

Calorique

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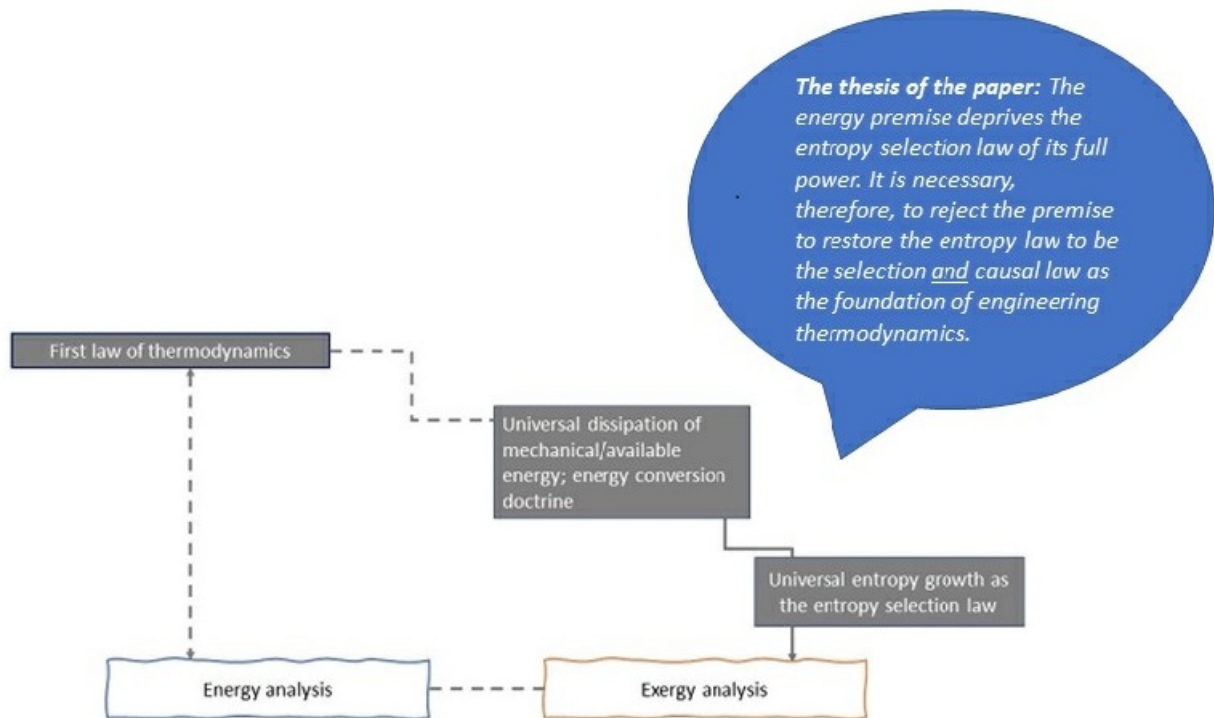
Disorganized energy, the encapsulation of which is in terms of measurable *mechanical energy*, *internal energy*, *entropy*, and *heat* in accordance with the first and second laws of thermodynamics.

The eighteenth-century and nineteenth-century discovery of Newcomen, Watt, Carnot, and Joule was the discovery of disorganized energy, called heat, and that motive power could be derived from this disorganized energy. The great discovery was transformed into a new branch of physics, thermodynamics, the science of heat and energy. In the pursuit of rigor, however, the idea of disorganized energy has receded into background replaced with the following doctrine:

1. caloric, the idea that heat is substance or material fluid is rejected;
2. heat itself is further reduced to be Q , i.e., energy and entropy in transit;
3. the theory of heat became the energetic theory of heat.

As Hermann and Pohlig, in [Which physical quantity deserves the name 'Quantity of Heat'? Entropy 2021, 23\(8\), 1078](https://doi.org/10.3390/e23081078); <https://doi.org/10.3390/e23081078>, wrote, “the name of an existing quantity was taken away from this quantity and given to another one [Q]. However, the old quantity [*heat quantity* or *disorganized energy*] was not given a new name, resulting in its disappearance from the scene.” By giving the name *heat* to Q , the old quantity, disorganized energy, “disappeared.”

For evidence of that, one needs to look no further than the common definition of energy, which is “The capacity of a physical system to do work” (<https://doi.org/10.32388/59VXK8>). This is indeed a definition for organized energy, i.e., mechanical energy, but a totally nonsensical definition for disorganized energy. Instead of the nuances of disorganized energy, thermodynamics as the theory of energy is dominated by the energy premise (see <https://doi.org/10.32388/G43182.2> and its Graphical Abstract here).



The energy premise, the presupposition that energy is the single, monolithic drive for work as encapsulated by the *Universal Dissipation* block, the assertion under which the entropy selection law is subsumed/absorbed.

The fundamental problem is the “disappearance” of disorganized energy from thermodynamics, which as the energetic theory of heat became a theory of energy rather than a theory of disorganized energy or a theory of calorique. (The choice of calorique here is a compromise, as a semantic matter, that we should make every effort to avoid the use of caloric because of its firm association with the notion of heat as substance.) The proposed definition thus is a proposal of giving the name “calorique” to this old quantity. With that we can begin with the restoration of thermodynamics to its original mission of articulating the full meaning of the NWCJ discovery--and the identification of its true implications. The first step in this restoration has been taken in the two papers: [Triadic relations in thermodynamics](https://doi.org/10.1016/j.ecmx.2022.100233) (<https://doi.org/10.1016/j.ecmx.2022.100233>) and [Clausius' thermodynamics, engineering thermodynamics based on the entropy law by discarding the energy premise](https://doi.org/10.32388/G43182.2) (<https://doi.org/10.32388/G43182.2>).