

# Categorical Quantum Pictorialism Depicts Meanings of Sentences

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*Abstract.* Words are the building blocks of sentences, yet meaning of a sentence goes well beyond meanings of the words therein. Indeed, while we do have dictionaries for words, we don't seem to need them for sentences. Formalizing this process of meaning assignment has been a fundamental problem in contemporary semantics.

To date, the type-logical and the distributional models have provided two complementary partial solutions. The former is compositional, the latter does well on lexical semantics. The question is how can we combine the best of these two in a single model? I will present one such solution, based on methods from category theory, pregroup grammars, and quantum physic, a rare interdisciplinary mix that has attracted pop science venues: we have been covered by the New Scientist under the cover heading “Quantum Linguistics Leap forward for artificial intelligence”.

I will provide an overview of the mathematical foundations of the setting in simple terms, show how the abstract prescriptions can be constructed from concrete data, and provide some very recent results from the experimental side. Together with E.Grefenstette, we implemented part of our method on real data from the BNC, experimented with a disambiguation task and obtained much better results.