

Review of: "Early Renaissance Concepts of Time and the Invention of Mechanical Clocks"

Nadja Simao Magalhaes¹

¹ Universidade Federal de São Paulo, São Paulo, Brazil

Potential competing interests: No potential competing interests to declare.

The subject of the paper is quite interesting, and the text is well written. The author presents a two-fold objective for the article at the end of the Introduction that could be mentioned already in the abstract.

The first objective ("I would like to bring the attention of researchers to almost simultaneous parallel developments in time-measuring technology, namely, the invention of mechanical tower clocks at the end of the thirteenth century and the emergence of sand clocks at about the same time") was already explored in a previous article by the author [1]. In the present submitted manuscript, a more extensive presentation is made of the sand clock history; otherwise, its text follows [1] closely.

The second objective ("I would like to investigate, from the viewpoint of a mechanician, the emergence of the pendulum-less mechanical clock in the thirteenth century and its relation to the invention of a much more accurate pendulum clock in the 1650-1670s by

Huygens. According to horological literature, after the introduction of the pendulum, the accuracy of clocks had increased by about 30 times. This increase requires an explanation from the dynamics point of view") was also already approached in [1], where much more detail on the calculations was presented in comparison to the results shown in the presently submitted manuscript. It seems that this second objective of the manuscript is unnecessary and should either be suppressed (together with the sections that refer to it) or reviewed to be presented in the context of original research. In the case of the latter, maybe it would be best to publish it as a separate paper from objective 1, facilitating its reading by the interested public.

In any case, it seems important to make clear to the reader whether the work is original or a review, both in the abstract and the introduction, as well as in the concluding remarks.

There are a few footnotes that do not justify their related main text, instead adding extra text to the manuscript. In this case, if the extra text is necessary to clarify the main text, then it may be best to add it to the main text.

The important reference [1] below is cited in the manuscript within a footnote, and it is re-cited in a few other footnotes with inverted authorship (correction needed). All references could be fully listed at the end of the manuscript - including those that were presented only in footnotes - and then be referred to in the footnotes when needed.

Figure numbers and their citation along the text should be revised.

Overall, the subject is interesting, and the manuscript is well written, but it overlaps considerably with existing literature [1], adding not much novelty to it in the present form. Besides the above suggestions, perhaps more emphasis could be placed in the manuscript on its new contributions to the available literature.

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[1] "Friction and Dynamics of Verge and Foliot: How the Invention of the Pendulum Made Clocks Much More Accurate", by Aaron S. Blumenthal and Michael Nosonovsky. Appl. Mech 1:111, 2020.