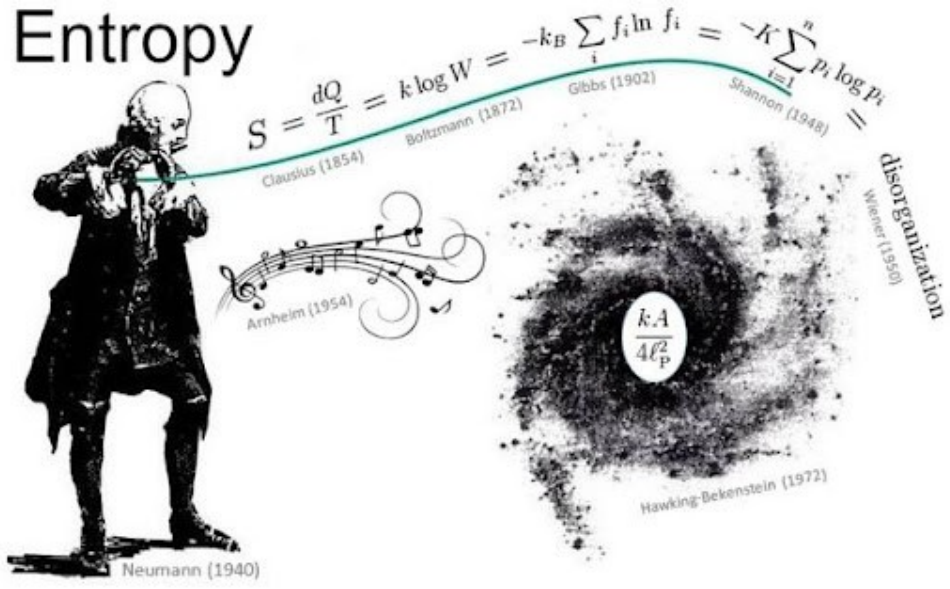

Harold Morowitz „Entropy and the Magic Flute”, 1992

Entropy! Entropy?

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Energy and entropy are two most important concepts in physic. Their essence is revealed by two principles of thermodynamic. Energy is conserved and, entropy is increased during any real physical process. The link between them is the notion of heat. There is a lot misunderstanding about the physical meaning of heat, because it is very far from its intuitive understanding. For instance, the expression “transfer of heat” has no sense because heat itself is a mode of transfer of energy, like work, and we do not speak about the transfer of work. On the other hand, entropy is contained in the body, and it is related to heat by the Clausius relation $dS = đQ_{rev} / T$, saying the change in entropy during a reversible process is equal to the heat divided by the absolute temperature. Beside this definition of entropy there is also Boltzmann’s, Gibbs’s, Shanon’s, and von Neumann’s quantum definition.

Do they represent the same thing?

What is the relationship between them?

Can we apply them straightforwardly to different physical situations?