

Is the *first law* harmful?

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1824 CARNOT used heat as substance like quantity, which cannot be created nor annihilated. Although the assumption of a substance like character for the heat facilitated the theoretical analysis of the heat engine, principal disadvantages of this idea became soon obvious. Experiments done by JOULE (1843) showed that heat can be created on the expense of work. This reasoning resulted in the conclusion that heat and work are equivalent quantities. The equivalence of both tempted CLAUSIUS to assume, that since heat can be created a possible way for its annihilation must exist, although he was not able to name any experiment proofing the annihilation of heat.

The same character, which has been regarded as impossible for the heat, was later observed for another quantity closely related to heat: the entropy ($dS = \frac{dQ}{T}$). Such a close relation between the former perception of heat and the entropy raises the question, whether entropy and heat are essentially the same.

Another approach to heat can be done by the direct metrication of the common perception of the term „heat“. This approach leads to a quantity, which proves to be the entropy on closer inspection.

The identification of entropy as the common heat implicates great benefits for chemical philosophy, reasoning and education. As the entropy loses its abstract character, the analysis of complicated experiments in physical chemistry becomes amazingly easy. A simple experiment (shown as a computational simulation) shows, that the flow of entropy/heat along a temperature gradient creates entropy/heat by itself!