

The management of symbolic raw materials in the Late Upper Paleolithic of South-Western France: a shell ornaments perspective

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Reviewer : Catherine Dupont

The paper is dedicated to both intact and perforated shells found in a major site of the south-west of the France, the one of Rochereil. The study is well detailed and is a major contribution of our knowledge on shells accumulated by Humans in the Palaeolithic, especially the Late Upper Palaeolithic. We anoted the text for a better understanding of our comments.

A main comment we have after reading the paper is: is the caching of raw material the only hypothesis you can propose?

- were the intact shells found in a certain form of accumulation?
- which argument are in favour of a caching?
- can't these shells have been used without modifications (exchange, personal collection...)?
- Are there other raw materials evocate caching?

A second comment is about the used modern collections. Some of them are represented by less than 60 individuals. It is difficult to use them as a reference for a whole population. I suggest bibliographical references below.

Although general references are given to describe the geographical origin of shells, it will be more relevant to give more precise references for each species and information (location, fossil or not, usual sizes...).

The other comments are below. The paper is interesting and the only aim of my comments is to make it better. If some of my comments are unadapt, don't hesitate to explain it.

The paper has to be published after consideration of my comments.

Title

The paper is mainly on the site of Rochereil even if the authors compare their results to other sites. The name of this site should be mention on the title.

Abstract

The abstract is concise and presents the main findings of the study. The term “raw material” can induce that the shells are raw material to make an object. See if you keep only this hypothesis according to the comments.

Introduction

The **introduction clearly explains the motivation** for the study.

The **research question is clearly presented**.

I am not a specialist of the Paleolithic but, it would be really interesting and important to place this study in the state of research of the Palaeolithic ornaments in the South-Western France, and at the second scale to the one of the Late Upper Paleolithic. Was the Rochereil collection knew from Vanhaeren and Taborin when they wrote their syntheses: did these two researchers known the shells from Rochereil’s excavation, did they interpret them... How this paper answer to new questions according these two or other important syntheses (new data, new methods...)?

Line 44 erase A.L.

Archaeological context and objectives

The different stages are describe but what about the sampling (with water, sieving, size of the mesh...). The authors write about “spatial records”, but nothing is said about the spatial organisation of these shells.

Lines 79-88 are difficult to understand with the figure 1, because the number of the layer are not clearly mentioned on the legend of the stratigraphy of figure 1.

Taxinomy

L111-112 The criteria used for bivalve determination are lacking.

L119 A more recent check of Latin names can be interesting. Some of them can change regularly.

L119 "Biodiversity Heritage Library": reference?

Morphological and morphometric analyses

L135 “naked eye” English. Maybe “by sight”?

L137-140 Explain a little more: why have you chose these reference collections? How have they been chosen and collected?

L140 *Ocenebra erinacea* The Latin name is *Ocenebra erinaceus*

Table 1 With less than 60 individuals it is difficult to us a modern collection. This number is not efficient to describe a population.

Microscopic analysis

L146-151 “taphonomic and anthropogenic modifications”: can you explain how you did that more precisely? Have you done a systematic analysis in sharing the shell into different parts?

Results

Shell identification

L177 377 shells: precise which ones there are: all shells intact and modified?

L177 “to Layer II” : what about shells from other layers?

L183 “shores in the Pleistocene.” Reference / You cite the references in the methodology but we need more precise references for each origin of raw material.

L184-187 Why don't you test the shape of the *Tritia reticulata*? It can be a good mean to know if all of them are coming from the same coast. As this species is polymorph, it can be difficult to compare the archaeological collection to modern collection.

http://www.patrimoniocultural.gov.pt/media/uploads/trabalhosdearqueologia/51/estudo_complementar.pdf DUPONT C., 2011 – Chapitre EC. Etude complémentaire : les invertébrés marins du « concheiro » de Toledo (Lourinhã, Portugal). In : Araújo A.C. (ed.), O concheiro de Toledo no contexto do Mesolítico inicial di litoral da Estremadura. Trabalhos de Arqueologia, n°51, ISSN 0871-2581, 185-227. /LAPORTE L., DUPONT C., GRUET Y., COURTAUD P., DUDAY H., QUESNEL L., LEFEUVRE J.Y., BAMBAGIONI F., MIALHE V., ROBIN K., 2021- Les coquilles marines de la nécropole mésolithique de La Vergne (Saint-Jean-d'Angély, Charente-Maritime, France) : de leur collecte à la mise en scène des corps humains. Gallia Préhistoire, 61, mis en ligne le 02 juillet 2021, <http://journals.openedition.org/galliap/2160>

L185 “gastropod shell is conical, featuring of axial ribs containing 7 to 9 whorls, and is also 186 present along Atlantic and the Mediterranean coasts.” References

L195-197 references

L198-202 references

L209 “Among the four valves possibly belonging to the Cardiidae family” Why possibly?

L225 references

L230 “probably belonging to the genus *Spondylus*” explain which criteria you use to say that?

L235 “comparison with previously published inventories show that 3 shell species are missing from the current collection” The reverse is also true, some of the shells in your inventory had not been identified. How do you explain this?

L254-255 “The fragments of the bivalves *Mytilus* sp., *Pecten maximus*, *Spondylus* sp. and the two fossil Cardiidae show no anthropogenic modification.” The edges are not used or eroded?

L279 Is the size of perforations not small for natices' predation? Some worms can do double perforations. Another reference maybe with complementary parameters: Cabral J.P., Monteiro-Rodrigues S. 2015 - Orifícios de predação em conchas de moluscos marinhos. Um modelo experimental para o estudo de perfurações em conchas arqueológicas La Investigación Arqueomalacológica en la Península Ibérica: Nuevas Aportaciones, in Gutiérrez-Zugasti I., Cuenca Solana D., Gonzalez Morales M.R. (dir.), Actas de la IV Reunion de Arqueomalacología de la Peninsula Iberica, Santander, 22-24 mai 2014, Santander, Nadir Ediciones, p. 241-250.

L309 (Figure 6d, e) / L268 space or not

L317 size of the natural perforation

L323-327 Are you sure that the shape is stable for the murex? Have you got sufficient shells to work on such comparison?

https://www.researchgate.net/publication/237730687_Comparative_morphology_of_Pliocene_Quaternary_and_Recent_shells_of_Ocenebra_erinaceus_Linnaeus_1758_and_O_brevirobusta_Houart_2000_Mollusca_Muricidae_Ocenebrinae_reflections_on_the_intra- and_interspe

L364 Why tusk shells are animals and have an orientation: anterior and posterior. Why do you use proximal and distal?

L408-409: reference for fossil specimens?

L409 “By comparison, the length of the scaphopods from Rochereil is, on average, 5 times greater than their maximum diameter (Table 4).” Please precise your idea? What is the consequence of such difference?

L417 Moreover, the “rare?” larger and longer scaphopods from Rochereil fall outside the size range observed in the fossil reference collection.

Regional comparison

A your description of Rochereil is mainly based on sizes of shells: are there other archaeological collections with such data?

Tables and figures

Table 2 Problem with the reference of the figure for *Glycymeris* / line associated to the symbol ° for figure *Tritia reticulata*

Figures: The orientations of shells should be the same. The columella of gastropod should be vertical when photographed one by one. See orientation for bivalves.

Figure 3: italic for the last name

Figure 4 italic “striations on the ventral margin of the shells” Only the margin? I see them on the extern part of the shell but not only on the margin.

Figure 8: orientation with vertical columella.

Figure 9: The shape of this shell is dependant of its environment. Difficult to describe this figure with so few data.

Figure 10: italic/ posterior and anterior would be better.

Figure 11: italic

Discussion

L513-515: “The absence of anthropic modification on these shells suggests they were naturally deposited in the cave sediment, and not intentionally introduced by Magdalenian occupants.” Why do you say that? Have you stratigraphic difference between these shells and the other ones? Have you other elements from the karstic limestone near these shells?

L524 similar: on which criteria?

L535 generally or mainly?

L538 The region is “Poitou-Charentes”

L556 “The location of the site at a considerable distance from either coast indicates that the mollusks were not collected live for consumption.” Are they known to be eaten after archaeological records?

L575-576 Precise that this result is based on archaeological observations and that it is an hypothesis.

L578-580: reference

L567-568 There are references on murex. Examples: Berrou V., Merle D., Dommergues J.-L., Crônier C. & Néraudeau D. 2004. — Comparativemorphology of Pliocene, Quaternary and Recent shells of *Ocenebra erinaceus* (Linnaeus,1758) and *O. brevirobusta* Houart, 2000 (Mollusca, Muricidae, Ocenebrinae): reflections onthe intra- and interspecific variations. *Geodiversitas* 26 (2) : 263-295. / Fossil and recent Muricidae of the world ,

Merle, Didier Editeur : ConchBooks. Hackenheim, Germany, 2011.

Can you verify if there are data on their size and shapes?

L593-594 “The fact that most of the shells recovered from Rochereil were unmodified suggests that the objects **were collected with the intention of being transformed into ornaments,**” I am not agree with this consequence. It is not because that these shells are unmodified that human have preview to do it.

L599 3) are waiting to be exchange? 4) Personal collection?

L593-599 Have you got data that can may the difference between a storage or a personal collection? Are there concentrated shells in context? Were all species mixed at Rochereil when they were discovered?

Maybe a reference that can interested your paper. It is about unmodified shells. There is a mention to the Taborin’s observation that is linked to your paper. Dupont C., 2019- Archaeological evidence for collecting empty shells along the French Atlantic coast: A major activity for coastal populations. *Journal of Ethnobiology*. 39(2), 223-239, <https://doi.org/10.2993/0278-0771-39.2.223>

Conclusions

L644 “storage” How do you define this term after your data?

L646 “before modification”: necessary?

L 657 ‘embedded caching’ How do you define this term after your data?

L659 “a deviation in normal” excessive: what is normality? Can’t we consider populations as a diversity? Deviation is a negative word for me, a value judgment.

References

L504 Taborin 1993: reference?

L632 Taborin 2007 reference?

L652 White 1997: reference?

L712/ L723/ L728-729/ L741 italic

L826 & ?

L848 Sandrine ?

L936 abbreviation?

References of a same author are not in a chronological order