

## Cognitive Model of Analogy Based on Operation of the Brain Cells: Glial, Axons and Neurons

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**Abstract :** Analogy is an essential tool of human cognition that enables connecting diffuse and diverse systems with attributional, deep structural, casual relations that are essential to learning, to innovation in artificial worlds, and to discovery in science. Cognitive Model of Analogy (CMA) leads and creates information pattern transfer within and between domains and disciplines in science. This paper demonstrates the Cognitive Model of Analogy (CMA) as an evolutionary approach to scientific research. The model puts forward the challenges of deep uncertainty about the future, emphasizing the need for flexibility of the system in order to enable reasoning methodology to adapt to changing conditions. In this paper, the model of analogical reasoning is created based on brain cells, their fractal, and operational forms within the system itself. Visualization techniques are used to show correspondences. Distinct phases of the problem-solving processes are divided thusly: encoding, mapping, inference, and response. The system is revealed relevant to brain activation considering each of these phases with an emphasis on achieving a better visualization of the brain cells: glial cells, axons, axon terminals, and neurons, relative to matching conditions of analogical reasoning and relational information. It's found that encoding, mapping, inference, and response processes in four-term analogical reasoning are corresponding with the fractal and operational forms of brain cells: glial, axons, and neurons.

**Keywords :** analogy, analogical reasoning, cognitive model, brain and glials

**Conference Title :** ICAARE 2020 : International Conference on Analogy and Analogical Reasoning

**Conference Location :** London, United Kingdom

**Conference Dates :** June 29-30, 2020