

**SYNERGY OVERCOMES THE SECOND LAW
BY INCREASING FREE ENERGY WHILE DECREASING ENTROPY**

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ABSTRACT

Synergy, emerges from synchronized reciprocal positive feedback loops between a network of diverse actors. For this process to proceed, compatible information from different sources synchronically coordinates the actions of the actors resulting in a nonlinear increase in the useful work or potential energy the system can manage. In contrast noise is produced when incompatible information is mixed. This synergy produced from the coordination of different agents achieves non-linear gains in free energy and in information (negentropy) that are greater than the sum of the parts. The final product of new synergies is an increase in individual autonomy of an organism that achieves increased emancipation from the environment with increases in productivity, efficiency, capacity for flexibility, self-regulation and self-control of behavior through a synchronized division of ever more specialized labor. Examples that provide quantitative data for this phenomenon are presented.

Keywords: Entropy, Free energy, Synergy