also made by linear incision in the initial phases (1-2), all of them are distinctively of phase 6.

Polymorphs

They are motifs made up of various forms whose interpretation is very uncertain. In Tachokalt 1, 4 of them have been defined as such, carried out by pecking and assigned to phase 6.

		Quantity	Technique						
			Incision		Scraping	Abrasion		Pecking	
			Very fine linear marks (< 2 mm)	Fine linear marks (2-5 mm)	Superficial	Medium linear marks (4-10 mm)	Thick linear marks (> 10 mm)	Superficial	Deep
Z O O M O R P H S	Elephant	8			1		1	2	4
	African wild ass	1						1	
	Giraffe	1						1	
	Gazelle	11	4	3		2		1	1
	Aurochs	3		2	1				
	Bull	34						10	24
	Antelope	6			2	2		1	1
	Barbary sheep	20							20
	Goat	7							7
	Scimitar-horned oryx	6			2	1			3
	Cheetah	1						1	
	Ostrich	14					1	5	8
	Bustard	1							1
Unidentified quadruped	74	1	2		1		25	45	

Anthropomorphs		5		1				1	3
Tools	Axe	4							4
G E O M E T R I C S	Circular	12						1	11
	Angular	5							5
	Meander	18	1	3		1			13
	Spiral	2							2
	Grid	4		3		1			
	Globular	6							6
	Group of lines	12	3	7		2			
	Group of dots	10						5	5
Polymorphs		6						1	5
Undefined Remains		137	1	3	1	2		50	80
Total		408	10	24	7	12	2	105	248

Table 7: Technomorphological evaluation of Tachokalt 1.

In Anou L'haj 1, 81 motifs were documented (table 8), of which 19 could not be defined and another 19 are unidentified quadrupeds. Its typological analysis is based on 43 figures, arranged in 3 thematic groups:

Zoomorphs

Depictions of 8 species are observed. The bull is by far the most abundantly depicted animal (11). Made by pecking and abrasion (in this case, the abrasion is the product of subsequent recycling), all of them are associated with the intermediate phases. There are few examples of the rest of the typologies: gazelle (4), antelope (2), scimitar-horned oryx (2), ostrich (2), warthog (1), elephant (1) and a lion (1). With the exception of the warthog (scraped) and the lion (pecked), all of these are already depicted in the initial phases (1-3). Regarding the typologies of Tachokalt 1, the African wild ass, the giraffe, the aurochs, the barbary sheep (in contrast to their abundance in Tachokalt 1), the goat, the cheetah and the bustard disappear while the warthog and the lion appear (Table 6).

Anthropomorphs

7 individuals have been documented, made by abrasion (5), pecking (1) and incision (1). In the case of abrasion, it must be the product of subsequent recycling since it seems that its original technique was pecking. These 5 anthropomorphs, which form a set, can represent a group of warriors and are assigned to phase 6. The other two correspond to the final phase.

Geometrics

They have been classified into 4 typological categories: group of lines (5), circular (4), meander (2) and grid (1). In its execution, abrasive, pecked and incised techniques are used and correspond to the last phases of the graphic sequence (phases 6-7).

		Quantity	Technique					
			Incision		Scraping	Abrasion	Pecking	
			Very fine linear marks (< 2 mm)	Fine linear marks (2-5 mm)	Superficial	Medium linear marks (4-10 mm)	Superficial	Deep
Z O O M O R P H S	Elephant	1				1		
	Gazelle	4	1	1		1		1
	Bull	11				4	5	2
	Antelope	2	1	1				
	Scimitar-horned oryx	2				1		1
	Warthog	1			1			
	Lion	1					1	
	Ostrich	2	2					
	Unidentified quadruped	19	6	2		3	2	6
Anthropomorphs		7		1		5	1	
G E O M E.	Circular	4					1	3
	Meander	2						2
	Grid	1		1				
	Group of lines	5		4		1		
Undefined Remains		19		7		3	8	1
Total		81	10	17	1	19	18	16

Table 8: Technomorphological evaluation of Anou L'haj 1.

7. Style and chronology of the first phases (1 and 2)

The representations of the first two phases of Tachokalt and Anou L'haj present techno-stylistic similarities, in some cases even recurring, despite the fact that their limited number does not allow for a systematic assessment in this regard. Note the figures in Tachokalt 1 stone block A 27 and Anou L'haj stone blocks A 26 and B 4. Although these are two possible quadrupeds and an ostrich, the way the heads are drawn is very similar (fig. 15). We are, therefore, facing stylistic conventions that would determine the iconographic structure of the motifs. Other significant features would be the elongated bodies and the open

ending of the snouts of the quadrupeds. The animals are solved from simple linear strokes but they also present volumetric details that emphasize anatomical concepts (stone blocks B1 and B 4 of Tachokalt and Anou L'haj respectively) bringing us closer to a marked naturalism that is reinforced by the realism of the hooves of one of the gazelles in block B 1 (hindquarters) (fig. 9; fig. 11).



Fig. 15: Comparison that places emphasis on the formal similarities between the heads and necks of these phase 1 motifs (*Tamanart Team*).

In spite of being a controversial issue, we must not overlook that some of the technical and stylistic features of these zoomorphs remind us of southern European Palaeolithic art.²⁴ We refer to the ending of the snout of the zoomorphous figures, open in some cases, the ears or linear horns in parallel, the way the neck and chest are articulated, the naturalistic representation of anatomical details or the definition of the hooves, etc., and also to the attitude and animation of some figures.²⁵ We find a certain parallelism associated with the phase 1 figures on the way the heads are designed and the lengthening of the bodies or necks of the fine engraved zoomorphs in Ardales cave, Málaga,²⁶ or those painted by fine strokes in Atlanterra cave, Cádiz (Upper Magdalenian).²⁷ It could also be stressed here that the incised fine line technique is not unrelated to Late Pleistocene and Early Holocene depictions (with which they share technical and stylistic features) in

24. A. Leroi-Gourhan, *Préhistoire de l'art occidental. L'art et les grandes civilisations*, 1 (Paris (2^a édition): Éditions d'Art Lucien Mazenod, 1971).

25. V. Villaverde Bonilla, *Arte paleolítico de la Cova del Parpalló. Estudio de la colección de plaquetas y cantos grabados y pintados* (Valencia: Diputació de València, Servei d'Investigació Prehistòrica, 1994).

26. P. Cantalejo Duarte et al., *La Cueva de Ardales: Arte prehistórico y ocupación en el Paleolítico Superior. Estudios, 1985-2005* (Málaga: Centro de Ediciones de la Diputación de Málaga, 2006); R. Maura Mijares, *Arte prehistórico en las Tierras de Antequera- Prehistoric Art in the Land of Antequera* (Sevilla: Junta de Andalucía, Consejería de Cultura, 2011), 24-121.

27. S. Ripoll López and M. Mas Cornellà, "La grotte d'Atlanterra (Cádiz, Espagne)-Atlanterra cave (Cádiz, Spain)," *International Newsletter on Rock Art* 23 (1999): 3-6; M. Mas Cornellà and S. Ripoll López, "Technologie et thématique de l'art rupestre paléolithique sous abri rocheux dans le sud de la Péninsule Ibérique (Andalousie, Espagne)," in *L'art paléolithique à l'air libre. Le paysage modifié par l'image. Tautavel-Campôme, 7-9 octobre 1999*, ed. D. Sacchi (Carcassone: Groupe Audois d'Études Préhistoriques, 2002), 91-93.

open-air sites in the Iberian Peninsula.²⁸ We cannot link these engravings to the Early Period defined for other areas in North Africa.²⁹ Neither can we link them to the fauna that is traditionally taken into account,³⁰ although we can affirm that the species identified here for the two first phases (gazelles, aurochs, antelopes and ostriches) are representative of the Late Pleistocene in the North Africa Atlantic area.³¹

The fact that since 20000 BP the climatic conditions of the Atlantic area of the Sahara and particularly those of the Draa valley were different from those of the rest of the Sahara³² suggests an older age than the one accepted up until now for the engravings of the first phases of Tamanart, completing chronological sequences that already pointed in this sense in relation to the rock art of Morocco,³³ and considering as well that the Lower Draa was an important topographical passage whose palaeoenvironmental characteristics do not necessarily have to follow the same periodization as the rest of the Sahara.

28. R. de Balbín Behrmann (ed), *Arte Prehistórico al aire libre en el Sur de Europa* (Valladolid: Junta de Castilla y León, Consejería de Cultura y Turismo, 2008); M. Mas, “El arte epipaleolítico-mesolítico en Europa,” in *El arte en la Prehistoria*, M. Menéndez, M. Mas and A. Mingo (Madrid: Universidad Nacional de Educación a Distancia-UNED, 2009), 335-72.

29. M. Hachid, “La domestication des ovins, caprins et boeufs domestiques au Maghreb et un âge pour l’art rupestre de l’Afrique du Nord: 8000 ans cal BP – The domestication of sheep, goats and domestic cattle in the Maghreb and a dating for North African Rock Art: 8000 cal BP,” *International Newsletter on Rock Art* 73 (2015): 18-31.

30. J.L. Le Quellec, “Répartition de la grande faune sauvage dans le Nord de l’Afrique durant l’Holocene,” *L’Anthropologie* 103 (1999): 161-76.

31. H. Jousse, *Atlas of Mammal Distribution through Africa from the LGM (~18 ka) to Modern Times. The zooarchaeological record* (Oxford: Archaeopress, 2017); J.H. Cooper, “The Late Pleistocene avian assemblages from sectors 8 and 10,” in *Cemeteries and Sedentism in the Later Stone Age of NW Africa: Excavations at Grotte des Pigeons, Taforalt, Morocco*, ed. R.N.E. Barton et al., Monographien des Römisch-Germanischen Zentralmuseums, 147 (Mainz: Römisch-Germanisches Zentralmuseum, Leibniz-Forschungsinstitut für Archäologie Monographien des Römisch-Germanischen Zentralmuseums, 2019), 313-30; E. Turner, “Large mammalian faunal assemblages,” in *Cemeteries and Sedentism in the Later Stone Age of NW Africa: Excavations at Grotte des Pigeons, Taforalt, Morocco*, ed. R.N.E. Barton et al., Monographien des Römisch-Germanischen Zentralmuseums, 147 (Mainz: Römisch-Germanisches Zentralmuseum, Leibniz-Forschungsinstitut für Archäologie Monographien des Römisch-Germanischen Zentralmuseums, 2019), 239-308.

32. A. Salih, J. Onrubia-Pintado and M. Noçairi, “El Aioun-Tindouf,” in *Paléomilieux et Peuplement Préhistoriques Sahariens au Pléistocène Supérieur-Palaeoenvironments and Prehistoric Populations of the Sahara in the Upper Pleistocene. PICG 252. Solignac, 13-15 juin 1991* (Paris: Éditions L’Harmattan, 1997), 21-36; R. Heckendorf, “Bubalin” und “Bovidien” in *Südmarokko. Kontext, Klassifikation und Chronologie der Felsbilder im mittleren Draa-Tal* (Wiesbaden: Reichert Verlag, 2008), 286.

33. A. Lemjidi, H. Aouraghe and A. Atmani, “L’art rupestre de Figuig et Ich (Maroc oriental): nouvelles données,” *Journal of Materials and Environmental Sciences* 7 (2016): 3738-9; A. Lemjidi, “Arts rupestres marocains, un miroir esquissant des paléo-paysages maghrébins,” in *La Conférence Internationale RALI 2015. Marrakech 5-11 octobre 2015*, ed. K. El Hariri and H. Chennaoui Aoudjehane (Rabat: Ministère de l’Energie, des Mines et du Développement Durable, 2018): 137-48.

https://cartesgeoscientifiques.mem.gov.ma/catalogue/pages/beaux_livres/livres/conference_internationale/index.html; N. Oulmakki, A. Lemjidi and E.M. Asmahri, “Le Bani moyen à l’aube de l’Histoire d’après des données rupestres,” *Hespéris-Tamuda* LIV, 3 (2019): 205-23.

Furthermore, the human settlement of the Atlantic area of North Africa in the Later Stone Age is increasingly better documented.³⁴ At the same time, evidences of possible artistic manifestations of the Late Pleistocene have also been defined in this northwestern area.³⁵ In Morocco, moreover, we have some evidence of engraving on stone (mobiliary art) during the Iberomaurusian, although the figures are difficult to interpret.³⁶ We highlight, by formal analogy with the depictions of Tachokalt and being this well dated, the zigzag-meander engraved in the bone fragment found in Ghar Cahal.³⁷ Zigzags or meanders are also documented in mobiliary art during the Upper Palaeolithic in the Mediterranean Arc of the Iberian Peninsula, being more abundant in the Magdalenian.³⁸ Neither can we forget the human settlement during the Early Holocene in sites relatively close to the Tamanart valley,³⁹ or in Tachokalt itself, as evidenced by the lithic industry recovered in a superficial survey.⁴⁰

34. R.N.E. Barton et al., "The Late Upper Palaeolithic Occupation of the Moroccan Northwest Maghreb During the Last Glacial Maximum," *African Archaeological Review* 22 (2005): 77-100; A. Bouzouggar et al., "Le Paléolithique supérieur au Maroc: apport des sites du Nord-Ouest et de l'Oriental," in *IV Simposio de Prehistoria Cueva de Nerja. La Cuenca Mediterránea durante el Paleolítico Superior. 38.000-10.000 años*, ed. J.L. Sanchidrián Torti, A.M. Márquez Alcántara and J.M. Fullola Pericot (Nerja: Fundación Cueva de Nerja, 2005): 138-50; R. Nespoulet et al., "Palaeolithic and Neolithic Occupations in the Témara Region (Rabat, Morocco): Recent Data on Hominin Contexts and Behavior" *African Archaeological Review* 25 (2008): 21-39; D.I. Olszewski, U.A. Schurmans and B.A. Schmidt, "The Epipaleolithic (Iberomaurusian) from Grotte des Contrebandiers, Morocco," *African Archaeological Review* 28 (2011): 97-123; N. Barton and A. Bouzouggar, "Hunter-gatherers of the Maghreb 25,000-6,000 year ago," in *The Oxford Handbook of African Archaeology*, ed. P. Mitchell and P. Lane (Oxford: Oxford University Press, 2013): 431-43; B. Raissouni et al., *Carta arqueológica del Norte de Marruecos (2008-2012). Prospección y yacimientos, un primer avance. Vol. I, Villes et sites archéologiques du Maroc, V (Cádiz: Servicio de Publicaciones de la Universidad de Cádiz, 2015)*; R.N.E. Barton et al. (ed), *Cemeteries and Sedentism in the Later Stone Age of NW Africa: Excavations at Grotte des Pigeons, Taforalt, Morocco*, Monographien des Römisch-Germanischen Zentralmuseums, 147 (Mainz: Römisch-Germanisches Zentralmuseum, Leibniz-Forschungsinstitut für Archäologie, 2019); A. Bouzouggar et al., "Les principales découvertes archéologiques dans les séquences paléolithiques des grottes de Taforalt et du Rhafas (Maroc Oriental)," *Hespéris-Tamuda* LIV (3) (2019): 75-88.

35. J. Ramos Muñoz, "Abrigo y cueva de Marsa. Un nuevo depósito estratigráfico con arte rupestre prehistórico en el norte de Marruecos," in *Actes du Colloque La Maurétanie & le monde méditerranéen. Tétouan, 24-26 novembre 2016*, ed. M. Ghottes et al. (Tétouan: Université Adbelmalek Es-Saâdi, Faculté des Lettres et Sciences Humaines, 2018): 172-93; D.S. Fernández Sánchez et al. (ed), *Tajo de las Abejeras y cueva de las Estrellas (Castellar de la Frontera, Cádiz)* (Málaga: ArdalesTur Ediciones, 2019), 124-31.

36. H. Camps-Fabrer, *Matière et art mobilier dans la préhistoire nord-africaine et saharienne*. Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques, V (Paris: Arts et Métiers Graphiques, 1966), 209-38.

37. A. Bouzouggar et al., "Reevaluating the Age of the Iberomaurusian in Morocco," *African Archaeological Review* 25 (2008): 3-19.

38. Villaverde Bonilla, *Arte paleolítico*, 232-3.

39. J. Onrubia-Pintado and A. Ballouche, "Les industries épipaléolithiques de Taoulekt. Les sites TR-3 et TR-15," in *Le bassin de Tarfaya (Maroc atlantique, 28° Nord). Paléoenvironnements, paléanthropologie, préhistoire*, ed. J. Riser (Paris: L'Harmattan, 1996), 153-90; J. Soler Subils, *Les peintures rupestres préhistoriques del Zemur (Sahara Occidental)* (Girona: Documenta Universitaria, 2007), 34-35, 637-48; F. Borrell, "Early Holocene Occupations at Ashash Rock Shelter (Zemmur, Western Sahara)" *Journal of African Archaeology* 16 (2018): 83-103.

40. Mas et al., "Proyecto Tamanart (Marruecos): Documentación," 24-26.

Conclusions

Very fine-line and fine-line incised motifs in Tachokalt and Anou L'haj (phases 1 and 2) show a clear stylistic and iconographic homogeneity in terms of their technique as well as their formal structuring. These depictions have been published here in their entirety and they are opposed, considering all these factors, to the rest of thousands of motifs documented so far in the Tamanart valley. Their age is endorsed by the taphonomic implications and the characteristics and dark shade of the patinas. These differ from the freshness and lighter shade of the engravings of subsequent phases (in relation to the rock surface). This is recurring and must be taken into account. The themes bring us closer to groups of hunter-gatherers at a time when the density of the human settlement in these sites was far lower, which is reflected on the lack of earlier depictions. The conceptual unity of the two first phases would imply different socio-economic circumstances although, at the same time, similar to those in phases 3 and 4.

In view of the foregoing considerations, we reach the conclusion that there could have been contacts between the south of Europe and North Africa (Late Pleistocene-Early Holocene) or there may have existed communities with similar cultural structures which resulted in similar styles and forms, as it happens in other locations in the world. Paraphrasing G. Sauvet, the second would be an opinion whereas the first one is a scientific hypothesis susceptible to being contrasted by new archaeological data in the future.⁴¹

Bibliography

- Balbín Behrmann, R. de (ed). *Arte Prehistórico al aire libre en el Sur de Europa*. Valladolid: Junta de Castilla y León, Consejería de Cultura y Turismo, 2008.
- Barton, R.N.E., A. Bouzouggar, S.N. Collcutt, R. Gale, T.F.G. Higham, L.T. Humphrey, S. Parfitt, E. Rhodes, C.B. Stringer and F. Malek. "The Late Upper Palaeolithic Occupation of the Moroccan Northwest Maghreb During the Last Glacial Maximum." *African Archaeological Review* 22 (2005): 77-100.
- Barton, N. and A. Bouzouggar. "Hunter-gatherers of the Maghreb 25,000-6,000 years ago." In *The Oxford Handbook of African Archaeology*, ed. P. Mitchell and P. Lane, 431-43. Oxford: Oxford University Press, 2013.
- Barton, R.N.E., A. Bouzouggar, S.N. Collcutt and L.T. Humphrey (eds). *Cemeteries and Sedentism in the Later Stone Age of NW Africa: Excavations at Grotte des Pigeons, Taforalt, Morocco*. Monographien des Römisch-Germanischen Zentralmuseums, 147. Mainz: Römisch-Germanisches Zentralmuseum, Leibniz-Forschungsinstitut für Archäologie, 2019.
- Bednarik, R.G. "The IFRAO standard scale." *Rock Art Research* 8 (1991): 78-79.
- Bernaldez Sánchez, E., E. García-Viñas, M. Mas Cornellà, A. Lemjidi, M. Solís Delgado, R. Maura Mijares and A. Oumouss. "Palaeobiodiversity versus biodiversity. Animal representations in Tamanart and Azguer rock art (Morocco)." In *15th Congress of PanAfrican Archaeological Association for Prehistory and Related Studies*.

41. G. Sauvet, "Du bon usage des comparaisons d'ans l'art rupestre: le cas des signes," in *Sobre rocas y huesos. Las sociedades prehistóricas y sus manifestaciones plásticas*, ed. M.A. Medina Alcaide et al. (Córdoba: Universidad de Córdoba-Patronato de la Cueva de Nerja, 2015), 16-17.

- Sessions and abstracts book. Rabat, 10-14 September 2018*, 62. Rabat: Pan-African Archaeological Association, 2018.
- Borrell, F., G. Alcalde, I. Clemente, M. Saña, J. Soler and N. Soler. "Early Holocene Occupations at Ashash Rock Shelter (Zemmur, Western Sahara)." *Journal of African Archaeology* 16 (2018): 83-103.
- Bouzougar, A., R.N.E. Barton, S.N. Collcutt, S. Parfitt, T. Higham, E. Rhodes and R. Gale. "Le Paléolithique supérieur au Maroc: apport des sites du Nord-Ouest et de l'Orient." In *IV Simposio de Prehistoria Cueva de Nerja. La Cuenca Mediterránea durante el Paleolítico Superior. 38.000-10.000 años*, ed. J.L. Sanchidrián Torti, A.M. Márquez Alcántara and J.M. Fullola Pericot, 138-50. Nerja: Fundación Cueva de Nerja, 2005.
- Bouzougar, A., R.N.E. Barton, S. Blockley, C. Bronk-Ramsey, S.N. Collcutt, R. Gale, T.F.G. Higham, L.T. Humphrey, S. Parfitt, E. Turner and S. Ward. "Reevaluating the Age of the Iberomaurusian in Morocco." *African Archaeological Review* 25 (2008): 3-19.
- Bouzougar, A., N. Barton, L. Humphrey, E.H. Talbi, L. Boudchiche, J. Krause and J.J. Hublin. "Les principales découvertes archéologiques dans les séquences paléolithiques des grottes de Taforal et du Rhafas (Maroc Oriental)." *Hespéris-Tamuda* LIV (3) (2019): 75-88.
- Camps-Fabrer, H. *Matière et art mobilier dans la préhistoire nord-africaine et saharienne*. Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques, V. Paris: Arts et Métiers Graphiques, 1966.
- Cantalejo Duarte, P., R. Maura Mijares, M.M. Espejo Herrerías, J.F. Ramos Muñoz, J. Medianero Soto, A. Aranda Cruces and J.J. Durán Valsero. *La Cueva de Ardales: Arte prehistórico y ocupación en el Paleolítico Superior. Estudios, 1985-2005*. Málaga: Centro de Ediciones de la Diputación de Málaga, 2006.
- Cooper, J.H. "The Late Pleistocene avian assemblages from sectors 8 and 10." In *Cemeteries and Sedentism in the Later Stone Age of NW Africa: Excavations at Grotte des Pigeons, Taforal, Morocco*, ed. R.N.E. Barton, A. Bouzougar, S.N. Collcutt and L.T. Humphrey, Monographien des Römisch-Germanischen Zentralmuseums, 147, 313-30. Mainz: Römisch-Germanisches Zentralmuseum, Leibniz-Forschungsinstitut für Archäologie, 2019.
- Duveyrier, H. "De Mogador au Djebel Tabayoudt. Par le rabbin Mardochee Abi Serour. Résumé du journal de voyage." *Bulletin de la Société de Géographie*, December (1875): 3-15 (offprint).
- Duveyrier, H. "Sculptures antiques de la province marocaine de Sous." *Bulletin de la Société de Géographie* August (1876): 129-46.
- Evin, G. "Dans le Sud Marocain. Sur les traces du Rabbin Mardochee." *Bulletin du Comité de l'Afrique française* January (1936): 16-20.
- Fernández Sánchez, D.S., J. Ramos Muñoz, H. Collado Giraldo, E. Vijande Vila and A.J. Luque Rojas (eds). *Tajo de las Abejeras y cueva de las Estrellas (Castellar de la Frontera, Cádiz)*. Málaga: ArdalesTur Ediciones, 2019.
- Gálvez Horrillo, S. and J. Romero Pérez. "Elaboración de cartografía temática de usos de suelo del valle de Tamanart (Marruecos) a partir de imágenes Landsat." Trabajo fin de carrera, Universidad Politécnica de Madrid, Escuela Técnica Superior de Ingenieros en Topografía, Geodesia y Cartografía, 2013.
- García Algarra, M. "Las inscripciones rupestres tiffinagh en Aouinet Azguer 9 (Tan Tan, Marruecos)." *Revista Otarq* 3 (2018): 7-22.
- Hachid, M. "La domestication des ovins, caprins et boeufs domestiques au Maghreb et un âge pour l'art rupestre de l'Afrique du Nord: 8000 ans cal BP- The domestication of sheep, goats and domestic cattle in the Maghreb and a dating for North African Rock Art: 8000 cal BP." *International Newsletter on Rock Art* 73 (2015): 18-31.

- Heckendorf, R. "Bubalin" und "Bovidien" in Südmarokko. Kontext, Klassifikation und Chronologie der Felsbilder im mittleren Draa-Tal. Wiesbaden: Reichert Verlag, 2008.
- Jousse, H. *Atlas of Mammal Distribution through Africa from the LGM (~18 ka) to Modern Times. The zooarchaeological record*. Oxford: Archaeopress, 2017.
- Le Quellec, J.L. "Répartition de la grande faune sauvage dans le Nord de l'Afrique durant l'Holocène." *L'Anthropologie* 103 (1999): 161-76.
- Le Quellec, J.L. "De quoi Tazina est-il le nom?" *Les Cahiers de l'AARS* 17 (2014): 151-60.
- Lemjidi, A., H. Aouraghe and A. Atmani. "L'art rupestre de Figuig et Ich (Maroc oriental): nouvelles données." *Journal of Materials and Environmental Sciences* 7 (2016): 3718-39.
- Lemjidi, A. "Arts rupestres marocains, un miroir esquissant des paléo-paysages maghrébins." In *La Conférence Internationale RALI 2015. Marrakech 5-11 octobre 2015*, ed., K. El Hariri and H. Chennaoui Aoudjehane, 137-48. Rabat: Ministère de l'Energie, des Mines et du Développement Durable, 2018, https://cartesgeoscientifiques.mem.gov.ma/catalogue/pages/beaux_livres/livres/conference_internationale/index.html.
- Lenz, O. *Timbuktu. Reise durch Marokko, die Sahara und den Sudan*. Leipzig: F. A. Brockhaus, 1884.
- Leroi-Gourhan, A. *Préhistoire de l'art occidental. L'art et les grandes civilisations*, 1. Paris (2^a édition): Éditions d'Art Lucien Mazenod, 1971.
- Lhote, H. "Gravures rupestres de Tachoukent et de Tan Zega (Sud marocain)." *Libyca* XII (1964): 225-45.
- Mas Cornellà, M. and S. Ripoll López. "Technologie et thématique de l'art rupestre paléolithique sous abri rocheux dans le sud de la Péninsule Ibérique (Andalousie, Espagne)." In *L'art paléolithique à l'air libre. Le paysage modifié par l'image. Tautavel-Campôme, 7-9 octobre 1999*, ed. D. Sacchi, 87-93. Carcassonne: Groupe Audois d'Études Préhistoriques, 2002.
- Mas Cornellà, M. *La Cueva del Tajo de las Figuras*. Madrid: UNED, 2005.
- Mas Cornellà, M. "Producción y usos del arte rupestre e implicaciones cronológicas. Algunos ejemplos en Andalucía, España." In *Tramas en la piedra. Producción y usos del arte rupestre*, ed. D. Fiore and M.M. Podestá, 33-41. Buenos Aires: Sociedad Argentina de Antropología-Asociación Amigos del Instituto Nacional de Antropología-World Archaeological Congress, 2006.
- Mas, M. "El arte epipaleolítico-mesolítico en Europa." In *El arte en la Prehistoria*, ed. M. Menéndez, M. Mas and A. Mingo, 335-72. Madrid: Universidad Nacional de Educación a Distancia-UNED, 2009.
- Mas Cornellà, M., R. Maura Mijares, M. Solís Delgado and J. Pérez González. "Reproducción digital, microfotografía estereoscópica y fotografía esférica aplicadas a la interpretación del arte rupestre prehistórico." *Cuadernos de Arte Rupestre* 6 (2013): 77-83.
- Mas Cornellà, M., L.M. Gómez García, A. Caballero Klink, G. Torra Colell, A. Lemjidi and A. Oumouss. "Proyecto Tamanart. Prospección y documentación de yacimientos con arte rupestre del Valle de Tamanart (provincia de Tata, región de Guelmin Smara, Marruecos). Campaña de 2011-2012." In *Excavaciones en el exterior 2011*, ed. C. Martín Morales, Informes y Trabajos, 9, 490-507. Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2013, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>.
- Mas Cornellà, M., A. Lemjidi, A. Oumouss, G. Torra Colell, R. Maura Mijares, M. Solís Delgado, J. Pérez González, P.P. Pérez García, M. Farjas Abadía, J.M. Bezares Torrón, D. Jiménez Espartero and B. Gavilán Ceballos. "Proyecto Tamanart (Marruecos): Documentación de yacimientos con arte rupestre." In *Excavaciones en el exterior*

- 2012, ed. C. Martín Morales, *Informes y Trabajos*, 11, 11-30. Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2014, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>.
- Mas Cornellà, M., A. Lemjidi, A. Oumouss, G. Torra Colell, R. Maura Mijares, M. Solís Delgado, J. Pérez González, A. Jorge García, N. Oulmakki, Z. Amrani, E.M. Asmhri, M. Farjas Abadía, S. Gálvez Horrillo, J. Romero Pérez and B. Gavilán Ceballos. "Proyecto Tamanart 2013-2014." In *Excavaciones en el exterior 2013*, ed. C. Martín Morales, *Informes y Trabajos*, 12, 15-34. Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2015, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>.
- Mas Cornellà, M., A. Lemjidi, A. Oumouss, G. Torra Colell, R. Maura Mijares, M. Solís Delgado, J. Pérez González, E.M. Asmhri, N. Oulmakki, Z. Amrani, M. Farjas Abadía, B. Gavilán Ceballos and M. García Algarra. "Proyecto Tamanart 2014-2015." In *Excavaciones en el exterior 2014*, ed. C. Martín Morales, *Informes y Trabajos*, 14, 12-27. Madrid: Ministerio de Educación, Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2016, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>.
- Mas Cornellà, M., A. Lemjidi, A. Oumouss, G. Torra Colell, R. Maura Mijares, M. Solís Delgado, J. Pérez González, M. García Algarra, E.M. Asmhri, N. Oulmakki, M. Farjas Abadía and B. Gavilán Ceballos. "Proyecto Tamanart 2015-2016." In *Excavaciones en el exterior 2015*, *Informes y Trabajos*, 17, 88-102. Madrid: Ministerio de Cultura y Deporte, Subdirección General del Instituto del Patrimonio Cultural de España, 2019, <https://ipce.culturaydeporte.gob.es/difusion/publicaciones/revistas/revista-informes-y-trabajos.html>.
- Maura Mijares, R. *Arte prehistórico en las Tierras de Antequera-Prehistoric Art in the Land of Antequera*. Sevilla: Junta de Andalucía, Consejería de Cultura, 2011.
- Mbarki, F.Z. "Stratégie de communication digitale pour la promotion du patrimoine rupestre dans le cadre d'un tourisme durable: cas de la vallée de Tamanart," Rapport de projet de fin d'études, Master spécialisé en Marketing et Management Touristique, École Nationale de Commerce et de Gestion à Agadir, 2018.
- Nespoulet, R., M.A. El Hajraoui, F. Amani, A. Ben Ncer, A. Debénath, A. El Idrissi, J.P. Lacombe, P. Michel, A. Oujja and E. Stoetzel. "Palaeolithic and Neolithic Occupations in the Témara Region (Rabat, Morocco): Recent Data on Hominin Contexts and Behavior." *African Archaeological Review* 25 (2008): 21-39.
- Olszewski, D.I., U.A. Schurmans and B.A. Schmidt. "The Epipaleolithic (Iberomaursian) from Grotte des Contrebandiers, Morocco." *African Archaeological Review* 28 (2011): 97-123.
- Onrubia-Pintado, J. and A. Ballouche. "Les industries épipaléolithiques de Taoulekt. Les sites TR-3 et TR-15. In *Le bassin de Tarfaya (Maroc atlantique, 28° Nord). Paléoenvironnements, paléanthropologie, préhistoire*, ed. J. Riser, 153-90. Paris: L'Harmattan, 1996.
- Oulmakki, N., A. Lemjidi and E.M. Asmahri. "Le Bani moyen à l'aube de l'Histoire d'après des données rupestres." *Hespéris-Tamuda* LIV (3) (2019): 205-23.
- Pichler, W. and A. Rodrigue. "The 'Tazina style'." *Sahara* 14 (2003): 89-106.
- Puigauveau, O. du and M. Sénones. "Gravures rupestres de l'Oued Tamanart (Sud marocain)." *Bulletin de l'Institut Français d'Afrique Noire* 15 (1953): 1242-61.
- Raissouni, B., D. Bernal, A. El Khayari, J. Ramos and M. Zouak (eds). *Carta arqueológica del Norte de Marruecos (2008-2012). Prospección y yacimientos, un primer avance*.

- Vol. I. Villes et sites archéologiques du Maroc*, V. Cádiz: Servicio de Publicaciones de la Universidad de Cádiz, 2015.
- Ramos Muñoz, J., M. Zouak, S. Almisas Cruz, A. Barrena Tocino, S. Domínguez Bella, E. Vijande Vila, J.J. Cantillo Duarte, A. Maate, P. Cantalejo, J.M. Gutiérrez, J. Martínez, J.A. Riquelme, M.B. Ruiz Zapata, M.J. Gil García, J. Rodríguez Vidal and I. Clemente Conte. “Abrigo y cueva de Marsa. Un nuevo depósito estratigráfico con arte rupestre prehistórico en el norte de Marruecos.” In *Actes du Colloque La Maurétanie & le monde méditerranéen. Tétouan, 24-26 novembre 2016*, ed. M. Ghottes, M. Habibi, M. Makdoun and S. Kamel, 172-93. Tétouan: Université Abdelmalek Es-Saâdi, Faculté des Lettres et Sciences Humaines, 2018.
- Ripoll López, S. and M. Mas Cornellà. “La grotte d’Atlanterra (Cádiz, Espagne)-Atlanterra cave (Cádiz, Spain).” *International Newsletter on Rock Art* 23 (1999): 3-6.
- Rodrigue, A. “Les gravures rupestres de Tighert et d’Anou el Hadj (Fam el Hisn, Maroc).” *Les Cahiers de l’AARS* 16 (2013): 231-3.
- Rodrigue, A., F. Auvray, J.P. Levallois and M. Villet. “Tachokalt et Tanzida revisités.” *Les Cahiers de l’AARS* 17 (2014): 195-201.
- Ruhlmann, A. *Les recherches de préhistoire dans l’extrême sud Marocain*. Rabat-Paris: Publications du Service des Antiquités du Maroc, 1939.
- Salih, A., J. Onrubia-Pintado and M. Noçairi. “El Aioun-Tindouf.” In *Paléomilieus et Peuplement Préhistoriques Sahariens au Pléistocène Supérieur-Palaeoenvironments and Prehistoric Populations of the Sahara in the Upper Pleistocene. PICG 252. Solignac, 13-15 juin 1991*, 21-36. Paris: Éditions L’Harmattan, 1997.
- Sauvet, G. “Du bon usage des comparaisons d’ans l’art rupestre: le cas des signes.” In *Sobre rocas y huesos. Las sociedades prehistóricas y sus manifestaciones plásticas*, ed. M.A. Medina Alcaide, A. Romero Alonso, R.M. Ruiz Márquez and J.L. Sanchidrián Torti, 15-25. Córdoba: Universidad de Córdoba-Patronato de la Cueva de Nerja, 2015
- Searight, S. *The Prehistoric Rock Art of Morocco. A study of its extension, environment and meaning*. BAR International Series, 1310. Oxford: Archaeopress, 2004.
- Sémach, Y.D. “Un rabbin voyageur marocain: Mardochée Aby Serour.” *Hespéris* VIII (1928): 385-99.
- Sénones, M. and O. du Puigaudeau. “Gravures rupestres de la montagne d’Icht (Sud marocain).” *Journal de la Société des Africanistes* 11 (1941a): 147-56.
- _____. “Gravures rupestres de la vallée moyenne du Draa (Sud marocain).” *Journal de la Société des Africanistes* 11 (1941b): 157-68.
- Simoneau, A. *Catalogue des sites rupestres du Sud marocain*. Rabat: Ministère d’État Chargé des Affaires Culturelles, 1977.
- Skounti, A., A. Lemjidi, N. Oulmakki, E.M. Asmahri and M. Mas Cornellà. “Cupules et rituels: art rupestre et ethnoarchéologie dans la vallée de Tamanart (Maroc).” *Hespéris-Tamuda* LIV (3) (2019): 183-204.
- Soler Subils, J. *Les pintures rupestres préhistoriques del Zemur (Sahara Occidental)*. Girona: Documenta Universitaria, 2007.
- Turner, E. “Large mammalian faunal assemblages.” In *Cemeteries and Sedentism in the Later Stone Age of NW Africa: Excavations at Grotte des Pigeons, Taforal, Morocco*, ed., R.N.E. Barton, A. Bouzougar, S.N. Colcutt and L.T. Humphrey, Monographien des Römisch-Germanischen Zentralmuseums, 147, 239-308. Mainz: Römisch-Germanisches Zentralmuseum, Leibniz-Forschungsinstitut für Archäologie, 2019.
- Villaverde Bonilla, V. *Arte paleolítico de la Cova del Parpalló. Estudio de la colección de plaquetas y cantos grabados y pintados*. Valencia: Diputació de València, Servei d’Investigació Prehistòrica, 1994.

العنوان: نقوش صخرية ما قبل تاريخية دقيقة للغاية في تمنارت (المغرب): موقعي تاشوكالت وانو لحاج

ملخص: نقدم في هذه الدراسة فرزا وتحليلا، لنقوش متنوعة ومختلفة تم إنجازها بخطوط دقيقة (مخدوشة) و/أو جد دقيقة على كتل حجرية و/أو على جدران كوارتزيتية في موقعين من مواقع فنون ما قبل التاريخ بوادي تمنارت بإقليم طاطا بجنوب المغرب، وهما موقع تاشوكالت وموقع أنو لحاج. هذه النقوش (المخدوشة) حاضرة بشكل لافت بالموقعين، وبعض الأشكال الزهرية التي يصعب تصنيفها، وبعضها الآخر يعكس غزلانا وثيرانا متوحشة وظباءا ونعاما وأشكالا متعرجة، بتقنيات لا علاقة لها ببقية النقوش المعينة سابقا في منطقة الدراسة (وادي تمنارت)، حيث تقدم هذه التشكيلات في الوقت نفسه، نوعا من وحدة تقنيات الانجاز، كما تعبر بشكل مخالف للنقوش الأخرى، عن مفاهيم مميزة بنواميس تقليدية وهياكل إيقونوغرافية غير معتادة بواد تمنارت. التسلسل النقشي الذي نقترحه على هذين الموقعين، هو تسلسل يستند في حد ذاته إلى معايير موضوعاتية وأسلوبية وتقنية، كما يأخذ هذا التسلسل في الحسبان أيضا، جوانب أخرى مثل عمليات النقش التفاعلي وتراتب الخطوط وتراكبها وتوزيع الرسوم على السطوح الصخرية، نعتبر هذه النقوش (المخدوشة) هي الأقدم في سلسلة تطور الرسوم الصخرية بالمنطقة، ونشير إلى طابع تشابهها برسوم ونقوش ما قبل التاريخ في شبه الجزيرة الأيبيرية، آخذين إيماناً تواصل ضفتي البحر الأبيض المتوسط الغربي بعين الاعتبار، دون تغييب عامل التناظر الفني الصخري التلقائي، الذي يعكس تطورا في الانجاز حصل على نتائج أسلوبية وتقنية متشابهة، في معزل عن تواصل مباشر بين جانبي مضيق جبل طارق.

الكلمات المفتاحية: فن صخري، نقوش ما قبل التاريخ، خط دقيق، تمنارت، المغرب.

Titre: Gravures rupestres préhistoriques aux traits fins à Tamanart (Maroc): Tachokalt et Anou L'haj

Résumé: Dans cet article, nous isolons et analysons différentes expressions graphiques exécutées avec des lignes fines et très fines incisées sur des blocs de pierre ou des parois rocheuses dans la vallée de Tamanart (sud du Maroc) qui sont situées dans les deux sites rupestres de Tachokalt et Anou L'haj. Les sites présentent des motifs extrêmement patinés, quelques figures zoomorphes dont l'espèce ne peut pas être identifiée, et quelques autres représentations de gazelles, d'aurochs, d'antilopes, d'autruches et de formes sinueuses (méandres) qui n'ont rien à voir avec les autres figures enregistrées dans l'aire de notre étude (vallée de Tamanart) et qui, en même temps, présentent une certaine uniformité technostylistique et conceptuelle selon leur conventionnalité et leurs structures iconographiques. À partir de la séquence graphique que nous proposons pour cette zone, qui est à son tour basée sur des paramètres thématiques, typologiques, techniques et stylistiques, et prenant également en compte d'autres aspects tels que les processus taphonomiques, les superpositions ou la distribution spatiale, nous considérons ces motifs comme les plus anciens de la séquence et nous soulignons des parallélismes graphiques avec l'art préhistorique de la Péninsule Ibérique, envisageant à la fois la possibilité de contacts entre le sud de l'Europe et le nord de l'Afrique ainsi que la matérialisation de formes similaires, indépendamment, sur les deux côtés du Détroit de Gibraltar.

Mots-clés: Art rupestre, gravures préhistoriques, trait fin, Tamanart, Maroc.