

In Defense of the Merge-Only Hypothesis **Koji Fujita / Kyoto University**

In this presentation I defend and further consolidate the “Merge-only” hypothesis of current minimalism (Chomsky 2008, 2010, Berwick 2011, Berwick & Chomsky 2011, inter alia) by proposing a theory of language evolution according to which it was Merge that gave rise to other major components of the human language faculty.

Chomsky’s (2010) Strong Minimalist Thesis (*Interfaces + Merge = Language*) is the most elegant (and controversial) claim that biolinguistic minimalism makes with respect to the formation of human language, and yet it ignores certain fundamental issues. Most notably, it leaves open the questions of the evolutionary origins of (i) Merge, (ii) the interfaces, and (iii) other essential components of language such as the lexicon and the C-I and S-M systems. It has often been assumed in the literature that the minimal design specification of the Merge-based computational system is “externally” motivated, in the sense that it is optimized for interfacing with the two interpretive systems. The assumption that the computational system is perfect for satisfying the interface conditions is easily coupled with the evolutionary scenario of Merge arising in order to connect the already existing C-I/S-M systems.

I first reject this teleological scenario. Evolution is a blind process without any foresight, and one cannot say that syntax (or language, for that matter) evolved for such and such a purpose. Furthermore, this scenario is based on the unjustified supposition that the C-I/S-M systems were already in place in the present forms before the advent of syntax, which very likely contradicts another important minimalist view that it is syntax that sends an instruction to the interpretive systems and not vice versa. It ignores the effect that syntax may have had on the formation of the interpretive systems.

I believe the problem largely comes from a simplistic interpretation of the FLN/FLB dichotomy by Hauser et al. (2002). Their proposal is important in further motivating a comparative approach to the studies of language evolution, but it fails to capture two crucial facts: (i) Recursion (more concretely, recursive Merge) also has some continuity with other human and nonhuman capacities, and in this broad sense recursion does not strictly belong to FLN, and (ii) the interpretive systems are shared by other animals to some extent but still there is a remarkable difference between the human and the nonhuman systems, and in this narrow sense they belong to FLN. In short, the terms FLN/FLB are not used consistently when it is claimed that only recursion belongs to FLN.

The correct picture must be this: Every component of human language is unique to it but still they are all continuous with other capacities, and this continuity is a key to understanding how these unique components came into existence and were clustered into this complex biological trait we call language.

In line with this general picture, I advance the hypothesis that language emerged in the following steps. Firstly, Merge evolved from the recursive motor control capacity for hierarchical and sequential object combination as typically observed in tool making and using. The evolutionary and/or developmental relations between tools and language have long been recognized, but it is important to note that this is the first attempt made by generative linguistics to find an evolutionary precursor to syntax (instead of language as a whole) in a distant, non-linguistic capacity (Fujita 2009), in sharp contrast to the general agreement in minimalism that Merge emerged in saltation.

Chomsky (2008: 137) speculates that Merge arose from “a slight mutation rewiring the brain.” By connecting motor control and Merge, we can turn this speculation into a testable hypothesis. Recent progress in cognitive and neuro-archaeology focuses on the evolution of stone tool making and its implications for the evolution of our ancestors’ cognitive faculties and the relevant neural substrates. Faisal et al. (2010) report that left ventral premotor cortex (BA6) is uniformly activated when subjects make stone tools using Oldowan and Acheulean technologies. I suggest that the rewiring in question is a functional expansion from BA6 to BA44/45, from motor recursion to

cognitive recursion (including Merge).

It is safe to assume that before this rewiring took place our ancestors already had a lexicon and C-I/S-M systems in a very rudimentary form (protolanguage, in a loose sense). But as I will claim, it was Merge that converted this language-like system into the full human language faculty with all of its generative power. Consider the lexicon as an example. Studies of animal cognition have shown that animals have word-like signals (such as alarm calls) that associate particular sounds with particular situations, and it has been reported that some of them can learn hundreds of human words. And yet we can detect a huge gap between human words and animal “words” in their creative richness and abstractness.

This gap reflects the fact that human words are formed by Merge combining conceptual and phonetic units into more and more complex amalgam. That word formation takes place only (post-)syntactically and there is no word before syntax has become a popular theoretical insight (distributed morphology, nanosyntax, etc.), and this insight serves as a productive research guideline for evolutionary biolinguistics. Importantly, to the extent that Merge forms words, we can explain why there are certain impossible words by the principle of minimal computation (the third factor). It has long been taken for granted that syntax and the lexicon are two independent modules of grammar, but the present study questions the validity of this supposition at least with respect to language evolution. I claim that syntax and the lexicon are the two faces of the same coin of Merge. This is a good illustration of how theoretical and evolutionary studies of language can inform each other and progress in tandem.

I will show that similar considerations will naturally lead to the conclusion that not only the lexicon but other major components of language, in particular the C-I system and the C-I interface, were made possible by Merge. Berwick (2011: 99) correctly remarks: “Once Merge arose, the stage for human language was set. There was no turning back.” But the power of Merge was probably far more drastic and pervasive in the evolution of language than he actually suggests.

References

- Berwick, R. C. 2011. Syntax facit saltum redux: biolinguistics and the leap to syntax. In A. M. Di Sciullo & C. Boeckx eds. *The Biolinguistic Enterprise: New Perspectives on the Evolution and Nature of the Human Language Faculty*. 65-99. Oxford University Press.
- Berwick, R. C. & N. Chomsky 2011. The biolinguistics program: the current state of its development. In A. M. Di Sciullo & C. Boeckx eds. 19-41.
- Chomsky, N. 2008. On phases. In R. Freidin et al. eds. *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*. 133-166. The MIT Press.
- Chomsky, N. 2010. Some simple evo devo theses: how true might they be for language? In R. K. Larson et al. eds. *The Evolution of Human Language: Biolinguistic Perspectives*. 45-62. Cambridge University Press.
- Faisal, A. et al. 2010. The manipulative complexity of lower Paleolithic stone toolmaking. *PLoS ONE* 5(11): e13718.
- Fujita, K. 2009. A prospect for evolutionary adequacy: Merge and the evolution and development of human language. *Biolinguistics* 3: 128-153.
- Hauser, M. D., N. Chomsky & W. T. Fitch. 2002. The faculty of language: what is it, who has it, and how did it evolve? *Science* 298: 1569-1579.