W-1-2

Merge から MERGE へ

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1 言語理論における真の説明と強い極小主義テーゼ

生成文法と真の説明

1. 生成文法は言語の根本的な特性に対して真の説明を与える研究である。
2. 普遍文法における 3 つの条件件を満たす場合に限り、真の説明となりうる。
3. 強い極小主義のテーゼのもと, 併合の理論の精緻化の必要性.

(1) 普遍文法 (UG) の 3 つの条件の対立と克服

a. Learnability: “The next problem is to determine why language keep the structure dependence, ignoring the simple properties of linear order. Learning is excluded, must come from innate structure ... There is no learning, so the problem of learnability is overcome.”

b. Evolvability: “... the basic structure of language should be quite simple. The result of some small rewiring of the brain that took place once and has not changed in the brief since. The apparent contradiction with learenability, therefore becomes sharper.”

c. Universality: The variety of language comes from the externalization: “...sensory-motor systems use for externalization have nothing at all to do with language.”

(2) 強い極小主義テーゼ (cf. Enabling function: Chomsky 2021)

a. “Ideally, it might turn out that the internal language is fixed and invariant, close to it. That would be the optimal solution to the problem of generation of an infinite number of thoughts.”

b. “the strong minimalist thesis [SMT] holds that I-language, the system that generates thought, keeps to Merge and language independent principles, such as computational efficiency. Optimally, any departure from the strong minimalist thesis should be so slight as to be susceptible to a simple account of its origin.”

c. “...we have to make clear that we understand the computational operation on which explanation is based. Merge proves to be defective in a way that has been familiar since the origins of the generative enterprise.”

2 Merge から MERGE へ

(3) 句構造文法

a. VP → V NP, *PP→ V NP

b. X → Y Z

⇒ 原則的に制限なし.

(4) X バー理論

⇒ 普遍的内心性 (Universal endocentricity) の導入

(5) 併合 (Merge, Chomsky 2013, Epstein et al. 2014, See also Larson 2015, Collins and Stabler 2016, and Adger 2017)

a. Merge(X,Y) = {X,Y}

b. 隠れた前提 (1)：併合は作業空間に適用される (cf. Chomsky, 2019b).

1. Form NP and vP separately
2. Merge NP and vP

c. 隠れた前提 (2)： 併合の定式化は、standard recursion とは異なる.

- "suppose the workspace contains a and b. Under standard recursion with the operation O, we could form O of a, b, call it X. That would add the new element X to the workspace, along with a and b. That' s standard recursion, as in rules of formation for formal system. But Merge was defined initially, so that a and b disappear when the set {a, b} is added to the workspace."

→ Remove (Chomsky, 1995)

(6) 併合が "standard recursion" とは異なる経験的理由

⇒ 移動に関するあらゆる制約を違反する構造を生み出す.

a. Merge(P,Q) → {P,Q}, P, Q

b. build up a structure with P such as {... {Z ... {... {P, Q} } } } = Y

c. WS_n= {P, Q, Y, {P,Q} ...}

d. Merge(P,Y) → { {P,Y}, P, Q, Y, {P,Q} ...} = WS_{n+1}, where Y includes P.

⇒ 曖昧性を生み出す (lethal ambiguity).

大併合: MERGE (cf. Chomsky, 2019a,b,c)

(7) MERGE(P,Q,WS) = WS' = {{P,Q}, $x_1 \ldots x_n$}, where conditions ... hold.

a. "MERGE applies to P, Q, and WS."

b. "Nothing should be lost by the operation."

c. "if a is a member of the workspace WS, it should still be accessible to the computation in the new workspace WS'."

d. "n (in $x_1 \ldots x_n$) should be minimal."

e. "MERGE will always add one new element to the workspace."

(8) 大併合が適用できる要素 (Accessibility for MERGE)

a. “an element *a* can be accessible to MERGE even if it’s not part of the workspace”

b. “a term of some element x is a member of x or a member of a term of x.”

c. A term of x might be inaccessible by

1. Phase impenetrability Condition (PIC, cf. Chomsky, 2000, 2001)
2. Minimal search (cf. Epstein et al., 2020)

(9) 資源節約 (Resource Restriction (RR)): (cf. Fong et al., 2019)

a. “Language is an organic system.”

b. “no operation Remove is needed.”

c. “Resource Restriction renders strictly Markovian.”

(10) コピーと削除

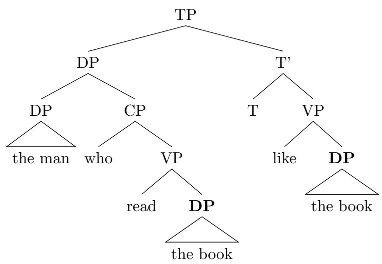
a. “Copies are formed by internal Merge, but more generally, we can assume that copies are formed generally by MERGE.”

b. “Copies are deleted for reasons of computational efficiency, but only if they’re MERGE configurations.”

c. “we form, in a course of derivation, if there are two structurally identical elements, we may or may not take them to be copies. It’s totally free.”

i. “the man who read the book liked the book.”

ii.



(11) 削除と最小探索 (minimal search)

a. “minimal search, at this point, can be an operation which searches everything that’s been generated and marks everything it finds undeletable.”

b. “The only thing that minimal search can’t find is something that it’s c-commanded by a head, the head of chain... so, it doesn’t mark undeletable, therefore it deletes.”

大併合のまとめ

- 大併合は作業空間への操作であり, 操作以外の部分での改変 (追加・削除) は許されていない.
- 大併合により, 次の作業空間に現れる新しい要素は一つに限る. さらに RR より、PIC, 最小探索 (c-統御) により, accessible element は制限される.
- コピーは大併合によって形成され, 作業空間内において構造が同じ要素はコピーとみなすことができる.
- 最小探索によって見つかった要素は削除されず, c-統御されているコピーは削除される.
- RR により、現在の作業空間の情報しかなく, 派生の歴史は見ることができない.

2.1 外的併合 (External MERGE) と内的併合 (Internal MERGE)

(12) 外的併合

a. i. $WS_1 = \{$ a, b, ... $\}$

ii. MERGE(a, b, WS_1)
$= \{ \{a,b\}, \ldots \} = WS_2$

b. no violation of RR.

(13) 内的併合

a. $WS_1 = \{ \{a,\{b,c\}\}, \ldots \}$

b. MERGE(c,{a,{b,c}}, WS_1)
$= \{ \{c_1,\{a,\{b,c_2\}\}\} \} = WS_2$

c. Minimal search
⇒ c_2 はアクセス不可.

2.2 併合の「変種」(Chomsky, 2019b; Komachi et al., 2019; Kitahara and Seely, 2021)

(14) 並列併合 (Parallel Merge, cf. Citko, 2005; Citko and Gračanin-Yuksek, 2021)

a. $WS_i = \{ \{a,b\}, c, \ldots \}$

b. MERGE(b,c,WS_i) $= \{ \{a,b\},\{b,c\}, \ldots \} = WS_{i+1}$

- {*b,c*} の内の *b* と {b,c} 自体が新しくアクセス可能な要素
- 最小探索が２つの *b*s を見つける → RR violation

(15) 側方併合 (Sideward movement, cf. Nunes, 2001, 2004)

a. $WS_i = \{ \{a,b\}, \{c,d, \ldots\} \}$

b. MERGE(a,c,WS_i) $= \{ \{a,c\}, \{a,b\},\{c,d\ldots\} \} = WS_{i+1}$

  - {a,c} 内の *a*, *c*, そして {a,c} 自体がが新しくアクセス可能な要素
  - 最小探索がこれらを見つける → RR violation

(16) 遅発併合 (Late-Merge, cf. Lebeaux, 2000)

a. $WS_i = \{ \{\{a,b\}, \{c,d,e,\ldots\}\} \}$

b. MERGE(b, e, WS_i) $= \{ \{b,e\}, \{\{a,b\},\{c,d,e\ldots\}\} \} = WS_{i+1}$

  - {b,e} 内の *b*, *e*, そして {b,e} 自体が新しくアクセス可能な要素
  - 最小探索がこれらを見つける → RR violation

(17) 反循環的移動 (Counter-cyclic movement, cf. Chomsky, 2008, 2013; Epstein et al., 2012)

a. $WS_i = \{ \{a,\{b,\{c,d\}\}\} \}$

b. MERGE(d,{b, {c,d}}, WS_i)
$= \{ \{d,\{b,\{c,d\}\}\},\{a,\{b,\{c,d\}\}\}\} \} = WS_{i+1}$

  - {d,{b,{c,d}}} 自体とその要素がアクセス可能な要素
  - 最小探索がこれらを見つける → RR violation

3 MERGE の帰結

3.1 PBC Effect

(18) Proper Binding Condition: (Fiengo, 1977; Saito, 1989)
Traces must be bound.

a. *Downward and sideward movement (RR violation)

b. *Head movement (*an unformulable operation*)

c. *Remnant Movement (cf. Müller, 1996; Kitahara, 1997; Takano, 2000)

(19) Remnant Movement: (cf. Epstein et al., 2018)

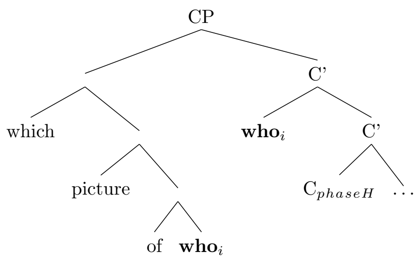
a. *[which picture of t_1]$_2$ does wonder who_1 Mary likes t_2? (Saito, 1992, 80)

b. $[_{CP}$ $[_{Pred}$ t_i How proud of Bill$]_j$ is $[_{TP}$ John_i t_j]]? (Takano, 1995, 332)

3.1.1 RR + MS + PIC = PBC effect: Kitahara and Seely (2021)

(20) a. $[_{CP}$ [which [picture [of who_i]]]$_2$ $[_{C'}$ [who_i $[_{C'}$ C_{phaseH} ... $[_X$ ... who_i ... $]_2$]]]]

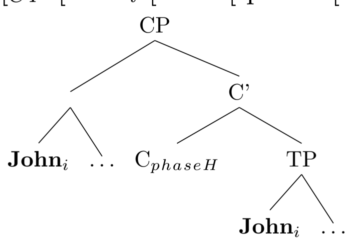
b.



- c-統御関係がコピー同士間にないため, コピーの削除は不可であり, 2つのコピー *who* はどちらもアクセス可能な要素. → RR violation
- 一方、(21) では, remnant phrase にある *John* のコピーはアクセス可能であるが, [spec,TP] にある *John* は PIC により, アクセス不可である. → no RR violation

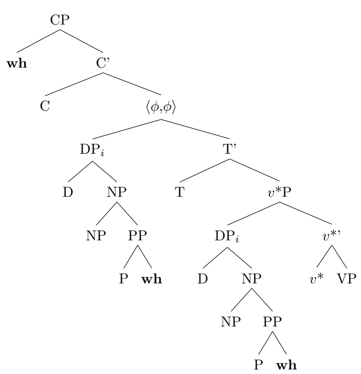
(21) a. $[_{CP}$ [John_i [how [proud [of Bill]$_j$ [C_{phaseH} $[_{C'}$ John_1 $[_{TP}$ John_i ... $]_j$]]]]]]

b.



3.2 凍結効果 (Freezing Effect)

- このアプローチでは、主語島制約 (subject islands) を導くことはできない (cf. Sugimoto, 2019).



- [spec,v*P] にある主語は最小探索により, アクセス不可能であり, [spec,TP] にある主語はアクセス可能であり, 大併合による移動の制約は無いように見られる (pace Goto and Ishii, 2020).

→ 大併合の枠組みにおける A-/A'-移動の性質の研究の必要性 (cf. Chomsky, 2008).

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