

Review of: "Classical Thermodynamics: Primacy of Dissymmetry Over Free Energy"

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Potential competing interests: No potential competing interests to declare.

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Comments to the Author(s)/Editor(s)

Summary:

The paper "**Classical thermodynamics: Primacy of dissymmetry over free energy**" deals with an engineering thermodynamics framework, instead, to be based on the premise of the primacy of dissymmetry over free energy.

Scope:

This manuscript falls within the scope of thermodynamics, containing a case for an engineering thermodynamics framework, instead, to be based on the premise of the primacy of dissymmetry over free energy. With Gibbsian thermodynamics undergirded with the dissymmetry proposition and engineering thermodynamics with the dissymmetry premise, the two branches of thermodynamics are unified to become classical thermodynamics.

Scientific rigor:

The theoretical predictions and the models described in this paper are presented in detail and, in my opinion, can be reproduced based on the manuscript methods. The authors argue for the merit of the second fundamental theorem because of it being a precise expression of Carnot's theory for the resolution of Thomson's problem, resolving the conflict between Carnot and Joule.

Significance:

The paper does not advance the field significantly but has archival value. Previous studies have shown similar conclusions to the author's research.

Clarity:

The work is well-written and clearly communicated, with several minor concerns regarding writing.

Length:

This manuscript is very long, at about 34 pages of content and almost 2 pages of references. This is due to the study

itself. I do not have any areas I would suggest being removed.

Title: The title is sufficient.

Abstract:

The abstract generally describes the work of the manuscript well and is sufficient. It should state the results obtained in the study.

Conclusion:

The conclusion summarizes the work well and demonstrates heat extraction as the dominant mechanism for effectively harnessing the driving force of the irreversible world .

References:

In general, the references are reasonably up to date, appropriate, and consistently formatted. There are also many old references (see references 1, 2, 9-12, and others) that may be useful for this study.

The manuscript has been revised and the following comments should be considered:

1. The paper has a good English structure, but some number coherence and other issues can be revisited.
2. The introduction provides sufficient background.
3. Some equations do not have the same size as the others (see eq. 34).
4. Equation 29 appears after equation 41 (see line 29, page 18).
5. I would suggest improving the figures' quality (see fig. 1- it appears blurred).
6. Basic concepts of the subject are well described, but the paper is not ambitious enough from a scientific point of view.
Some additional work along this line is recommended.
7. The conclusion section **should not contain any references**. It should show only the conclusion of the author's study.

Conclusion:

In conclusion, the manuscript **9RYDVV** is well presented. It could lay the foundation for further studies on this subject. So, overall, I think that, if the above comments are addressed, the manuscript will be ready for publication.