



Christophe Rigon / Soto² □ - Scybernethician @ki_cog

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[Understanding the Connectionist ("genAI") Epistemological Disruption] 🧵 □

I will quickly articulate some key rationals in this thread to explain the disruptive role of "generative AI" & their unexpected success, which is also at the foundation of my "scybernethics".



In a nutshell:

connectionist modeling is a de-construction of one pillar of traditional natural & cognitive science: functionalism.

"Connectionist" style modeling (Machine learning, Artificial neural networks and associated "learning rules"), which I prefer to more rigorously call generically PDP modeling (for Parallel and Distributed Processing, Rumelhart & McClelland, 1984, about micro-cognition),

simulates both *inductive inferences* (generalization from examples and categorization) and *distributed* (and not localized) memorization, two fundamental properties of natural cognition.

Now what generically characterizes the "cognitivist" paradigm, in line with traditional first-order scientific thinking, is functionalist intellectual thinking and explanations,

i.e. localized (the "what") linked by linear relations (the "how", logically valid deductive inferences, the "reason").

This is also in line with what phenomenologists (Husserl, etc.) call the "natural attitude", our practical way of thinking and conceiving the everyday, objectivist world (us vs. the world-out-there, others, the technological objects we use, etc.).

This is how scientists (here more particularly natural sciences) can communicate with each other, even from different disciplines (mathematics being another more specialized way to do it), and with the general public to share their discoveries.

It should be noted that we cannot directly think intellectually about the emergent properties of these types of parallel and distributed models (or "complex systems").

We are forced to simulate them computer-wise to understand their dynamics, while trying to solve them mathematically (creation of functions), but approximately, to make them intelligible by what was until then the scientific lingua franca.

However, there is another way to make them personally intelligible (cf. cybernetics), it is by practice: computer coding is also creating functions, but that is another story.

In the more specific case of LLMs, a second *recursive* layer (the "transformers") is added on this first layer simulating induction in order to simulate deductive processes this time. Thus the whole seems to produce abductive type reasoning (Pierce).

Thus it is possible to understand that these styles of modeling, that is to say of representations, de-construct (propose a finer alternative conceptions in terms of understanding) operationally/processually the functionalist conceptions,

and this represents a *major epistemological revolution* not only of the sciences and technologies of cognition, but more generally of technoscientific human thought.

But from the point of view of our common sense, cognitivist-like, it is only an illusory simulation (because operating a double cut and the map is not the territory) generating a *new phenomenological domain* (as the computers and then the internet has already done).

It is anchored on the techno-cognitive transduction operated surreptitiously (cf. The Blind Spot) and historically by the techno-logical drift of the notion of information from Shannon to von Neumann, via Turing.

The value of these dynamic models does not lie in their ability to generate this illusion, which must be freed from by knowing how they work and at the risk of a generalized "cognitarianization",

but in their *heuristic* power on how we can think about natural cognition anew, in accordance with the enactive paradigm.

At least, it is with this understanding that I have personally developed my cybernetic conception for thirty years.

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