

Dear Dr. Almeida,

We sincerely appreciate your time and effort in reviewing our manuscript submitted to PCI Archaeology. We are grateful for the constructive feedback provided by the reviewers and your thoughtful evaluation. We are pleased to learn that the manuscript is of interest and that the suggested revisions are considered minor.

We have carefully addressed all comments and revised the manuscript accordingly. Below, we provide a summary of the key revisions made in response to the reviewers' concerns:

1. Archaeological Context

- We have expanded the description of the **Beringen Brouwershuis site**.

2. Sampling Strategy

- We have clarified why not all artefacts from the pit were analysed, outlining the **criteria used for sample selection**.

3. Argumentation and Comparative Studies

- We have incorporated **additional references** to relevant studies on **heat-induced damage**.
- The discussion of **use-wear analysis** has been strengthened to better highlight its role in characterising the assemblage.
- We have addressed interpretative concerns raised by one of the reviewers, clarifying the rationale behind our interpretations, particularly regarding **potential ritual significance**.
- We have specified whether the lithic assemblage recovered from the pit is **typologically and/or biographically distinct** from other contexts at the site.

We believe these revisions have significantly improved the clarity and depth of our manuscript. A revised version of the preprint has been uploaded, with all changes carefully implemented. Additionally, we have prepared a point-by-point response to the reviewers, detailing how each comment was addressed.

We sincerely appreciate the opportunity to improve our work and look forward to your assessment of the revised manuscript. Please let us know if further modifications are required.

Best regards,

Sonja Tomasso

TraceoLab, University of Liège

First, we would like to express our gratitude to João Marreiros, Lars Larsson, and Juan Gibaja for their valuable feedback and insightful comments, which have significantly contributed to improving this manuscript.

Review by Joao Marreiros, 13 Jan 2025 13:43

Dear editor of the PCI Archaeology, dear authors of the manuscript entitled "From polishing to burning: deciphering a middle Neolithic hoard from Beringen Brouwershuis (Belgium) through functional analysis"

I am delighted to review the work by Tomasso and colleagues, which focuses on the microscopic analysis of micro traces on polished stone axes to document their use biography and lifecycle, consequently contributing to the discussion on their significance in Neolithic hoard practices.

In general, I find that the study is well-designed, featuring adequate methodology, documentation, and description of the acquired and analysed data. I recommend that the manuscript be published after minor revisions. Nevertheless, I believe that the manuscript could benefit from some adjustments concerning the scope and research questions that drive the study. I assume the researchers aim to investigate and contribute to the discussion on Neolithic ritual practices through the analysis of use-wear traces on polished axes (the so-called big picture). From my perspective, this discussion encompasses various interrelated aspects; however, this is not clearly articulated in the Abstract and Introduction. References to ritual practices and object biographies are notably absent in these sections.

In the Introduction, I suggest that the first paragraph, which provides details about the site and selected assemblage, be moved to the end of the section. The narrative should begin with a broader context, emphasizing the research questions presented in the second paragraph, followed by the selected case study. Here, the authors could elaborate more on the contribution of use-wear studies to these questions. Specifically, why is use-wear significant, and why should it be considered in this area of research? What data can use-wear provide that other types of artefact analyses do not? The focus should be on the deposition of these objects and the activities they are associated with.

The introduction has been modified, and the broader context of hoarding practices during the Neolithic, as well as the relevance of functional analysis for understanding these practices, has been described in detail.

There appear to be two sections titled "Materials and Methods," which I assume is an error. The third section, currently also called "Materials and Methods," should be titled "Sampling." In this section, the authors should clarify the criteria used for the initial sorting of the artefacts when they state, "... most promising for functional analysis."

The second materials and methods section has been changed into "microscopic analysis", as this was considered a more relevant title than the proposed "Sampling". In addition the sampling strategy has now been explained in detail.

In the Results section, while the authors report damage associated with the exposure of the artefacts to heat, they should substantiate their interpretations with key reference studies. In the Discussion, I again highlight the absence of an initial paragraph, or a few sentences dedicated to contextualizing the study, where the broader picture and main research questions are introduced and discussed. For instance, the authors refer to the concept of the "biographic approach" for the first time here. I believe this concept should be introduced much earlier in the manuscript. Following this idea, it is evident to me that the take-home message of this investigation is centred on hoarding practices, rituals, and interpreting the archaeological assemblages; this focus seems to be lacking in the introduction of the manuscript.

The biographic approach has explained in detail in the introduction, including key references.

Review by Lars Larsson, 19 Dec 2024 16:41

Does the title clearly reflect the content of the article? Yes

Does the abstract present the main findings of the study? Yes

Are the research questions/hypotheses/predictions clearly presented? Yes

Does the introduction build on relevant research in the field? Yes

Are the methods and analyses sufficiently detailed to allow replication by other researchers?

Yes

Are the methods and statistical analyses appropriate and well described? Yes

In the case of negative results, is there a statistical power analysis (or an adequate Bayesian analysis or equivalence testing)? don't know

Are the results described and interpreted correctly? Yes

Have the authors appropriately emphasized the strengths and limitations of their study/theory/methods/argument? Yes

Are the conclusions adequately supported by the results (without overstating the implications of the findings)? Yes

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Is anything known about how the various objects were deposited in the pit?

No further information is available.

What was meant by most promising for functional analysis when the selection of objects was made? Selection criteria? Why were not all the objects included in the analysis? What made not everyone most promising for functional analysis?

The selection strategy has been explained in detail in the text.

Why must axes have been used? What contradicts the fact that they were deposited unused?

There is clear evidence that at least one of the axes was used.

How common is heating in a regional perspective?

Heating has been frequently on axes within the wider region (see Wentink, Van Gijn). However is unclear whether it concerns controlled heating conditions.

Fig. 8. Where on the axe are the traces of being used as a strike-a-light? Where exactly are the markings a and b placed? Compare with the clear markings in Fig. 7.

VanmonTort et al., 2001/2002. VanmonTort et al. 2001; VanmonTort et al. 2002

Changed into Vanmontfort 2002

Is Hayden 1989 eller 1979?

Changed into Hayden 1979

Review by Juan Gibaja, 24 Jan 2025 07:53

The review of the article From Polishing To Burning: 1 Deciphering A Middle Neolithic 2 Hoard From Beringen 3 Brouwershuis (Belgium) 4 Through Functional Analysis represents an interesting contribution of functional studies to the interpretation of tools documented in certain structures. I would like to make a few comments bellow, which are not so much criticisms as suggestions for improving the text.

Line 73. One of the biggest deficiencies I have noticed is in the contextual information. You give an explication of the location of the site and talk directly about the structure in which the material was found. I think it would be interesting to describe much better the site, its characteristics, what kind of structures have been discovered, if there are other structures similar to the ones studied, what data other disciplines offer (about the economy, for example), etc.

The site context is described in more detail. However, it should be noted that it concerns a rescue excavation on a limited area with very few interventions from subdisciplines as generally no other artefacts or associated structures from the Neolithic period were observed. So it concerns an isolated find.

A map of the sit is also included, but a general map of Belgium would be useful for readers unfamiliar with the geography of the area.

A general map of Belgium has been added, indicating the location of the site in a larger geographical area.

Line 96. I think that one of the researchers who has done the most work on polished tools is Alba Masclans. I think her work should be referred to. Moreover, most of her studies are on Neolithic tools from funerary contexts.

We acknowledge that Alba Masclans has conducted extensive work on polished tools; however, we consider her studies beyond the scope of this research, as we aim to focus on work conducted in Northwestern Europe.

Line 107. With regard to the material, the authors do not explain why they only analysed 17 tools. What is the reason for this selection? In this sense, they have not explained whether there are other structures with lithic material that have not been studied.

The limited sample selection has now been explained in the Materials and Methods section.

Line 245. Regarding the modifications, it is surprising that even if they are very modified, as the author says, small modifications are associated with the hafting of these tools. The question is: could these types of modifications not be the result of alterations? Is there no other possibility than this interpretation?

Additional clarification has been added to the explanation within the manuscript. The evidence of hafting was characterised by a combination of macroscopic edge damage and microscopic features, which occur in diagnostic patterns, in addition these patterns were distinct enough to differentiate from post-depositional alterations.

Line 294. The authors are very interested in interpreting material that is fundamentally linked to the symbolic sphere. For example, the fact that a tool is documented as a strike-a-light is not seen as just another use or reuse, but as an element linked to the ritual. What seems strange to them may be part of the ritual, and other activities, such as wood or leather work, which are documented on other instruments, do not seem to them to be related to the symbolic world.

The strike-a-light was used in its final stage, and we propose a ritual significance, which does not exclude a more mundane function. This interpretation is based on its final documented use before deposition, suggesting a possible shift from a practical tool to one with symbolic meaning. The association between fire-making and ritual practices is well-documented, particularly in contexts of transformation or renewal. While the strike-a-light may have originally served a functional role, its final use, particularly if found in a structured deposit, could indicate deliberate ritual practice.

Line 309. "The absence of extreme discoloration or complete fracturing suggests controlled burning". In the photos, the presence of cracks and negatives of potlids from exposure to intense heat show that there was no controlled heating. These changes occur precisely when the heat is very intense. This leads to destruction of the flint or loss of quality when heating is used to cut the cores.

We have now explained in detail why we believe the lithics were exposed to temperatures exceeding 350°C but below 550°C. We suggest that controlled burning is the most likely hypothesis, based on past experimental observations. However, we added that further research is needed to confirm this hypothesis.

Line 313. It says: "This controlled exposure implies that the tools were purposefully modified before deposition, potentially carrying ritual significance". This is another example of the search for an exclusively symbolic interpretation. I think this kind of interpretation is very risky and without solid evidence. Many of the tools have been badly affected by high heat and little control. In any site with thermally altered flint tools, there are different degrees of alteration due to proximity or lack of proximity to the heat source, exposure, etc. However, this does not imply anything symbolic, but simply changes inherent to the activities carried out in the settlements. It is difficult to make these assessments if other structures on the site have been analysed or similar cases have not been evaluated. In any case, these are proposals by the authors, which the scientific community will evaluate as solid or not on the basis of the data presented.

We removed this sentence and replaced it with a more nuanced one: *"In contrast, the absence of extreme heat indicators in the lithic assemblage of Beringen suggests a lower-intensity burning process. Further research is needed to evaluate whether this burning was intentional and controlled or merely incidental."*

For all these reasons, I believe that this article should be published with minor modifications, regardless of whether the authors reflect on their interpretations or not.