Thermodynamic Entropy - Old Wine in New Pipes?

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Abstract. The aim is to demystify the thermodynamic concept of entropy for much wider use. Boltzmann entropy is seen as a purely mathematical tool for almost any kind of first-order kinetics which refer to a progressive parameter comparable to a rising temperature or an elapsing time: an interpretation as (a function of) probability is not needed for descriptiveness as apparently already demonstrated by G.A. Linhart in almost lost works in the early 20th century, retrieved and interpreted recently by Starikov [1-3]. When connected with probabilistic concepts even though, the conceptual understanding of "an entropy" arises technically from a distinction of "a past", "a presence" and "a future" with respect to the progressive parameter, and can then be revealed as basically well established much earlier in life-table statistics. In modern stochastic analysis, theoretical and applied, it is fundamental and far-reaching in martingale-based stochastic dynamic theory [4], and has a plethora of fruitful implications to sophisticated statistical data analyses, as well [5,6]: its name is *integrated (stochastic) intensity function* or *cumulative hazard function*, depending on context.

References

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