A General Framework for the Discussion of Mathematical Semiosis

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Abstract:

The discussion on the possibility of machines to achieve comprehension, understanding and true meaning grounded in the real world is a very controversial debate within Artificial Intelligence and Cognitive Science. One of the biggest problems is the requirement to involve "reality" in this discussion, bringing forth a lot of unsolved questions regarding the nature of what would be such thing we use to call “reality”. In this work, we present an attempt of getting rid of this problem, by re-defining the meaning process (semiosis, according to Peirce), in an entirely mathematical framework. We are calling this “transposition” of the Peircean theory to a purely abstract mathematical model as “Mathematical Semiosis”. By doing this, we aim at growing a more understandable theory for explaining what is to comprehend, to understand and to mean, in a strictly mathematical sense, avoiding complications related to the connection of signs to a real world. Our intention is to further apply this theory in order to develop machines with these capabilities. In such a regard, what we are calling here "Mathematical Semiosis" would be a kind of purely mathematical abstraction for what is "Semiosis" in the real world.