

Anticipatory natural systems – a working ontological framework for futures research?

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How R. Rosen builds a link between a mind and the external world?

- ◆ One of the primary functions of a mind is to *organize* percepts.
- ◆ Mind's active role in processing of percepts and ultimately in responding to them through effector mechanisms.
- ◆ The *organization* of percepts means precisely the establishment of relations. The relations reflect the properties of the active mind as much as they do the percepts which the mind organizes

Construction of percepts and their qualities

- ◆ The mind behaves *as if* a relation it establishes between percepts were itself a percept. Consequently, it behaves *as if* such a relation between percepts arises from a corresponding relation between qualities in the external world.
- ◆ Therefore it behaves as if such a relation between qualities in the external world were itself a quality, and as if the perception of this new quality consisted precisely of the relation it established between percepts.

The natural selection of minds as a criterion of truths concerning the external world

- ◆ The models of the external world which give rise to them, are directly subject to natural selection
- ◆ An organism which acts inappropriately or in a maladaptive manner, will clearly not survive long.
- ◆ The survival of an organism implies some degree of correspondence between the mind of the organism and objective qualities in the external world

Natural systems and formal systems

- ◆ When a modelling relation has been established (or posited) between a natural system N and a formal system F , *we can learn about N by studying F* , a patently different system.
- ◆ Likewise, once an analogy relation has been established between two natural systems $N1$ and $N2$, *we can learn about one of them by studying the other.*
- ◆ Both modelling and analogy have played perhaps the fundamental role in both theoretical and experimental science, as well as a dominant role in every human being's daily life.

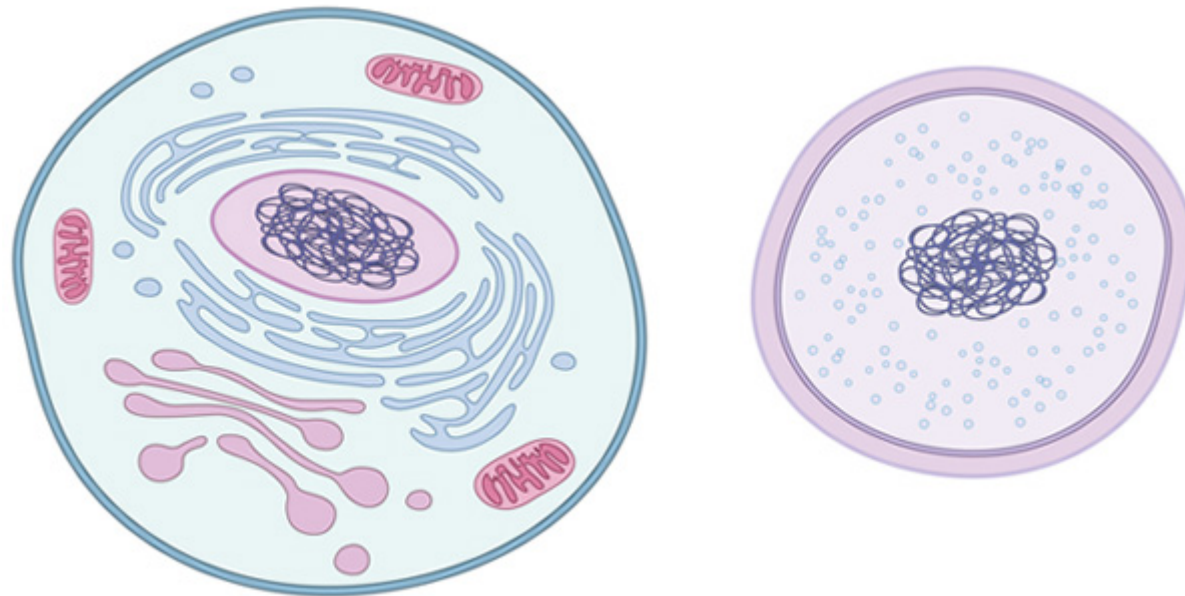
Essence and epistemology of systems

- ◆ Two systems are related through the generalities they share, and distinguished through their particularities.
- ◆ In biology, particular living organisms are considered to be instances of *life* (the general), and learning about this life by studying the particularities of living. Meaning: epistemology entails ontology or the essences of beings.
- ◆ It mandates that ontology is redundant, not a separate or independent study.

Relational biology

- ◆ Rashevsky's relational biology sought rather to keep the organization and throw away the matter; to treat the organization itself as a *thing*, and recapture specific material aspects through a process of *realization*.
- ◆ An *organism* is a material system that realizes a certain kind of relational structure, whatever the particular material basis of that realization may be.
- ◆ Rosen's class of relational cell models called (M, R)-systems (*M* for metabolism, *R* for repair). The minimal organization a material system of a *cell*.

DNA is not separated from the cytoplasm:
a **prokaryote**. DNA is partitioned off in its
own membrane-bound room: an **eukaryote**.



Another possibility: The General Frame of Consistency

- ◆ Valid predictions as the source of the essence of a not-learning system (being)
- ◆ Invariant criteria of sameness (same actions in same situations according to those criteria) of the not-learning systems make valid predictions possible to minds of (genuine) learning systems (beings)

Genuine interests as the essence of genuine learning systems or actors

- ◆ “The quality of the life project” instead of the survival with a permanent or extensive presence in the world
- ◆ Instead of systems that replicate themselves in various environments construction of environments where the promotion of genuine interests is possible.
- ◆ Some kinds of “equilibria of learning” related to interest based preferred choices indicate genuine interests.