

## ***Interactive comment on “GAIA 5.0 – A five-dimensional geometry for the 3D visualization of Earth’ climate complexity” by Renate C.-Z.-Quehenberger et al.***

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The authors report on an ambitious and seemingly very interesting SciArt initiative which looks to represent aspects of the Earth using elaborate higher-dimensional representations. I have no doubt that this subject could be of interest to the readers of Geoscience Communication. However, in its present form I find it hard to align the manuscript with the journal’s requirements (as outlined in Illingworth+, 2018, <https://doi.org/10.5194/gc-1-1-2018>). Principally, this states that "All research articles should include qualitative and/or quantitative evidence" which I could not see any evidence of in this manuscript. Instead, the manuscript seems to be more of an essay

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or opinion piece drawing from published artistic reflections in motivating the aspects of their exhibition. I admit that I am less familiar with this style of article, but would urge the authors to consider if their paper may be better suited to a more art-focused journal where this format is more common (I am aware of the Leonardo journal where I believe articles like this are published) or to consider how it might be fundamentally revised to align with the purpose of Geoscience Communication. At present it is rather impenetrable to readers who are not fully embedded within the art world as an academic discipline. I also found the manuscript to lack a clear sense of narrative flow - sections do not naturally follow on from one another, concepts are mentioned in passing without explanation only for them to be expanded upon much later, and the overall structure and purpose of the piece is nowhere set out to readers leaving them (or least me) very confused throughout. Clearly a lot of work has gone into this project and writing it up, so I hope that my comments can be taken in the spirit of collegiality to improve the communication of this innovative work as I would truly like to understand it better!

I will summarise some of my main issues with the manuscript in its current form.

1. Scientific basis - The authors need to clearly lay out in broad and understandable terms what the scientific basis for their artwork was. Elements are dotted throughout the manuscript but are not explained to non-experts in those specific fields. Furthermore, some of the concepts seem potentially controversial, e.g. the Gaia hypothesis, but nowhere are these criticisms clearly expressed. It is rather unethical to present conjectures, not currently based in sufficient objective evidence, as fact. The potential existence and nature of the 5 dimensions behind GAIA 5.0 (and whether this is established scientific fact at present) is also incredibly unclear. While I am familiar with Minkowski 4D space-time (mentioned on line 120 but with insufficient detail for a broad readership) I could not discern what the 5 dimensions the project refers to actually are. These background introductions need to come before any discussion of the artwork is raised.

2. Clear outline of the exhibition - Trying to understand what this exhibition actually con-

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tained was also difficult to discern. Early in the manuscript aspects of it are referenced before they are even introduced. It appears that there were many different elements, could these be summarised by a diagram or table early on to indicate to readers what they were. Such a clear introduction to the artwork might help mitigate much of the confusing narrative flow.

3. Writing to the purpose of the manuscript - As mentioned previously, it was not clear to me what the manuscript is hoping to achieve. If it is to motivate the various aspects of the exhibit through previously published artistic reflections, then make this much clearer upfront to readers and outline in each section the aspect of the exhibit or the overall concept being addressed. It is not clear to me whether this would be sufficient to align with the aims of Geoscience Communication as a journal, but at least it would make the manuscript more comprehensible.

4. Objective evidence and limitations - Many bold claims about the efficacy of this project are made. However, at present they come across as purely the opinions of the authors, with no objective data gathered through a clearly defined process being presented. There is some brief mention in the Discussion section about audience experience, but this is unfortunately currently not up to the standard of Geoscience Communication being anecdotal. Limitations on what can and cannot be confidently stated based on primary research aspects to the work are nowhere to be found.

Given these rather fundamental issues with the manuscript at present, I cannot currently recommend it for publication in Geoscience Communication. I urge the authors to consider these aspects carefully to try and work out where this very interesting work would be most suitably published, how they can make it clear to readers what their exhibition entailed, and establishing to readers what the purpose of their article is. With these in mind I'm sure that the authors would be able to produce a very compelling manuscript that I would be interested to read.

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