Interaction maximization as an evolution principle for social systems
Part IV: Techniques for measuring interaction strength in social systems

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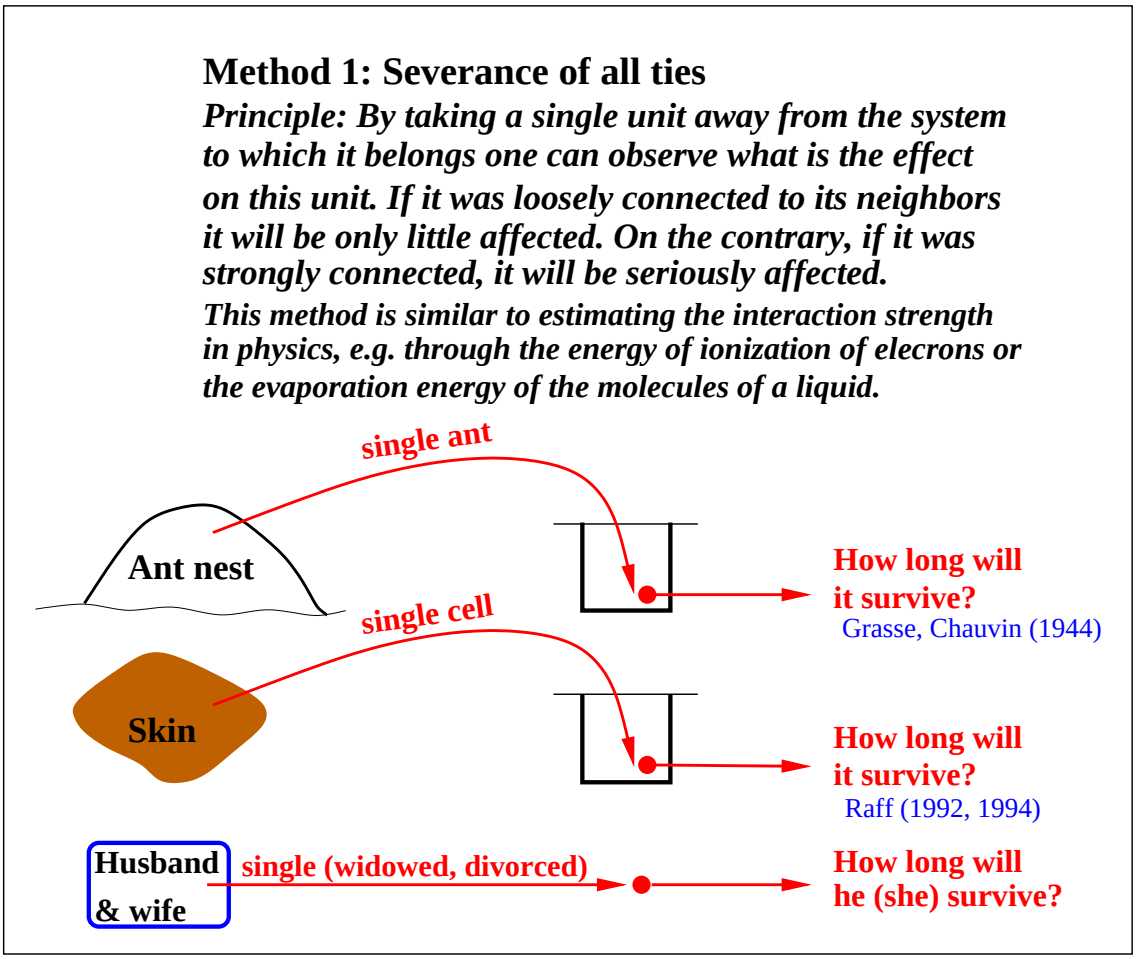
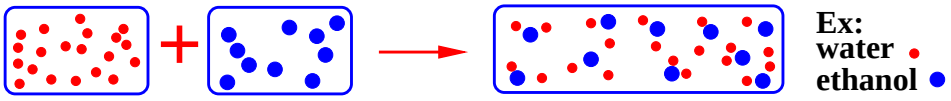


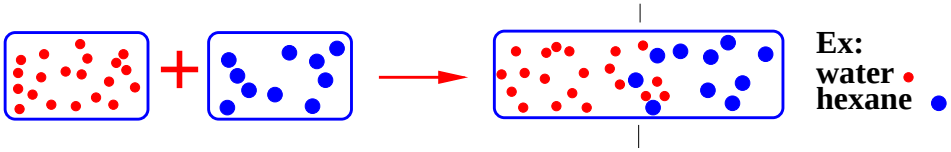
A first proposal for measuring the interaction strength in biological and social systems.

Method 2: Mixing of two populations

Principle: Systems with strong interactions and cohesion (e.g. two cells) do not mix. On the contrary, systems with weak interactions (e.g. argon + helium) are miscible in all proportions. Thus the degree of miscibility provides an estimate of the interaction strength.
In social systems the degree of miscibility can be estimated, for instance, by the percentage of mixed marriages.



The new red/blue interaction is larger than the loss of interaction in each species



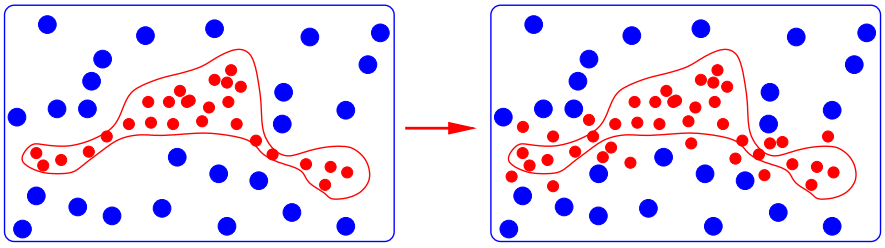
The new red/blue interaction is smaller than the loss of interaction in each species

A second proposal for measuring the interaction strength in biological and social systems.

Method 3: Escape rates

Principle: Intuitively, it is natural to estimate the cohesion of an organization through its ability to retain its members. Thus, the drop−out rate in a school, the desertion rate in an army, the turn−over in a company, the immigration rate in a country provide estimates of the cohesion of these organizations.

The motivation for this approach is strengthened by the fact that in physics it can be verified quantitatively that there is a high correlation between interaction strength in a liquid and the pressure of saturated vapor (that is to say the probability of escape of individual molecules) above the liquid.



A third proposal for measuring the interaction strength in biological and social systems.