



**HARVARD UNIVERSITY
DEPARTMENT OF LINGUISTICS**

Whatmough Lecture XVIII

Date and Time: April 29, 2025 from 4:00 – 5:30 pm

Location: Fong Auditorium, 1st Floor Boylston Hall

Reception location: Harvard Faculty Club, 10 Quincy Street (immediately following the talk)

Speaker: Paul Smolensky, Krieger-Eisenhower Professor of Cognitive Science at Johns Hopkins University and Senior Principal Researcher in the Deep Learning Group at Microsoft Research Redmond

Speaker Bio

Title: Do the syntactic abilities of generative AI systems falsify fundamental principles of generative linguistics?

Abstract

Do the impressive abilities of neural networks in form of Large Language Models to generate rich, well-formed syntax falsify fundamental principles of generative linguistic theory? In short, the answer I will argue for is: “no.” But it will be a rather nuanced “no,” trying to identify the proper treatment of generative AI for generative linguistics.

Specifically, I will consider these principles:

1. **Computability:** Generating natural language with rich, human-level syntax requires use of symbolic grammatical rule systems.
2. **Explanation:** Theoretical explanation in generative linguistics requires built-in discrete symbolic structure.
3. **Acquisition:** Children’s ability to acquire language requires innate knowledge of grammatical rule systems.
4. **Universals:** Linguistic universals can only be explained from innate limitations on what languages are learnable.

The quantity of discussion of these questions will decrease sharply from points 1–4; the bulk of the presentation focused on point 1. The discussion of point 1 takes off from joint work with Roland Fernandez, Herbert Zhou, Mattia Opper, and Jianfeng Gao (arXiv:2410.17498).