

**Maritime exploitation and exchanges in the
Maghreb during the Neolithic and Bronze Age**

Hamil Samira♦

Morsli Abdellah University. Tipaza, (Algeria)
hamil.samira@cu-tipaza.dz

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Abstract: The Maghreb, endowed with an exceptional prehistoric heritage, is home to major sites dating back to prehistory. In this region, human interest in aquatic environments is reflected through numerous Neolithic sites located along the coast and coastal margins. These areas provided essential raw materials, served as privileged routes for mobility, and offered strategic locations for the settlement of upper Pleistocene hunter-gatherer groups. The exploitation of marine resources intensified during the Neolithic, as evidenced by the presence of fish remains, marine shells, and lithic and bone tools associated with fishing activities. This article presents archaeological data on the subsistence strategies of populations in northern Maghreb, based on the study of malacofaunal remains, navigation and exchange processes during the Neolithic, and the physiological and cultural appropriation of aquatic environments by early human groups.

Keywords: Maghreb; Navigation; Neolithic; Prehistory; Archaeological remains

Introduction:

The maritime domain has played a major role in connecting the peoples living along the shores of the Mediterranean. With its distinctive shape, islands, bays, and straits, the sea created means of subsistence and exchange, occupying a central place in reflections on settlement dynamics across the various periods of prehistory; this explains the existence of numerous shared cultural traits across its shores, already observable as early as the Neolithic period.

The human relationship with the sea is as ancient as humanity itself. Indeed, humans did not merely seek food along the coasts but succeeded in building wooden watercraft and, eventually,

♦ Corresponding Author

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more complex ships, in order to obtain more food, to move across regions, or to flee and settle in new areas.

Human groups that inhabited this region continuously consumed various species of mollusks and shellfish from the upper Paleolithic onward. During the occupation of coastal zones and shorelines, humans exploited marine resources, as evidenced by archaeological remains and traces of human activity, these findings reflect the significant role of marine products in daily subsistence, this maritime exploitation intensified and diversified throughout the Neolithic and subsequent periods, largely due to the development of navigation techniques.

In the Maghreb region, the oldest archaeological artifacts imported by humans during the Neolithic period originated from the Iberian Peninsula most notably Cardial Pottery, followed later by bell-shaped Pottery. Since the Paleolithic, humans expressed the desire to explore nearby islands by navigating primitive canoes, despite the dangers associated with navigation—often caused by climatic and geographical factors such as currents, winds, and rugged rocky coasts—humans ventured into the maritime space from prehistoric times. Researchers have noted that the first maritime crossings occurred during the lower Paleolithic based on the typological similarities of Acheulean stone tools; this corresponds to the Riss glacial stage, when the distance between landmasses and the sea was reduced due to sea-level regression.

The exploitation of marine environments by prehistoric societies in the Maghreb raises a series of questions related to environmental adaptation, subsistence practices, and the existence of long-distance exchange networks. How did the earliest Neolithic communities along the North African coastline engage with coastal zones and available marine resources? Do the currently known archaeological indicators (malacofaunal remains, ceramic fragments, obsidian tools, funerary monuments) allow us to reconstruct the modalities of this exploitation and trace trans-Mediterranean cultural interactions? This inquiry falls within a broader perspective aimed at assessing the role of the sea in shaping settlement patterns, mobility, and exchange dynamics from the earliest phases of the Neolithic in the western Mediterranean.

This article aims to:

- Highlight the various forms of marine resource exploitation (for food, ornamentation, and tool-making) in prehistoric sites of the Maghreb.

- Demonstrate, through archaeological evidence, the existence of maritime exchange networks between both shores of the Mediterranean as early as the Neolithic period.

- Assess the role of these interactions in the transmission of technical knowledge (ceramics, lithic production) and funerary models (Megalithism).

- Shed light on the strategic role of Maghrebian coastal zones in the processes of Neolithisation and in cultural contacts with the Iberian Peninsula, Sicily, Sardinia, and southern Italy.

The approach adopted is based on a cross-analysis of archaeological data from several Neolithic sites in the Maghreb, it includes:

- An archaeozoological study of marine faunal remains, particularly malacofauna, to assess the dietary role of mollusks and fish in the economy of coastal human groups.

- A typological and comparative analysis of ceramics—focusing on Cardial and bell beaker styles—in order to identify cultural influences and diffusion routes across the western Mediterranean basin.

- A technological study of lithic material, centered on the presence and provenance of obsidian (Lipari, Pantelleria), to highlight transmarine procurement networks.

- An architectural analysis of Megalithic funerary monuments, comparing Maghrebian forms (Dolmens, Haouanets) to analogous structures in southern Europe, within the framework of contact archaeology.

- Finally, an in-depth bibliographic review incorporates the findings of previous research (Gabriel Camps, Gobert, Tarradell, etc.) into an updated interpretation of the available data.

I. EXPLOITATION OF MARINE RESOURCES

I.1- Fish and Mollusks

The importance of the relationship between humans and the sea is evident in numerous coastal sites of the Maghreb, located along the southwestern shores of the Mediterranean. Traces of prehistoric maritime fishing are visible along the coast, in many sites situated near the sea. Following the Versilian Transgression, a

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strip of continental shelf emerged, such as the one observed at the base of the marshy plain separating the Tamarhat rock shelter from the sea¹. Neolithic archaeological remains also attest to human occupation on a number of nearby islands, visible from the coastal cliffs of Oranie, particularly Flat Island (Île Plane, Rachgoun, island Habibas, and the Zaffarines. This could be explained by the temporary connection of these islands to the mainland during the major Post-Tyrrhenian regression.

Among the Neolithic remains, marine shells indicate that the inhabitants of these sites—shelters or caves—partially relied on marine resources for subsistence, their food waste contained marine shells, fish remains, as well as terrestrial gastropods and game animal bones, foraging practices included collecting mollusks from rocks (limpets, mussels) or from tide pools (crustaceans). In the Alain shelter near Oran² remains of *Patellidae*, *Mytilidae*, and *Trochidae* have been observed, in this region, the diet of troglodyte groups³ consisted of flesh, eggs, and both terrestrial and marine shells, among the mollusks consumed by humans were limpets (*Patella*) and Scallops (*Pecten*), which served as food, as observed in the Rassel cave⁴.

This diet varied from one region to another, influenced by both natural factors and purely human reasons, such as dietary habits and specific needs, in northwestern Algeria, populations relied more heavily on vertebrates than on marine mollusks (tab. 1-fig. 1), in contrast to findings from the Manasra cave in Morocco⁵.

¹ Balout L. « L'homme préhistorique et la Méditerranée occidentale », *Revue de l'Occident musulman et de la Méditerranée*, 1967, n°3, p. 21

² Campas E, Chakroun A, Merzoug S. « Données préliminaires sur l'exploitation de la malacofaune marine par les groupes ibéromaurusiens de l'abri Alain (Oran) ». *PALEO*, 2016, n°27, p. 91

³ Pallary P et Tommasini. P. « La Grotte des troglodytes (Oran) ». *A.F.A.S.*, t. II, 1891, p. 647

⁴ Camps Fabrer. H, Parures des temps préhistoriques en Afrique du Nord, *Libyca*, t.VIII, 1960, p. 79

⁵ Campas. E, Chakroun A, Chahid. D, Lenoble A, Boudad L, El Hajraoui M A, Nespoulet, Subsistance en zone côtière durant le Middle Stone Age en Afrique du Nord : étude préliminaire de l'unité stratigraphique 8 de la grotte d'El Mnasra (Témara. Maroc). *Comité des travaux historiques et scientifiques*, 2018, n°78, p. 6

Among the sites recently studied in Tunisia, aside from those related to capsian snail shell middens, the site of Sebkha, located on the coast of Halk el Menjel (Hergla, Sousse), and lies at the bottom of the gulf of Hammamet on the eastern coast of central Tunisia⁶. The study of marine mollusks around Sebkhet Halk el Menjel reveals a high natural presence of *Cerastoderma glaucum*, with possible evidence of human exploitation, particularly at SHM-1, SHM-12, and SHM-15. Although some shells show modifications that may indicate consumption, distinguishing natural accumulations from anthropogenic deposits remains difficult. A *Charonia* shell suggests symbolic use. The lagoon environment likely did not allow for permanent occupation, but rather for seasonal exploitation, similar to that observed in the region of kneiss island.

The table and the figure clearly illustrate variations in the exploitation of animal resources among the three cave sites in the Maghreb region during the Neolithic period. These differences reflect diverse lifestyles and environmental behaviors that suggest adaptation to the local context of each site. For example, proximity to the sea is associated with a high presence of marine mollusks, as seen at El Mnasra Cave; a high concentration of terrestrial mollusks and vertebrates is observed at Dhar el Mendjel, located about 3 km from the coast; and a broader, more intensive exploitation of all animal categories—especially vertebrates—is evident at Cuartel Cave. These data may reflect:

- Different dietary habits
- Distinct strategies of settlement and mobility
- Environmental factors (proximity to the sea, mountains, forests, etc.).

⁶ Mulazzani. S, Boussoffara. R, Aouadi. A, Azzarà. V, Belhouchet. L, Boujelben. A, Crema. E.R, , Curci. A, Del Grande. C, Maini. E, Mannino.M.A, Mazzanti. C, Scaruffi. S, Entre Sahara et Méditerranée. Le peuplement de Sebkhet Halk el Menjel (Tunisie orientale) pendant l'Holocène (campagnes 2002-2005). *Revue Afrique XXI*, 2008, p. 16

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**Table (1): Faunal remains recovered from prehistoric
cave sites in the Maghreb**

Site	Marine Malacofauna	Terrestrial Malacofauna	Vertebrates
Cuartel Cave	61	221	849
Dhra el Mendjel Cave	40	336	620
El Mnasra Cave	201	101	237

Source : (7 / 8)

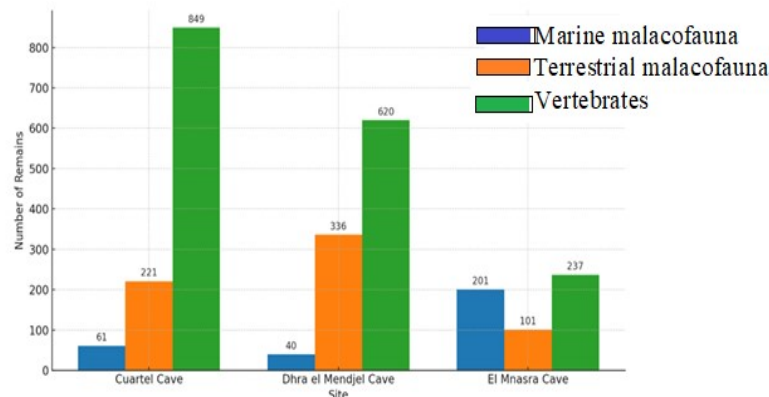


Figure (1): Faunal remains by category and site

The source: (by the author)

I.2- Ornament elements

The use of marine shells as raw material for the manufacture of ornamental objects is well-attested (fig. 2). These shells were often perforated at the top to allow suspension. Among the recovered remains, those from the Forest cave⁹ show a notable presence of mollusk shells, including around twenty limpets

⁷ Doumergue F, Grotte du Cuartel (Oran). *B.S.G.A.O*, t. 46, 1926, p. 185

⁸ Campas. E and al, Subsistance en zone côtière durant le Middle Stone Age en Afrique du Nord, op. cit, p. 06

⁹ Doumergue F, La grotte préhistorique de la forêt à Oran. *B.S.G.A.O*, t. 27, 1907 p. 396

(*Patella ferruginea*, *P. safiana*) and smaller species such as *P. coerulea* and *P. lusitanica*. Other species also were used for ornamental purposes. A valve represents mussels (*Mytilidae*) from the Polygone cave¹⁰ (*Mytilus barbatus*) and by specimens from the Forest cave. Spondylus shells, found as sawn and perforated fragments, come from the Mouillah site. Cardium shells were likewise used in ornamentation, while *Monodonta articulata* (top shells) and perforated murex shells were discovered in various Oranian deposits, where they were likely used as pendants.

Perforated *Turritella* shells, possibly imported from the southern coast of Spain due to their concentration in the western Maghreb¹¹, were used as ornaments, along with purple shells (*Purpura haemastoma*), cowries (*Cypraea*), and tritons (*Simplum nodiferum*). The latter, in particular, may have also served as a sounding horn. Columbella shells, widespread in coastal Neolithic sites, were pressure-perforated and readied for stringing. Although rare along the North African coast, nassa shells were found at El Mekta¹², Kef El Agab¹³, and Oued El Akarit¹⁴, as well as in Oranian sites such as Polygone, Aïn Guedarra, and Chabet Echoufil¹⁵.

Neolithic and Capsian populations paid particular attention to these shells despite their rarity. They were perforated and then worn as pendants or sewn onto leather strips. The precise function of these ornaments remains unknown. They may have held symbolic value, been used in funerary rituals, or served an apotropaic purpose—intended to ward off misfortune or evil influences.

¹⁰ Doumergue F, La grotte du Polygone (Oran). *B.S.G.O.*, t. 47, 1927, p. 206

¹¹ Camps-Fabrer. H, 1960, p. 83

¹² Gobert E G. Notions générales acquises sur la préhistoire de la Tunisie. *Actes du II^{ème} congr. panf. de Préhist.* Alger, 1952, p. 221

¹³ Barbin P, La grotte du Kef-el-Agab (Tunisie). *Gisement néolithique. Libya*, n°33, t. I, 1953, p. 271

¹⁴ Gobert E.G et Howe. B, L'Ibéromaurisien de l'Oued el-Akrite. *Actes du congr. panaf. de prehist, 2^e session*, Alger, 1952, p.575

¹⁵ Doumergue F, Contributions au Préhistorique de la Province d'Oran. *B.S.G.A.O.*, t. XLV, 1925, p. 234

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Figure (2): Ornamental elements
a–b. *Pecten* shell from the Spanish Battery site and the
Midi cave c. *Colombella* shell from the Spanish Battery site
d. Goose barnacle shell (*Pollicipes*) from the Snail Cemetery site



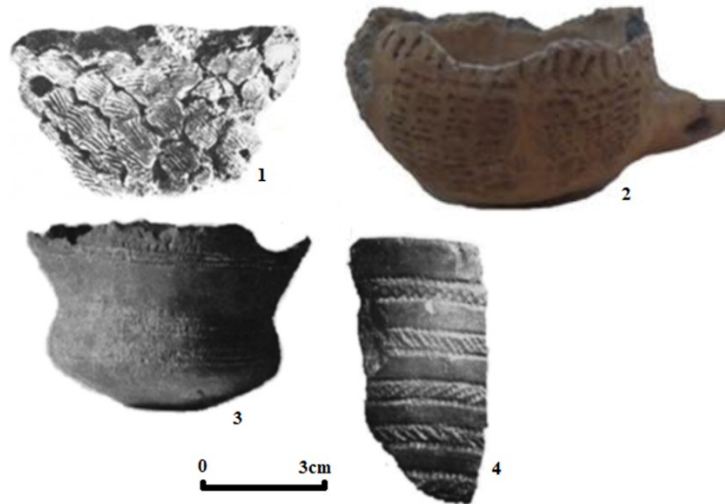
The source: (Author's photo)

II. NAVIGATION AND EXCHANGE:

II.1- Pottery

Relations and exchanges during the Neolithic period are evident through archaeological remains. Among these, Cardial Pottery (fig.3. n°1–2) stands out. South of the strait of Gibraltar, characteristic techniques appear, such as Cardial decoration, a type of impressed decoration made using a *Cardium* shell, often producing crenellated motifs arranged in registers. This type of pottery is distributed along the western Mediterranean coasts, from northwestern Italy to southern Spain, it is also found in Portugal, the islands, and on the African coast, especially in Morocco.

Figure (3): Neolithic pottery in the Maghreb
1–2. Cardial pottery from El Khrill (Morocco) and Forest cave
(Algeria) 3–4. Bell beaker pottery from Ghar Oum El Fernane
(Algeria) and Dar Soltane (Morocco)



The source: ⁽¹⁶⁾

These interactions were particularly intense, occurring via the strait of Gibraltar and the Alboran sea¹⁷ (fig. 4), Cape Spartel, west of Tangier served as a departure point for the first navigators who crossed Gibraltar, it is in this region that cardial decoration was introduced. A European style that developed in coastal areas of the western Mediterranean and spread to the northwestern-most Maghreb, particularly in Moroccan caves near Tangier¹⁸, including Achakar, Mugharet el-Aliya in Rabat (Dar es-Soltan), and in

¹⁶ Jodin A, Les grottes d'El Khril à Achakar, province de Tanger. *Bull. Archéol. Marocaine*, n°3, 1958-1959, p. 251

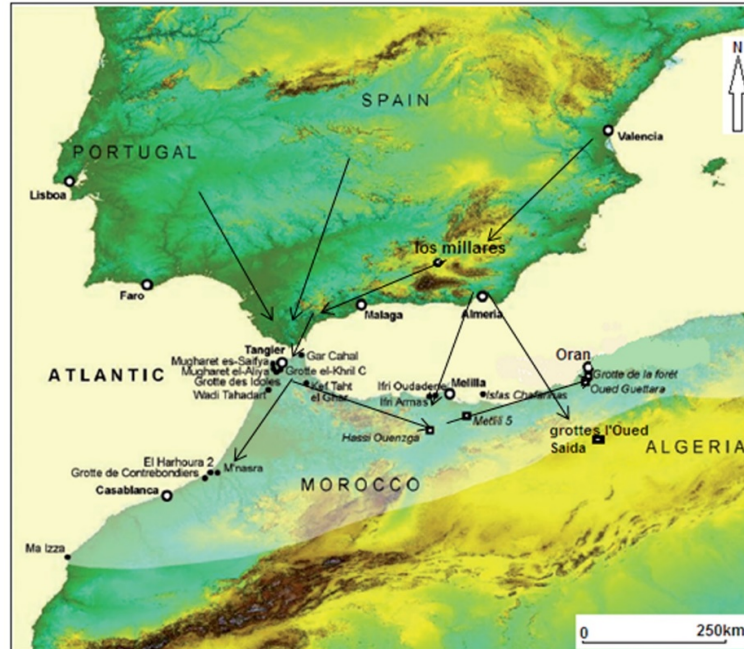
¹⁷ Tarradell. M, *Noticia sobre la excavacion de Gar Cahal. Tamuda*, n°II, 1954, p. 345

¹⁸ Jodin. A, Les grottes d'El Khril à Achakar, province de Tanger, Op. cit., p.249

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Tétouan (Caf Taht el Gar and Gar Cahal)¹⁹. In Dar es-Soltan, Cardial decoration is found alongside bell beaker Pottery in a layer above that containing painted sherds similar to Sicilian ceramics, Cardial Pottery is rare in northwestern Algeria, except for a cup discovered in the the Forest cave in Oran²⁰.

Figure (4): Spread of cardial and bell beaker pottery



The source: (by the author)

Cardium-impressed ceramics from Mugharet es-Safiya, Mugharet el Aliya, and Mugharet el Khail show parallels with numerous sites in the Iberian Peninsula²¹. At Gar Cahal (Ceuta) painted sherds were found beneath bell beaker layers; their discoverer, M. Tarradell. Linked them to the Chalcolithic Pottery of

¹⁹ Tarradell M, Caf taht el Gar, cueva neolitica en la region de Tetuan (Marruecos). *Ampurias*, t. XIX-XX. 1958, p. 138.

²⁰ Doumergue F, La grotte préhistorique de la forêt à Oran. *B.S.G.A.O*, t. 27, 1907, p. 392.

²¹ Gilman A, *A Later Prehistory of Tangier. Morocco*. harvard: Published by Harvard University Press, 1957, p. 124.

Los Millares (second half of the 3rd millennium BCE), at the northernmost point of Morocco, the El-Khril site (Tangier) yielded nearly 500 cardium-decorated sherds²², identical to those from Montserrat and La Sarsa (Valencia).

At the other end of the Maghreb, connections are established with Sicily, Sardinia, and possibly southern Italy. In an extensive study, Gabriel Camps demonstrated that Maghrebi painted pottery has immediate origins in Sicily (Castelluccio culture) and more distant ones in the eastern Mediterranean²³. Pottery vessels of the “Cazuela” type from Dar es-Soltan, Gar Cahal (Ceuta), Caf Taht el Gar (Tétouan), and Achakar (Tangier), dating to the first half of the 2nd millennium BCE, confirm these connections.

Adding to this are rare signs of a “Bronze Age” in the Maghreb, including rock art depictions of weapons in the Atlas mountains near Marrakesh²⁴ and a copper dagger from Chenoua in Algeria²⁵. These point to late contacts with Iberian bell beaker culture, the bell-shaped forms of the three southern groups (Guadalquivir, Portugal, Almería)²⁶ clearly had links with North Africa.

Bell Beaker vases and sherds (fig. 3. n°3–4) have been found in northern Morocco at Achakar, Gar Cahal, and Caf Taht el Gar, as well as on the Atlantic coast at Mehdiya and Dar es-Soltan²⁷. Bell Beaker Pottery likely spread inland into the Maghreb, reaching Orania, where Bell Beaker sherds were found in Rhar Oum el Fernan cave, located 120 km from the coast²⁸. In these two cases, the maritime route via the Alboran Sea was likely used.

²² Jodin, A, Les grottes d'El Khril à Achakar, province de Tanger, op. cit, p. 249

²³ Camps G, Navigations et relations préhistoriques en Méditerranée. *Soc d'étude et de recherches préhistoriques des Eyzies*, n°7, 1977, p. 70

²⁴ Souville. G, Témoignages sur l'âge du bronze au Maghreb occidental. *Comptes rendus des séances de l'Académie des Inscriptions et Belles-Lettres*. n°1, Paris, 1986, p. 97

²⁵ Camps G et Giot. P R, Un poignard chalcolithique au Cap Chenoua. *Libyca*, t. VIII, 1960, p. 262

²⁶ Delibes de Castro, *El vaso campaniforme en la meseta norte española*. Espagne: Universidad, Departamento de Prehistoria y arqueología, 1977, p. 102

²⁷ Jodin A, Les problèmes de la civilisation du vase campaniforme au Maroc. *Hesperis*, t. XLIV, 1957, p. 360

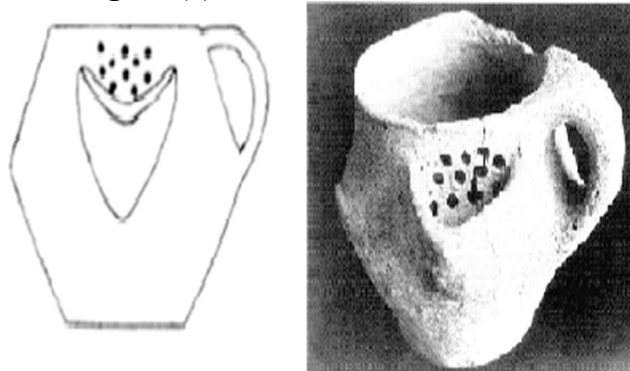
²⁸ Gobert E G, Notions générales acquises sur la préhistoire de la Tunisie. *Actes du IIème congr. panf. de Préhist.* Alger, 1952, p. 222

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On the Tunisian coast and in the Tébessa region in Algeria, Gastel yielded vertical-filtered vases (fig. 5), first reported by Cintas, likely inspired by southern Italian forms²⁹. This type of filtered vessel, also found at Maktar (Tunisia), features a vertical filter made of perforations halfway up the wall and is extremely rare in North Africa. Its origins trace back to the Chalcolithic east, from Susiana (Tepe Djowi) to Sicily (Caltagirone), passing through Anatolia (Kültepe), Cyprus, and southern Italy (Taranto).

In the Maghreb, ceramic production long remained based on the coiling technique; as the potter's wheel appeared only very late, observable changes suggest some foreign influence: pot bottoms, previously conical, became flat a style borrowed from southern Italy (Mezzogiorno) and Sicily.

Figure (5): Filter vase from Gastel



The source: ⁽³⁰⁾

II.2- Lithic industry and raw materials

A recent study on prehistoric obsidian sheds light on how long-distance exchanges were organized³¹, particularly between the islands and Mediterranean shores via the

²⁹ Cintas P, *Éléments d'étude pour une protohistoire de la Tunisie. P.U.F. In-broché*, 4, 1961, p. 77

³⁰ Camps G, *Le style de Gastel. Etude des céramiques d'une nécropole protohistorique d'Algérie. In: Antiquités africaines*, n°33, 1997, 41.

³¹ Costa L J. (2009). Les tailleurs itinérants d'obsidienne. *Pour la Science*, n°383, 2009, p. 8.

Sicilian channel. The presence of obsidian industries along the Tunisian coast (Bizerte, Béchateur, Korba, El Marsa) cannot be explained by local raw material sources, but rather through exchange networks. Obsidian, unknown in the Maghreb, was used in Pantelleria, Sicily, Sardinia and originated from the Eolian Islands. Pantelleria Island, located about 70 km from Kelibia (Cap Bon) and 100 km from Selinunte (Sicily), which likely served as a trans-Mediterranean stopover point. This volcanic rock serves as a valuable marker of exchange between Mediterranean islands and coastal regions, as it circulated widely, while other traded goods—such as foodstuffs, manufactured products, and textiles—have long since disappeared. Mobile flint-knappers and traders spread blades made of volcanic glass sourced from Sardinia and three Italian islands throughout the western Mediterranean basin. This indicates that the Sicilian channel was crossed during the Neolithic period. These contacts occurred between Tunisia, northeastern Algeria, and the Mediterranean islands, explaining the presence of obsidian industries along the coast.

The clearest example of these exchanges is provided by obsidian itself: although geologically absent in the Maghreb, it is archaeologically present in several Neolithic sites. This black, glassy lithic material has been found at Korba (Tunisia), located 8 km southwest of Bizerte, where obsidian arrowheads have been traced to the Lipari Islands, major diffusion center in the western Mediterranean³². At Djebel Eddib, in the region of Béchateur, matte black and olive-green obsidian industries have also been identified (fig. 6)³³. In Hergla, southern Tunisia, a black obsidian industry has been dated to around 3300 BCE³⁴. Additional finds are reported at Kef Hamda (Maktar) and Sebkhet el Maleh (Zarzis)³⁵, as well as in

³² Fobis F, Note sur une station préhistorique aux environs de Bizert. *Rev. Tunis*, t.XXII, 1916, p. 74

³³ Camps G, Notes de protohistoire nord-africaine, *Libyca*, t. XII, 1964, p. 294.

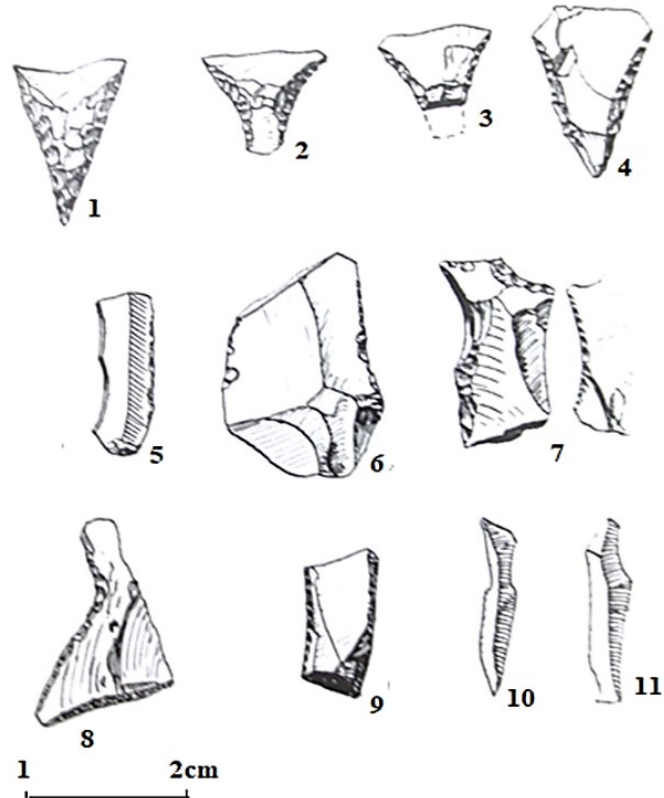
³⁴ Mulazzani S., Bourdonnec F.X., Belhouchet L. Poupe, Obsidian from the epipaleolithic and neolithic eastern Maghreb. in: *Journal of archeological science*, n° 37, 2010, p. 2529

³⁵ Morel. J, Contribution aux recherches préhistoriques dans le massif de l'Edough. *Libyca*, t.17, 1969, p. 155

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the upper layers of Aïn Khia, the Marsa site, and Tébessa, where Fournier collected a very dark obsidian scraper³⁶.

**Figure (6): Obsidian tool assemblage from Djebel Dib,
Bechateur region (northern Tunisia)**



The source :(³⁷)

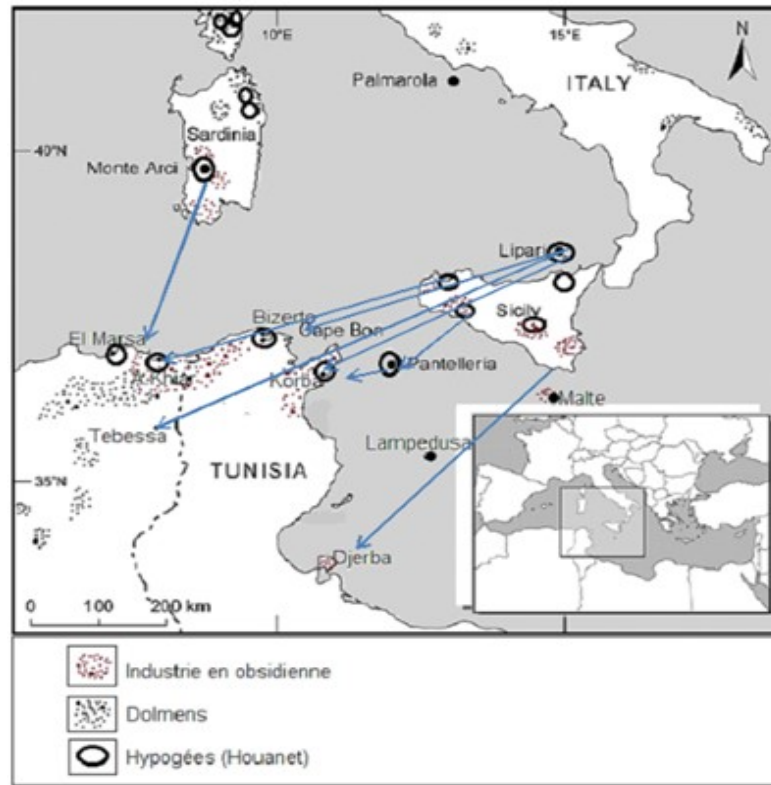
These lithic remains highlight the significance of Mediterranean maritime currents in the eastern Maghreb, revealing early regional interactions. Gobert was the first to emphasize the significance of obsidian tools in Neolithic deposits at Korba (Cap Bon) and Béchateur (Bizerte). He noted that obsidian is not native

³⁶ Camps G, Relations protohistoriques entre la Berbérie Orientale et les îles italiennes. *Con. Prehis de Monaco, n°V. XVI*, 1965, p. 334.

³⁷ Camps G, Notes de protohistoire nord-africaine, op. cit, p. 294.

to Tunisia and considered its presence as a clear indicator of maritime imports³⁸ (fig.7).

Figure (7): Exchange routes between eastern Maghreb and the Italian Islands



The source: (by the author)

Similarly, on islands off western Algeria, obsidian artifacts have been discovered at the Zaffarines and Rachgoune, Vuillement collected red obsidian flakes³⁹, and on island Plane, knapped flint was found, even though flint does not occur naturally on these islands. The fact that obsidian is only found in distant volcanic

³⁸ Gobert E G, Notions générales acquises sur la préhistoire de la Tunisie. *Actes du IIème congr. panf. de Préhist.* Alger, 1952, p. 230

³⁹ Vuillement. G, Fréquentation préhistorique des îles occidentales de l'Algérie. *Libyca*, 1954, t. II p. 64

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terrains confirms that maritime navigation was regularly practiced even in the most ancient times⁴⁰.

II.3- Fauna

Any study of prehistoric cultures in the western Mediterranean basin would be incomplete if it continued to overlook the long Maghrebi coastline along the southern edge of this basin⁴¹. The origins of sheep domestication are closely linked to the development of Mediterranean navigation. According to Gabriel Camps, there is no evidence in the western Mediterranean of a wild fossil sheep species that could have served as the ancestor of domestic sheep. In Europe, the question remains open (the Corsican mouflon), but in North Africa, the presence of the Barbary sheep (*Ammotragus lervia*)—which is not a true sheep—rules out local domestication⁴².

North African rock art offers highly realistic depictions of early sheep, shown without wool, reflecting an early stage of domestication, the expansion from the near east toward the Mediterranean is considered one of the main vectors of Neolithic diffusion, involving the introduction of several domesticated species, including sheep, goats, and dogs.

II.4- Megalithic Monuments

Contacts between regions are also evident during the later phase of the Neolithic (Chalcolithic) through the presence of certain funerary monuments⁴³, among these imported forms are the haouanets (fig. 8), hypogean tombs shaped like silos or megalithic burial chambers carved into rock faces.

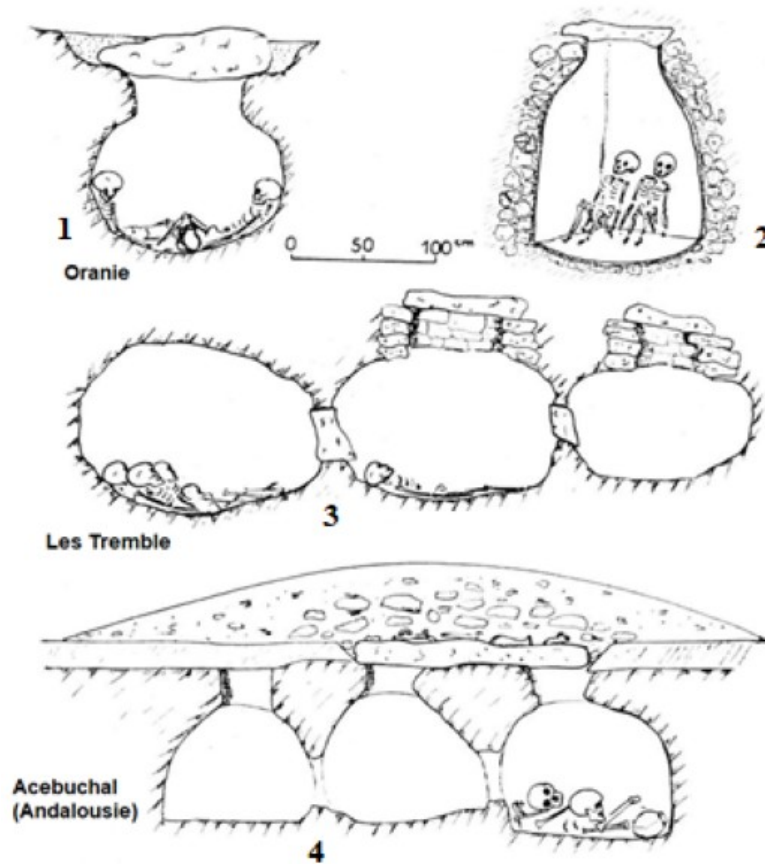
⁴⁰ Lacoste L, Sur l'industrie de la pêche maritime à l'époque préhistorique dans le Nord de la Berbérie. *B.S.G.A.O*, t. XXXI, 1911, p. . 379.

⁴¹ Camps G, Le mouton au néolithique ancien dans les pays de la Méditerranée Occidentale. *Actes du colloque international du CNRS*. paris, 1983, p. 210

⁴² Camps. G, Origines de la domestication en. Afrique du Nord et au Sahara. *In:Revue française d'histoire d'outre-mer*, t.65, n°240, 3e trim, 1978, p. 376.

⁴³ Camps G, Relations protohistoriques entre la berbérie orientale et les îles italiennes, op. cit, p. 330

Figure (8): Funerary monuments



The source: (⁴⁴)

These artificial caves were used from the 3rd to the 7th century CE, where the dead were deposited along with offerings, sometimes placed on added stone slabs, they are especially numerous in northwestern Tunisia, becoming increasingly rare westward, while their exact chronology is uncertain, their origin is attributed to Sicily.

⁴⁴ Camps G, Sur trois types peu connus de monuments funéraires nord-africains (notes de protohistoire). *Bulletin de la Société préhistorique française*, t. 56, 1959, p. 103.

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Dolmens, gallery graves, and Haouanets show typological similarities to those in southern Italy, these structures, whose layouts resemble gallery tombs, are often carved into soft rock or deeply embedded underground. Similar to examples in Sardinia and Malta⁴⁵, dated to the chalcolithic, the monuments—whether dolmens or Haouanets—remain confined to a limited area, mainly in the eastern Maghreb: Haouanets do not extend beyond Tébessa and Constantine, and dolmens do not appear west of Algiers.

Jar burials, similar to those found in the near east (especially Byblos) during the 4th millennium, have also been documented in the Biskra region. These burial practices reflect connections with Sicily, southern Italy, and Sardinia, alongside tumuli and related forms. As one moves inland toward the Aurès, dolmens appear to merge with local traditions, resulting in original forms, such as burial cists⁴⁶ covered with stones and externally resembling tumuli, the traditional funerary monument of north Africa, like Haouanets, these structures highlight strong cultural ties between the eastern Maghreb and southern Italy/Sicily.

Megalithism, in its diverse manifestations, flourished during the 3rd millennium, its origins are likely multiple, with Mediterranean influences reaching the coasts of the Maghreb, hundreds of such monuments have been found in eastern Algeria. This Mediterranean contribution, of great cultural and anthropological significance and closely linked to specific ethnic groups, may have crossed the strait of Sicily and spread into the eastern Maghreb through the construction of dolmens or the excavation of hypogea⁴⁷. The construction of dolmens or the excavation of hypogea may have crossed the Sicilian Strait and spread into the eastern Maghreb through coherent migrating populations or by permanent settlements of Bronze Age Mediterranean groups.

⁴⁵ Camps G, Peuplement des îles et navigations préhistoriques. *L'homme préhistorique et la mer*, Comité des Travaux historiques et scientifiques, Paris, n°27, 1998, p. 130

⁴⁶ Aumassip G, *L'Algérie des premiers hommes*. Paris : Méditerranée Sud, 3, Maison des sciences de l'Homme, 2001, p. 127

⁴⁷ Pallary P, Des industries de la pierre dans l'Algérie occidentale. *L'Homme Préhistorique*, 3^e année. n° 2, 1905, p. 33.

Subterranean silo-shaped tombs have also been found in the Oran region, such as at Kléber and Trembles, where the funerary pits appear as circular shafts cut into the soil⁴⁸ (fig. 8. n°1–2–3). A similar tomb exists in Ouled Mimoun (Tlemcen): the narrow entrance shaft, only 0.50 m wide, opened at a depth of 1.50 m, the chamber measured 1.60 m high and had a semi-circular floor plan with a radius of 0.90 m, the inner walls, roughly shaped in soft soil, were coated with plaster, and the tomb contained two well-preserved skeletons.

On the opposite shore of the Alboran Sea, Andalusia—, which maintained a strong influence over the northwestern Maghreb—has earlier tombs that may have served as prototypes for those in the Oran region, these include shaft access tombs opening into irregularly shaped, often clustered chambers, such as in the collective burial of Acebuchal (fig. 8. n°4).

III- DISCUSSION

The oldest known remains of watercraft in the Mediterranean Sea date back to 7148 ± 139 B.C, while the earliest recorded shipwrecks only appear during the Bronze Age⁴⁹. However, evidence suggests that maritime connections began much earlier, as demonstrated by numerous discoveries made on various islands, particularly in Corsica, Cyprus, the Tunisian islands, as well as in the Oranian islands, and those of Morocco and Spain to the west⁵⁰. These findings attest to the existence—by the 4th millennium BCE (Tabl 2)—of seafaring and a long-standing familiarity with the sea, pointing to early navigation across the Mediterranean. Traces of this maritime activity are found at both ends of North Africa, where the African and European shores are separated today by only a few kilometers. During the early Neolithic, the appearance of Cardial Pottery, initially of the “Alboranian” phase (5600–5300 B.C), followed by the “Lusitano-

⁴⁸ Camps G, Sur trois types peu connus de monuments funéraires nord-africains (notes de protohistoire), op. cit. p. 103

⁴⁹ Courtin J, Découverte de la première phase de l'âge du bronze en basse Provence : la grotte de la Carrière, près de Marseille (Bouches-du-Rhône). *Cahier ligures de Préhistoire et d'Archeologie*, 11, 2, 1962, p. 256.

⁵⁰ Camps G, *Les civilisations préhistoriques de l'Afrique du Nord et du Sahara*. Ed Doin, Paris, 1974, p. 100.

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Moroccan” phase (5000–4500 B.C), reflects a complex process of cultural diffusion. An earlier component, known as the “Tellian” tradition (around 6500 B.C), which finds its echoes in the eastern Rif, appears to have originated in the Oranian region of Algeria (fig. 9). This allows for the hypothesis of a combined mediterranean origin, involving multiple currents of influence.

Figure (9): Area mentioned in the text

1-Hergla, 2- El Mekta, 3- Kef El Agab, 4- Bizerte, Béchateur, 5- Korba, 6- La Marsa, 7- Djebel Eddib, 8- Kef Hamda, 9-Ain el Khia, 10- Gastel, 11- Sebkhet el Maleh, 12- Tamar Hat, 13- Chenoua, 14- Ressel cave, 15- Forest cave, 16- polygone cave, 17- Guedarra 18-Chabet Echoufil- midi cave- Spanish Battery – Alain rock shelter , 19-Rachgoun, 20- Ile plane, Habibas, Zaffarines, 21- Rhar oum el Fernan, 22- Gar Cahal, 23- Taht el Gar, 24- Mugharet el Khail, 25-Mugharet-el-Aliya, 26- Mugharet es-Safiya, 27- Idoles cave, 28 Dar-es-soltan, 29- Mnasra.



The source: (by the author)

**Table (2): Chronological table of neolithic maritime
connections and cultural phases (North Africa and Western
Mediterranean)**

Period	Event or Cultural Phase	Concerned Region
7148 ± 139 B.C	Earliest known remains of watercraft in the Mediterranean	Eastern Mediterranean

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6900 – 4920 B.C	Radiocarbon-dated Cardial Pottery sherds	Idoles site, Rabat
6500 B.C	“Tellian” Neolithic	Oranian region (Algeria), Eastern Rif
5600 – 5300 B.C	“Alboranian” phase of Cardial Pottery	Western Mediterranean
5000 – 4500 B.C	“Lusitano- Moroccan” phase of Cardial pottery	Morocco, Southern Iberian Peninsula
4th millennium B.C	Evidence of early seafaring and maritime familiarity	Mediterranean islands, North Africa
3rd millennium B.C	End of the humid Neolithic period in the Sahara – increasing geographical isolation	Sahara – North Africa
Before 2000 B.C	Introduction of Bell Beaker decoration in Northern Morocco and Orania	Northwestern Maghreb
Bronze Age (from 3000 B.C)	First recorded shipwrecks Strainer vessels and megalithic monuments	Mediterranean

The source (by the author)

The Forest cave remains the only Algerian site traditionally recognized as having yielded a fragment of Cardial Pottery, found in association with incised or grooved sherds decorated with crosshatched patterns. Direct radiocarbon dating has also been, performed on Cardial Pottery sherds from the Idoles site⁵¹, placing their origin between 6900 and 4920 B.C.

⁵¹ Daugas J P, Elidrissi A, Ballouche A, Marinval, Le Néolithique ancien au Maroc sept entrée : sériation typochronologique et hypothèses génétiques. *Bulletin de la Société préhistorique que française*, tome 105, n 4, 2008, p. 797.

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By the mid-3rd millennium B.C, the humid Neolithic period in the Sahara ended. North Africa, now almost entirely cut off from the rest of the continent by the expanding desert, maintained contact with other African regions primarily through the narrow Tripolitanian corridor. This geographical isolation was offset by the development of maritime connections during the same period with southern Iberia on one hand, and with Sicily, Sardinia, Malta, and southern Italy on the other (fig. 10). Furthermore, the introduction of Bell Beaker decoration in northern Morocco and Orania is attested before 2000 B.C.

Conclusion:

The relationship between humans and the sea evolved from the final phases of the upper Paleolithic, as interest in marine resources gradually increased during the Neolithic. At several sites across the Maghreb, it is observed that despite human proximity to the sea—and the potential access it provided to food sources—subsistence strategies, as revealed by faunal remains, were primarily based on terrestrial hunting and gathering, with marine resources playing a more limited role. From the Late Capsian onwards, marine fauna (fish and mollusks) is attested, though in relatively small quantities. This disparity may be, explained by seasonal site occupations or by differences in cultural practices between human groups.

The sea also served as a medium for exchange. These exchanges initially took place along the eastern and western shores of the Maghreb, before expanding and diversifying throughout the broader Mediterranean basin during antiquity. Regarding means of navigation, it is likely that maritime movements relied on coastal navigation (cabotage) using rafts or dugout canoes. However, one should not imagine vast networks or large-scale migrations, but rather small groups engaging in exchanges involving raw materials (such as obsidian), manufactured goods, or even ideas and symbolic imitation.

The evidence suggests that the movement of people, goods, and ideas by sea toward the Maghreb occurred from very early times. The neolithization of this region cannot be fully, understood without considering seafaring as a key factor. Nevertheless, for a long time, maritime activity has only been, inferred through the study of archaeological artifacts or cultural and societal practices, as

no direct evidence of watercraft has yet been uncovered. Only floating tree trunks or dugout canoes are currently hypothesized.

Maritime exchanges thus predate the arrival of the so-called "Sea Peoples"—Tyrians, Greeks, and Punics. The Maghreb turned toward the sea at a time when its insularity was becoming, more pronounced in the south due to the gradual desertification of the Sahara beginning around 3000 B.C. This region, once closely linked to the Maghreb throughout prehistoric times, became increasingly isolated as an ecological barrier formed, progressively severing north-south interactions.

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