Socio-thermodynamics – Integration and Segregation in a Population

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Abstract

An analogy is constructed between thermodynamics and sociology. The sociological system is one of hawks and doves who compete for the same resource. In the analogy the price of the resource corresponds to the temperature of a liquid or solid and the two species correspond to the constituents of a liquid solution or an alloy. Different phases of a solution are analogous to different strategies of competition in the population. It turns out that in good times, when the price is low the species mix homogeneously while in bad times when the price is high, there is segregation into hawk-rich and dove-rich colonies.