

Pair-Merge under MERGE

Hisatsugu Kitahara (Keio University)

Masashi Nomura (Chukyo University)

Masayuki Oishi (Tohoku Gakuin University)

Jun Omune (Kansai Gaidai University)

The minimalist theory of syntax has been advanced since *The Minimalist Program*, which contains several papers by Noam Chomsky, was published in 1995. A number of important revisions have been made (e.g. Chomsky (1995, 2004, 2015)), and the core syntactic operations have been ‘simplified,’ following the Strong Minimalist Thesis (SMT). The SMT posits that language is a perfect system, called the Faculty of Language (FL), meeting interface conditions such as Full Interpretation. Understood in this way, the FL, an organ of the body (or a modular system in the brain), just like any other natural objects, conforms to the laws of nature. Chomsky (2005) calls them the ‘third-factor’ principles. The minimalist investigation, pursuing the SMT, also addresses the problem of evolvability, that is, the evolution of the language capacity, which is taken to be a key concept to understand the nature of the FL. Given the sudden emergence of the language capacity on the evolutionary timescale (see Berwick and Chomsky (2017), among others), the number of ‘language-unique’ operations are expected to be minimum, ideally limited to one and only one. Such a sole operation is now called Merge, the simplest structure-building operation that forms a set, formulated as (1) (Chomsky (2013, 2015)).

$$(1) \quad \text{Merge}(a, b) = \{a, b\}$$

When this Merge operation applies ‘externally,’ it takes two distinct objects and forms an unordered set. In contrast, if Merge applies ‘internally,’ it takes two objects, one of which is contained in the other. We call the former external Merge (EM), and the latter internal Merge (IM)—IM corresponds to Move in the earlier minimalist framework. Thus, just one operation, Merge, ensures the basic properties of the FL, namely discrete infinity and displacement. Crucially, Merge applies ‘freely,’ regardless of whether this is external or internal (see Chomsky (2015), among others). This operation is no longer a triggered operation as in the system of the probe-goal agreement (see Chomsky (2001)). In other words, applying Merge freely suggests that the current model is not ‘crash proof’ (see Frampton and Gutmann (2002)); it generates deviant linguistic expressions. This is a natural assumption because our brain (or mind) is able to recognize and have some forms of interpretation for deviant expressions themselves.

However, how free is free Merge? Does free Merge allow extensions such as parallel Merge

(Citko (2005)), late Merge (Fox and Nissenbaum (1999)), sideward Merge (Nunes (2001)), and counter-cyclic IM without replacement/infixing (Epstein et al. (2012))? Chomsky (2017) addressed these questions in his recent Arizona lectures (March 2017) and particularly in his Reading lecture (May 2017), identified a flaw in the formulation of Merge, and revised Merge to MERGE, an operation applying to workspace (WS); MERGE maps WS onto WS'. The notion of WS has been tacitly assumed, because to generate {XP, YP}, XP and YP must be constructed independently. But the notion of WS had been left unclear, and nobody had asked what WS is and how it works. In his recent lectures, Chomsky examined the nature of the WS and how freely MERGE applies, under the general conditions (called 'seven desiderata') and demonstrated that under MERGE, parallel Merge, late Merge, and other extensions of Merge do not surface. This MERGE-based analysis has a strong implication that pair-Merge, which is an independent operation forming an ordered pair (see (2)), motivated by the asymmetric property of adjunction, is no longer available, provided that forming an ordered pair (e.g. head movement) is a departure from the simplest Merge (1).

(2) Pair-Merge (a, b) = <a, b>

Conceptually, the elimination of pair-Merge is desirable, given evolvability (and simplicity) (see Chomsky et al. (2017: 25)), but it poses a serious empirical problem; we must find a way to explain the ubiquitous phenomena of adjunction under MERGE.

In this workshop, we will review the core empirical cases motivating pair-Merge (including both head movement and phrasal adjunction), and then explore possible approaches to these phenomena under MERGE. One such approach is to formulate pair-Merge under MERGE, restricting its departure to be minimum. Another approach is to eliminate pair-Merge and deduce its desirable effects from other independently motivated operations such as Transfer or Externalization. Or alternatively, one might argue that the asymmetries exhibited by adjunction are deducible from how MERGE applies in the course of a derivation. We will discuss in detail generative procedures involving pair-Merge of heads (Chomsky (2015)), and phrasal adjunction under the MERGE-based model.

The workshop aims at discussing various issues related to pair-Merge, in particular the status of pair-Merge under MERGE. To make this workshop accessible to students and researchers from all levels, it includes the brief introduction on recent development in the minimalist investigation (including Chomsky's Arizona/Reading lectures and Chomsky et al. (2017)).

Selected References

- Berwick and Chomsky (2017) "Why Only Us: Recent Questions and Answers," *Journal of Neurolinguistics* 43, 166–177.
- Chomsky, Noam (1995) *The Minimalist Program*, MIT Press, Cambridge, MA.
- Chomsky, Noam (2001) "Derivation by Phase," *Ken Hale: A Life in Language*, ed. by Michael

- Kenstowicz, 1–52, MIT Press, Cambridge, MA.
- Chomsky, Noam (2004) “Beyond Explanatory Adequacy,” *Structures and Beyond: The Cartography of Syntactic Structures, Volume 3*, ed. by Adriana Belletti, 104–131, Oxford University Press, Oxford.
- Chomsky, Noam (2013) “Problems of Projection,” *Lingua* 130, 33–49.
- Chomsky, Noam (2015) “Problems of Projection: Extensions,” *Structures, Strategies and Beyond: Studies in Honour of Adriana Belletti*, ed. by Elisa Di Domenico, Cornelia Hamann, and Simona Matteini, 3–16, John Benjamins, Amsterdam.
- Chomsky, Noam (2017) A talk given at the workshop entitled “Generative Linguistics in the 21st Century: The Evidence and the Rhetoric,” the University of Reading, May 11, 2017. <https://www.facebook.com/search/top/?init=quick&q=University%20of%20Reading%20chomsky&tas=0.21866556606255472>.
- Chomsky, Noam, Ángel J. Gallego, and Dennis Ott (2017) “Generative Grammar and the Faculty of Language: Insights, Questions, and Challenges (2nd version),” unpublished manuscript. lingbuzz/003507.
- Citko, Barbara (2005) “On the Nature of Merge: External Merge, Internal Merge, and Parallel Merge,” *Linguistic Inquiry* 36, 475–496.
- Epstein, Samuel D., Hisatsugu Kitahara, and T. Daniel Seely (2012) “Structure Building That Can’t Be,” *Ways of Structure Building*, ed. by Myriam Uribe-Etxebarria and Vidal Valmala, 253–270, Oxford University Press, Oxford.
- Fox, Danny and Jon Nissenbaum (1999) “Extraposition and Scope: A Case for Overt QR,” *WCCFL* 18, 132–144.
- Frampton, John and Sam Gutmann (2002) “Crash-Proof Syntax,” *Derivation and Explanation in the Minimalist Program*, ed. by Samuel D. Epstein and T. Daniel Seely, 90–105, Blackwell, Oxford.
- Nunes, Jairo (2001) “Sideward Movement,” *Linguistic Inquiry* 32, 303–344.