

Bookkeeping in Phase-Based Syntax: The Role of Buffers

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0. *Background* A basic premise underlying this talk is that there are good empirical and conceptual reasons for maintaining a categorical rather than relativized approach to phases (Chomsky (2001; 2008; 2013) vs. Bobaljik & Wurmbrand (2005), den Dikken (2007), Gallego (2007), Bošković (2014)), with the Phase Impenetrability Condition (PIC) acting both as a third factor principle that contributes to efficient computation and as a locality constraint on movement (Müller (2011)). On this view, once a phase is completed, the material that is c-commanded by the phase head becomes systematically inaccessible for further syntactic operations, without any qualification.

1. *Problem* In such an approach to syntax, a problem arises in cases where it looks as though information must be available in a certain domain that should not be available at this point, due to the PIC. More specifically, the situation can occur that information from an earlier, lower domain A must be used in the current domain B even though A is *not accessible anymore* because it is too deeply embedded; this can be referred to as a *backtracking* problem; cf. (1).

(1) *Backtracking*:

$$\underbrace{[XP \dots [X' X \dots [YP \dots [Y' Y \dots [ZP \dots [Z' Z \dots [WP \dots [W' W \dots]]]]]]]]}_B \underbrace{\dots}_A$$

2. *Phenomena* The backtracking problem in (1) shows up with four different types of movement in German. First, it holds for *improper movement*, as in illegitimate scrambling from a finite CP in (2-b) vs. legitimate clause-bound scrambling in (2-a) (cf. Ross (1967)).

- (2) a. dass das Buch₁ keiner t₁ liest
 that the book_{acc} no-one_{nom} reads
 b. *dass Karl das Buch₁ glaubt [CP dass keiner t₁ liest]
 that Karl_{nom} the book_{acc} thinks that no-one_{nom} reads

Second, the backtracking problem occurs with *remnant movement* in German, which does not exhibit a freezing effect ((3-a)), in contrast to extraction from a moved item ((3-b)); see den Besten & Webelhuth (1987).

- (3) a. [VP₂ t₁ Gelesen] hat das Buch₁ keiner t₂
 read has the book no-one
 b. *Was₁ denkst du [VP₂ t₁ gelesen] hat keiner t₂ ?
 what think you read has no-one

Third, backtracking is an issue with *resumptive movement* in (Standard) German island contexts; see (4) (and note that the resumptive pronoun is possible only if an island is encountered by the null relative operator on its way to the target position).

- (4) ein Buch [CP Op₁ [C wo] [TP ich einen Mann getroffen habe [CP der es₁ gelesen hat]]]
 a book where I a man_{acc} met have who it read has

And fourth, *idiom part movement* also gives rise to the backtracking problem. As noted by Harwood et al. (2016), if DP is a phase, the existence of semantically opaque verbal idioms as such already poses a potential problem under the PIC. The problem that I would like to focus on arises when a part of a verbal idiom undergoes movement. In this case, both fronting of a DP or PP *and* fronting of a remnant VP are subject to more restrictions than ordinary DP/PP and remnant VP movement are; see (5-a) (Müller (2000), Wierzba (2016)) and (5-b) (Heck & Assmann (2014) and Fanselow (2015)), respectively.

- (5) a. #_[DP₁ Die Flinte] die hat er zu früh _[VP₃ t₁ ins Korn geworfen]
the musket_{acc} the has he_{nom} too early into the grain thrown
“He gave up too early.”
- b. #_[VP₃ t₁ Ins Korn geworfen] hat er _[DP₁ die Flinte] zu früh t₃
into the grain thrown has he_{nom} the musket_{acc} too early
“He gave up too early.”

I will show that in all these four environments involving movement of some item α from an embedded domain A to a higher domain B, the A-information that is needed in B in order to determine whether movement is legitimate is not in and of itself located on α (either inherently, as a lexical property, or as a consequence of Agree, via standard assumptions about feature valuation), but rather comes from the *syntactic context* of α in A. Thus, what must be accessed in B is contextual information of the following type: information that specifies what kinds of phase edges α has passed on its way from A to B (improper movement), information that specifies whether some item has moved out of α in A, and whether this latter item has already reached its criterial position in A (remnant movement), information that specifies whether a copy has been made of α , and whether α has encountered an island on its way from A to B (resumptive movement), and information that specifies whether α was externally merged as part of an idiom or not (idiom part movement). However, given successive-cyclic intermediate movement steps via phase edges and the PIC, none of this information is available anymore where it matters.

3. *Proposal* Based on Müller (2014), I would like to suggest that contextual information of this type is placed on a buffer. Since movement is a precondition for transporting information from one domain to another, the buffer that temporarily stores (and, in many cases, subsequently gets rid of) earlier contextual information should plausibly be related to movement. For concreteness, suppose that the locus of this storage is the movement-related feature of the moved item (e.g., [wh] for wh-phrases, [top] for moved topics, [rel] for relative operators); more precisely, the value of such a feature. Thus, syntactic buffers are queue (-like) lists that constantly change throughout the derivation but – and this is the single most important assumption underlying the present proposal – must qualify as legitimate (in a sense to be made precise) in criterial positions. From a more general perspective, the concept of syntactic buffers can be viewed as being the opposite of the concept of SLASH-feature percolation proposed in Gazdar (1981); Gazdar et al. (1985): In the latter approach, properties of the moved item are registered on the syntactic context; in the present approach, properties of the syntactic context are registered on the moved item.

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