京都大学　言語科学レクチャーシリーズ

Kyoto University Language Sciences Lecture Series

On the Strong Minimalist Thesis: Towards Efficient Computation and Perception

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日時

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１３：３０〜１７：３０

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参加費：無料

場所

京都大学

吉田南キャンパス

総合人間学部棟　1B06

https://www.kyoto-u.ac.jp/ja/access/campus/yoshida/map6r-ys

準備のため、事前申し込みをお願いします

https://forms.gle/9MfBK9V8rszJhd6C8

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Abstract

The Strong Minimalist Thesis (SMT) states that language is structured around the simplest possible generative operation, recursive Merge operating on a scratchpad called the Workspace (WS), beginning with a collection of heads drawn from the Lexicon. Merge builds interpretable I-Language objects, (optionally) externalized as E-Language, e.g. as speech. Assuming recursive Merge is a property limited to modern humans, 200,000 years ago being a mere blink of the eye on the evolutionary timescale, we have that Merge must be maximally simple with no time to introduce complications or evolve other operations, (Berwick & Chomsky, 2017).

As a formal (theory) object, the operation Merge has exponential combinatorial possibilities when it comes to Workspace computation. How then, can the slow chemical brain with a severely-limited power budget reflexively compute thought structures without being overwhelmed? Chomsky's answer is that Merge is subject to Language (Organ) Specific Conditions (LSCs) that limits Merge, and that Nature makes efficient use of what it is presented with.

It is also a fact that human beings can effectively parse and interpret E-Language, despite Nature optimizing language for thought. Isn't it a mystery that humans manage to parse externalized language that may leave words both unpronounced and displaced from canonical positions? How does that work if there has been only enough time for Merge to emerge?

In this talk, we review the basics of the Merge-based model of I-Language and describe how a SMT-based parsing model can use Theta (θ) Theory, a LSC, to tame the complexity of WS computation for the slow brain. We will illustrate through worked examples how *WS θ-balancing* can help bridge the gap between externalized and internalized language, addressing the problem of unpronounced words. Displacement also poses combinatorial challenges to the recovery of structured thought from an initial set of heads, not pre-partitioned into non-overlapping sub-arrays, called Phases, in the case of perception. We discuss strategies for minimizing this burden, compatible with the SMT.

In summary, the goal of this work is to suggest that the above evolutionary scenario is not only plausible, but can be made efficient enough without positing (evolutionarily implausible) additional parsing mechanisms. If so, this research contributes to the narrative that unlocking Merge was all that was needed.