Pattern Recognition Principle Theoretical Model of Mind-Brain Functioning

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Abstract: The Computational Theory of Mind and the Connectionist Neural Model are actually the dominant cognitive models in the scientific community. But there is still a discussion about their compatibility as the basis of Cognitive Science. A more fundamental explanation of this two leading cognitive mechanisms in physical basis can give a better explanation of the mind and brain phenomena.

I propose the concepts of PATTERN RECOGNITION-PROCESSING-LEARNING as NECESSARY AND SUFFICIENT PRINCIPLE to build a solid foundation of cognitive science. This encloses a general body-mind, physical, psychological, neural, functional and computational reductionist explanation of the mind cognitive phenomena.

Supporting arguments are: 1- Pattern recognition is a necessary principle for cognitive science. It is a key process in many different scientific areas, but no cognitive science model takes it formally for a general brain-mind theory. 2- The equivalence of the physical-neural-computational mechanisms of pattern recognition as the basis of the cognitive phenomena in performing all cognitive functions (sensory, memory, learning, processing, logical, feeling, emotions, thought, consciousness, etc) , which are here demonstrated. 3- I also propose some key biological cognitive processes and strategies strictly related to pattern recognition processing. 4- A definitional-explicative modeling building theory is also shown giving simple, understandable and unambiguous definitions and scientific explanation of most key cognitive concepts like thinking, self and consciousness. Such a theory is of fundamental importance because those type of cognitive concepts lacks even a reasonable definition. With a scientific-objective definitions we can evaluate, compare and estimate its consistency and also propose experimental and empirical experiments. As an example I suggest one preliminary definition of self-consciousness as: "the recognition by the pattern recognition system of the patterns of its own activity". 5- A mathematical-logical formalism study of cognitive pattern recognition is here proposed as theoretical basis. Here a general formal definition of pattern recognition is proposed in the cognitive science scope. 6- With this theoretical formulation we are able to include other cognitive properties to any basic definition as far as needed, demonstrating it as a solid and promising theory.

As any candidate as a complete theory of cognitive science, this model allow us to reinterpret all branches of human reasoning, including the philosophy and foundations of science and the human understanding of the universe. With the promising applied pattern recognition technology already in development, this model could help to give some directions to artificial intelligence and also neurobiology and psychology-sociology research.