

Review of: "The Thomson-Clausius synthesis revisited: Why “conversion” of heat to work is a misnomer?"

Antonio Moñino Ferrando¹

¹ Universidad de Granada

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The Author comes up with a research on the concept of heat related with the mechanical equivalent of heat, and the differences between heat exchanged between sources, heat converted to work in a mechanical process and dissipation. The research provides with a valuable point of view on the Carnot's theory and the Thompson considerations. From the focus of Thermodynamics and Statistical Mechanics it provides with a wide yet deep discussion on the involvement between entropy, heat and work. Indeed, the work goes in the line of previous research by the author (for example **The Second Law: From Carnot to Thomson-Clausius, to the Theory of Exergy, and to the Entropy-Growth Potential Principle**, in *Entropy*, (2017)).

However, there remain some tips whose consideration by the Author might help to make the paper more “readable” and appealing to other potential readers in like-minded field. Perhaps “readable” would not be the most appropriated word, since the manuscript is well written and paced. But the document sometimes seems to be a scientific essay rather than a research paper, but it is only a personal point of view. Some suggestions:

1. The objective of the research, even if the corresponding paragraph in the Introduction starts as “The paper suggests that the genius...”, should be clearly stated.
2. That clarity should also be present in the rest of the document and for the same reasons. However, Sections 5 and 6 recover what in opinion of this reviewer should be the main discussion line in the manuscript.
3. Any reader searching for exergy might as well be interested in this paper. For that reason, a more applied point of view on exergy and system/processes in non-equilibrium with the reference environment and energy degradation would be interesting. Perhaps a good point to insert it would be around Section 3.3, where the valuable discussion on the classification of processes is considered.