

Peer Review

# Review of: "Assimilating Neuroimaging with the Archaeology of Early Mark-Making: A Critical Assessment"

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This research analyses the origin of the earliest marks engraved by humans more than 500,000 years ago, assessing whether they represent complex symbols or a proto-aesthetic response. The author challenges the traditional symbolic model, arguing that *Functional Magnetic Resonance Imaging* (fMRI) techniques have temporal limitations that obscure early visual cortex activity in pattern processing. Through the use of *Neurovisual Resonance Theory* (NRT), it is proposed that these engravings emerged from a cerebral preference for geometric forms and symmetry (*proto-aesthetic sense*). The text suggests that these marks originated from motor skills associated with toolmaking before acquiring cultural meaning. Finally, the study seeks a consensus that integrates neuroscience, archaeology, and material engagement theory to understand cognitive evolution.

That is, in contrast to the "*symbolic model*", which posits an early lexical assignment (a meaning shared and understood by a society) whereby the first geometric forms already activate the *Visual Word Form Area* (VWFA), this approach proposes an intermediate stage in which the pleasure derived from symmetry and geometric order preceded the symbol (or its symbolic meaning).

In this regard, I find this essay to be **well written and well justified**, and it proposes an **alternative that deserves to be considered in the search for the origins of human symbolism**.

I would only like to point out a few minor errors in the text that could be corrected:

1. In reference 7, the name "*Salagon*" is listed, whereas we understand this should refer to "*M. Salagnon*".

2. On page 3, the fMRI method is described as “*Functional Magnetic Resonance Imagery*,” whereas it is more commonly referred to as “*Functional Magnetic Resonance Imaging*” in the literature (e.g., <https://pmc.ncbi.nlm.nih.gov/articles/PMC3073717/>). If this is an error, it would be advisable to correct it.
3. On page 6, the text reads “*VWEA has been found be sensitive*” where it should read “*VWEA has been found to be sensitive*”.
4. Reference 30 lists “*EEG-fMRG: What we have learned and what does the future hold?*” where “fMRI” is intended instead of “fMRG”.
5. Citations should be reviewed for consistency, as they sometimes appear as “et al.” (e.g., Murray et al.) and elsewhere as et al without the period (e.g., Cela-Conde et al, page 8). The same applies to DOIs, which sometimes include spaces that would invalidate access (e.g., “j.jasrep.2 019.02.025” instead of “j.jasrep.2019.02.025”).

## **Declarations**

**Potential competing interests:** No potential competing interests to declare.