

Tel Aviv University  
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## THURSDAY INTERDISCIPLINARY COLLOQUIUM

Thursday 25/07/2024

16:15-17:45

Webb 103

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### Exploring the balance between economy and restrictiveness in grammar learning

A language learner, whether a child or a machine, faces the task of finding a grammar best to account for an input given in the target language. Previous research examining this process suggests two principles that guide the course of learning. The first principle is economy, as in Chomsky and Halle (1968): the learnt grammar should require as little storage space as possible in the learner's memory. The second principle is restrictiveness (Berwick 1985 and others): the grammar should fit the input data as closely as possible in its generated output.

Rasin & Katzir (2016) argue that language learning requires both principles to be taken into account simultaneously. While various ways of balancing economy and restrictiveness are conceivable, the literature has focused on just one choice, namely MDL (Rissanen 1978), in which economy and restrictiveness are balanced by minimizing their sum.

The present research explores alternative balances between economy and restrictiveness and their application to grammar learning. The alternative balances to be examined are in the form of multiplication of each component by a scalar weight, their exponentiation by weights, and hybrid form having both manipulations applied. The custom-balance MDL variants will be evaluated for their performance guiding a learning experiment in an effort to find the optimal balance for learning a grammar from an input dataset.

The preliminary findings suggest that variations made to the MDL objective function have a significant effect on learning success. Linear weight application seems to guide the learner towards the best results in most cases, while the exponential and hybrid modifications cause either overfitting or overgeneralization.

*Click [here](#) to see the colloquium program.*