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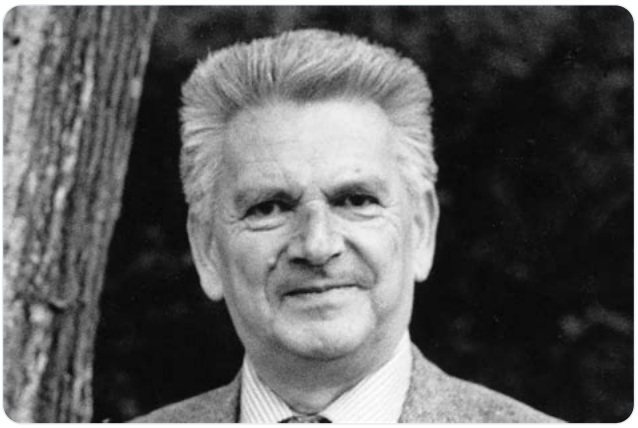
☐ Decision-making involves making discrete distinctions in continuous flow of events: it's a reductionist logic based on the need for action. It has already been modeled mathematically by René Thom (catastrophe theory), but is not sufficient to have a rational grasp of events:



More complexity needs to be added to the model. First some refs:

René Thom

Catastrophe theory (math)

The Rise and Fall of Catastrophe Theory

René Thom - Wikipedia

https://en.wikipedia.org/wiki/Ren%C3%A9_Thom

https://en.wikipedia.org/wiki/Catastrophe_theory
https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/rise-and-fall-catastrophe-theory

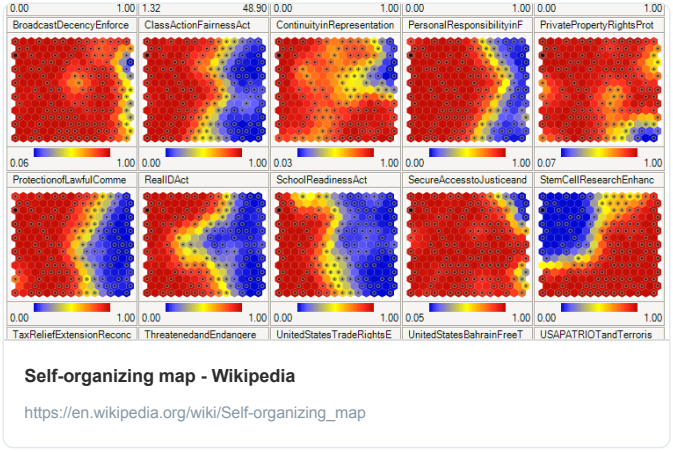
The enactive framework offers a more integrative conception of decision-making for thinking a decision through a PDP modeling (not much to do with the ANN neural metaphor) of a distributed network of "micro-decisions", iteratively enacting a convergent global "decision". So that

the network converges adequately, one needs a global "energy" function to minimize so that the networks "relax" in a stable state corresponding to the best topological resolutions of the "space problem". This is called a bottom-up and "unsupervised learning" modeling.

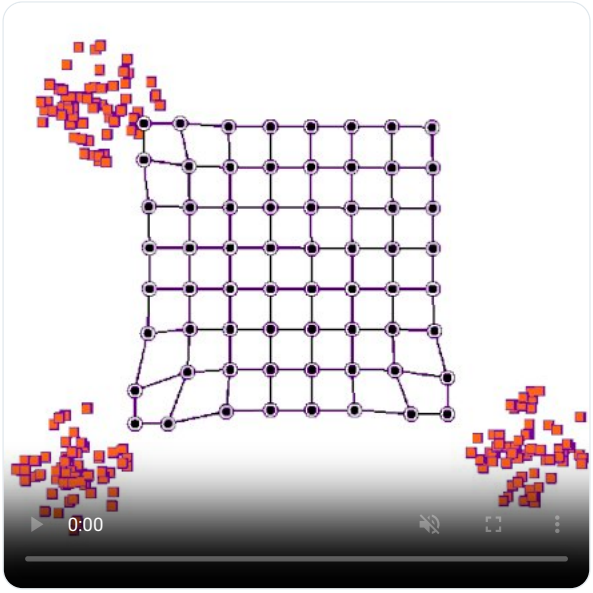
The prototypical model of such "energetical" conception is the Hopfield model. But there are others like Kohonen self-organizing maps for example.

Hopfield model

Kohonen self-organizing maps
https://en.wikipedia.org/wiki/Hopfield_network



A Kohonen SOM map in action:



When seeing this kind of dynamic behavior it is really tempting to make a (*conscious and heuristical*) analogy with basic biological ones, like for ex. with Physarum polycephalum (aka the "blob"), and it's cognitive-like trophic behaviors (see the famous map of Tokyo subway).

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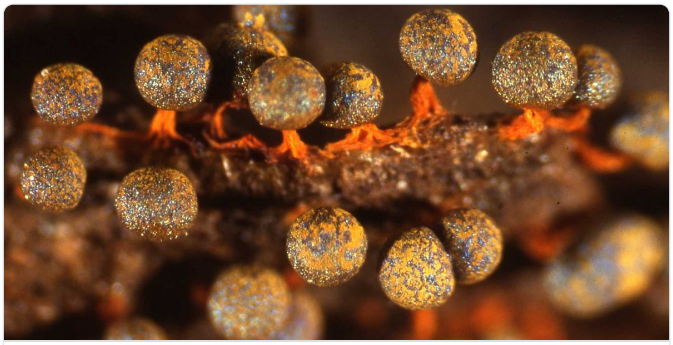
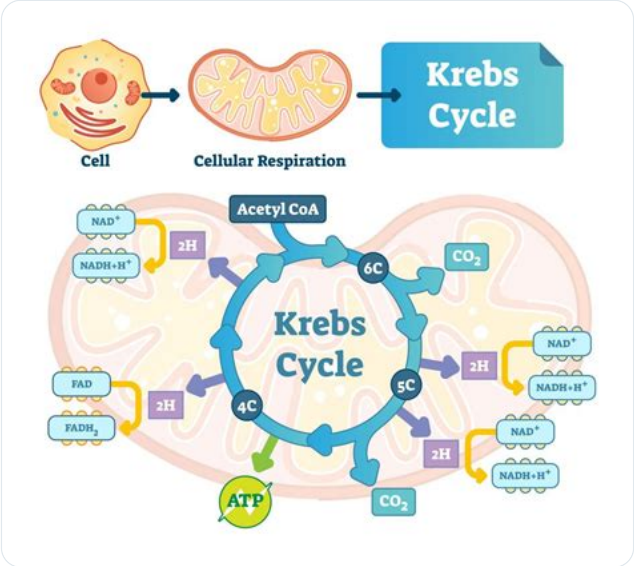
Leading to a more biological realistic thinking of the global "energetic function": a global metabolic homeostatic (and allostatic) circulation, self-regulating the network of biological processes toward an organism's meaningful relaxation state. 🕉️😉



Physarum - Wikipedia

https://en.wikipedia.org/wiki/Physarum_



Understanding and meaning-making, for an organism like us embedded in its own cognitive niche, ie culture AND technologies, aka the Anthropocene, is becoming vital. So learning is first and should be understood and conveyed as a homeostatic need: knowing is regulatory.

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