

Response to Reviewers

Reviewers' comments in *italics*, my response in **bold**.

Reveiwer #1 (Rachel Crellin)

The section labelled 'Conclusions' would benefit from a re-titling – it is really a very thoughtful discission on machines in archaeology more broadly. It makes a series of excellent points about how approaches to machine learning and the labels we apply to it uphold an unhelpful nature/culture dualism. This is a great point and not one that I have seen made elsewhere. Breaking this part of the paper into its own section would help drive this home and make the paper more readable. I suggest shifting the sub-heading 'conclusion' to sit before the final three paragraphs and re-naming the current 'conclusions' section with a different sub-heading.

This I have done – I re-titled the first part 'Implications' and inserted a new sub-title before the last 3 paragraphs 'Concluding Remarks'. I have also tried to tie the text better back to the preceding discussion.

Minor points.

· *The author might consider offering a brief explanation of what they mean by emic and etic categories on page 2 to help readers unfamiliar with these terms.*

I have added a few sentences on this and slightly re-jigged this paragraph.

· *The author might consider adding references to papers from the [Arch-I-Scan](#) project*

Done

· *On page 6, line 7 'thar' should be replaced by 'that'*

Done

· *Add a citation of Kristiansen 2014. Towards a new paradigm. The third science revolution and its possible consequences in archaeology. Current Swedish Archaeology 22(1): 11-34 into the section on theory and big data.*

Done

· *Add a citation of Barad, K. 2007. Meeting the Universe Half Way into the section on the materiality of science (p10)*

Done

Reviewer # 2 (anonymous)

Title:

The title is informative and descriptive, but it may not entirely represent the essay. I wonder if ontology is also not a prime component of the author's discussion.

Ontology is important but I think it is better to foreground another concept so I re-titled the piece by adding 'typology' – Archaeology, Typology and Machine Epistemology

Abstract:

The abstract is informative, but as above, it is not entirely representative of the work. At the very least, one would expect to see some mention of automation and novelty. In the current version, it reads too generic with wide-spanning questions.

Indeed – the abstract was written before I really knew what I was going to say, so I have now re-written it to better reflect the paper.

Introduction:

It is clear and to the point. Here, the author builds upon the ontological discussions, so we miss the machine epistemology. The author assumes we all know what these epistemologies are. I would have preferred to read the author's position more clearly -so that the rest of the essay had a more solid framework.

I have worked on making the introduction flow better so it sets up the purpose of the paper and I hope this is now clearer.

In-line comments:

- *“Typological debates have periodically surfaced in the history of archaeology but in the Anglophone world ... “ Wouldn't it be nice to discuss the take of the “non-Anglosphere world” on this matter? Are we not missing opportunities to build better machine epistemologies by not being more inclusive?*

I have added a disclaimer here and stressed the anglophone perspective represents my own limited experience

- *Since the author mentions Deleuze in the essay, I wonder how would the “research question” “our question today should be what do types do “ would differ from what might types do (as I brutally caricature Todd May's comparison of Deleuze's philosophy with earlier work. I lack expertise in this matter, but as an outsider to new-materialist approaches, I am motivated more by the imbalanced agency inherent to the subject-object relation.)*

I have re-phrased this to accommodate this subtle, yet significant difference

Materials:

Automation

The section is well-written and could be an essay on its own. There is not much to comment on it in general. So I provide below some in-line comments:

- *It would be beneficial to provide a reference from Marx, as the author explicitly mentions “Marx's famous critique of automation.”*

Done

- *It would also be beneficial to highlight the “labour theory of value” within the context of time-saving and labour-saving automation. At the end of the day, and however we define*

it, automation changes archaeological labour relations, so the value of what and how we labour.

I have made a passing reference to this without going into detail – would take me too far off point

- *This is one of the most critical views in the essay. The author states: “My sense is, automation works best when it is applied to reproducing an accepted way of doing something; that is, to accelerate a pre-determined output.” At this point, one should also stop and ask what is the pre-determined output -hence an ontological rather than an epistemological problem. The fallacies of pre-determination (biases one may read) are more visible in law and medicine, yet archaeology (despite the lack big data in its true sense) is not immune to past biases -as we scavenge through legacy data.*

I am not sure I fully understood what the reviewer is getting at here but I have tried to stress what I mean by pre-determined output

- *Finally, the author is being computationally simplistic -as he tacks between supervised and unsupervised classifications, probably to make a point. But how about semi-supervised learning or reinforcement learning? What are the implications of such techniques?*

To an extent but in the next section I do discuss semi-supervised learning in more detail; however I have added the term at the end of this section to avoid obvious dichotomizing.

Novelty

Compared to the "automation" section, the "novelty" section is more straightforward and less speculative -if I may use that word. Nevertheless, it would have been beneficial to read the author's definition of novelty: what is considered the novel? Can there be a thing ever entirely novel? Is it a fantasy that we expect computers to create novel things while we are not fully "capable"? Are we the victims of digital hype? As these are very subjective questions, it would have been nicer for the reader to have a "boundary" around this section.

I have added a paragraph at the start of this section on what I mean by novelty, though this opens a can of worms and is a topic I address in more detail in another paper (which I cite later on).

Conclusion:

It is an unorthodox section. It is very long. But most importantly, I cannot directly tie the great arguments in previous sections with the “conclusion” section. It stands on its own and reads almost as if part of another essay. It might be a good idea to create a “results” section where the author builds towards a “discussion/conclusion” section.

See response above to Reviewer #1

As far as I can tell, this is a chapter for a volume. So I assume some key topics like “new materialism” is discussed elsewhere. Otherwise, some concepts and ideas float.

All unusual concepts have links to citations; there is a limit to how much explaining I can do without digressing and breaking the flow and so I have also had to assume some background knowledge on the part of the reader. Obviously this will vary and I cannot always strike the right balance but hopefully most readers will cope.

In-line comments:

- *I would disagree with the naiveté of Anderson's claim on "the end of theory." Now I use this example -only to point at how such "naïve" positions can also be highly influential and shift the arguments; one may only look at Trump's way of using social media and his success in creating an army of trolls. In the digital age, it is not clear anymore who is naïve and who is not.*

Fair point – it may be naïve to assume Anderson is being naïve. I have altered this accordingly.

- *I wonder if adding a Marxist definition of technology (see David Harvey, *Marx, Capital and the Madness of Economic Reason*) would support the author's arguments.*

Interesting idea but I felt this would perhaps open another can of worms I could not deal with. So I have not done anything here.

- *It would have been great to read what the author thinks about the term: robot, both in Čapek's original and modern ways.*

Brilliant point – I was not familiar with this etymology and loved it, so I added a paragraph.

- *Finally, is the difference intentional? I have not read Simondon's work: "a distinction between three levels of autonomy: elements, individual and ensembles" and "re-thinking this concept. His distinction between elements, objects and ensembles" Are individuals and objects the same?*

A mistake – they are not the same. I have corrected it. The right word in both cases should be 'individual'. An object is just one kind of individual – and even then, not only that.

Besides all these changes, I also made a few minor edits here and there and added an acknowledgements section at the end.