慶應言語学コロキアム

慶應義塾大学言語文化研究所
The Keio Institute of Cultural and Linguistic Studies

On the Deep Simplicity of SMT Operations

講師：Sandiway Fong（University of Arizona）
討論者：大石　正幸（東北学院大学名誉教授）
司会・コメンテーター：　内堀　朝子（東京大学）
コメンテーター：北原　久嗣（慶應義塾大学）

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会場：慶應義塾大学三田キャンパス北館大会議室 ※対面開催のみ
使用言語：英語
参加申込：研究所ホームページもしくは右のＱＲコードよりお申込み下さい
＊ 準備の都合により、事前申込をお願いいたします。
＊ 事前にお申込みいただかない方の当日参加も可能ですが、会場にて参加者カードへの記入が必要となります。
＊ 今回のセミナーは生成文法研究の専門的知識が前提となります。

This talk discusses the technical nature of simplicity in language.

The simpler the generative system of *I-Language*, the deeper the explanations it provides. Chomsky observes that the *generative enterprise* first assumes that an explanation exists (vs. a simple taxonomic classification) and then aims to provide as deep an explanation as possible. We can then ask: at what point is maximal simplicity (and depth of explanation) achieved? The *Strong Minimalist Thesis* (**SMT**) provides an answer to this question.

The **SMT** posits that *I-Language*, at its core, consists only of operations that are “maximally simple”. Maximal simplicity is also motivated by one of Chomsky's criteria for a *Genuine Explanation*, the (relatively recent) *evolvability condition*. If *I-Language* (as we know it) coincided with the appearance of anatomically modern humans approximately 300 kya, one would expect these operations to have assumed a simple form.

For example, *Merge simply* fires in a workspace of objects initially populated by syntactic atoms selected from a mental lexicon (**LEX**). It puts two items together and does nothing more. It imposes no order, assigns no phrase labels, does not modify any of the items (*the non-tampering condition*), is memoryless (the *Markovian assumption*) and autonomous: it cannot make use of relations computed outside of Merge, e.g. at **INT** (*Interpretation*) or **EXT** (*Externalization*), e.g. wrt. word/phrase order or labels.

Another operation, *FormSet*, also operates on workspace items and therefore must follow the same rules. The *simplest* formulation of *FormSet* is one that exhibits parallelism, which is absent from *Merge*. On the input side, it creates a collection of items that are parallel with respect to *simple criteria*, such as referentiality or predicatehood. On the output side, *Merge*, when applied to *FormSet* structures, must treat each member in the same way.

Finally, another core operation, *Minimal Search* (**MS**), underpins all construction of structure. It looks for a matching object, possibly within a structure. It *simply* finds the first one available and stops. With **MS**, there is no possibility of a comparison among candidates, no multi-stage probing. In the case of **MS**, simplicity happens to coincide with maximal efficiency. Under the **SMT**, no other search operations are possible.

Although *Merge* is functionally simple, we can ask whether it is also computationally efficient. The terms of a *Genuine Explanation* entail that *I-Language*, like any cognitive system grounded in reality, will be subject to natural and biological laws (the *Third Factor*). For example, the brain‘s chemically gated processing is slow, making computational efficiency a serious concern. Yet we know that it is efficient enough to support both fast internal thought and slow communication, the latter involving additional language-particular *Externalization* (**EXT**) and *Perception* stages.

A related question is whether language makes use of all the combinatorial choices afforded by its Structure Building Operations (**SBO**s) (its *enabling function*). One possibility is that the *Third Factor* imposes limits on the use of such operations, thereby giving rise to a *Performance* distinction.

共催：科学研究費助成　基盤研究（C） 25K04101『併合と最小探索に基づく日英語比較研究：統辞構造はどのように生成され解釈されるのか』

主催 慶應義塾大学言語文化研究所

［お問い合わせ先］
〒108-8345　港区三田2-15-45　慶應義塾大学言語文化研究所
電話：03-5427-1595（事務室直通）　メール：genbu@icl.keio.ac.jp
http://www.icl.keio.ac.jp