

## Braintheory

Intending to simulate thought, or consciousness even, one will reduce it to movements of an agent within an hermetic domain. Thus, the hermetic paradigm is basic to artificial human intelligence. It consists of but two elements, the hermetic horizon and the agent acting within it. As horizons as well as agents may in principle differ among them it follows that different forms of intelligence exist. This is shown in a table of categories like the one in

**FIG. 1**

HORIZON AGENT	STRUCTURE $\alpha$	STRUCTURE $\beta$	...	STRUCTURE $\omega$
SYSTEM A				
SYSTEM B				
⋮				
SYSTEM Z				

Each square of the table represents a special form of intelligence. The human brain fills one of the possible entries. It is a special case of an agent, as are any of the other entries in the table. Each represents one possible realization of the "agent" idea. Knowing the categories of agents as well as of horizons, and thus knowing exhaustively the table of agent-horizon-categories, is the prerequisite of speaking in a meaningful manner of a "brain theory," a "theory of consciousness," a "theory of cognition," etc. A "brain theory," a "theory of consciousness," or a "theory of cognition" is not viable as long as it consists of speculating about the respective object - the brain, consciousness, cognition - in its respective singularity. Only upon being able to deduce the object as one possible representation from a known number of possible representations can we speak of possessing some insight into that object. - E.g., a theory of the plant is possible, because we know ALL plants. A theory of the animal is possible, because we know ALL animals. A theory of life is impossible, because we know only ONE life. A feature of reality is inconceivable as long as we do not know the realm of options it is but one representation of.

FIG. 2

<b>HORIZON</b>							
<b>AGENT</b>	2 STIMULI	3 STIMULI	...	n STIMULI	...	n + k STIMULI	∞ STIMULI
<b>TURING MACHINE</b>	BACTERIA	TICKS	...	BRAINS	...	CONSCIOUSNESS	?

The construction of the table of categories starts by differentiating agents as well as horizons. Properties by which to differentiate need to be independent. Reducing any possible activity of the agent, from tropotactics to thought, to computing leads to a 1-row table of categories as in Fig. 2.

In this table, entries of forms of substratum are equivalent to the mathematics they are governed by. As a Turing machine can in principle perform any computation, the species could be simulated, and the table could even be extrapolated to the right, which would be equivalent to extrapolating evolution herself.

FIG. 3

<b>HORIZON</b>	
<b>AGENT</b>	<b>WORLD</b>
<b>BACTERIA</b>	1 %
•	•
•	•
•	•
•	•
<b>HUMAN BRAINS</b>	100 %

The reverse case is given by the 1-column table. It contains but one reality, the world, which comprises anything that happens to be the case. The agents differ by recognizing different sectors of the world. All agents live in the same, single world. They only differ by their potency to differentiate the horizon. Simple tropotactical agents differentiate just once. To them, the world consists of but 2 stimuli. Brains differentiate the world in a number of ways. This paradigm holds an unlimited number of different agents, because it is sufficient to find a new mode of differentiating in order to be able to survive as an additional agent. (Fig. 3). - The 1-row paradigm deals with just one agent, the Turing machine, for which worlds exist by an unlimited number. In both cases the difficulties arise from a lack of orthogonality, or independence, between agent(s) and world(s): In the first paradigm, the world depends ontologically on the agent, in the second case the agent depends ontologically on the world, or horizon. The first paradigm represents theories akin to autopoiesis (in the sense of Maturana and Varela), the second one represents the idea of the origin of species by adaptation and selection in the sense of the theory of evolution. The first approach founders with respect to a complete ontology of the world, the second one founders with respect to a rational orthogenesis of the agents.

Considering horizons and agents to be independent of each other results in the following preliminary attributes, or possible states, of horizons: (i) The horizon does not exist, (ii) it does exist and is complete, (iii) it does exist and is incomplete. Assuming three types of agents as well, the properties of whom remain to be specified, leads up to a 9-square table as in fig. 4.

**FIG. 4**

HORIZON \ AGENT	NO HERMETISM	COMPLETE HERMETISM	FRACTAL HERMETISM
TYPE 1	1	2	3
TYPE 2	4	5	6
TYPE 3	7	8	9 HUMAN BRAINS

Only one of the entries we are able to fill in, namely the one we know to be occupied by those agents that we happen to know to be "brains." They are our exclusive sources for finding the true categories of horizons and agents, thus to establish a valid table of categories. From the premise that agents and horizons are ontologically independent of each other it follows that no agent can eo ipso be identified to be a brain. The definition of an agent depends as well on its dynamics as on the structure of the horizon. Furthermore, it follows that the logical bases of the agents differ. Throughout the table the mathematics are specific to each entry. E.g., the mathematics of square no. 9 should be sexagesimal, i.e. use the number 60 as a base.