Opaque reflexes of cyclic movement: Ordering final vs. intermediate steps

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Claim I argue that final and intermediate steps in a movement chain must be triggered by different types of features. Evidence comes from opacity effects that show that these movement types can apply at different points of the derivation: When interleaved with Agree, one movement type applies before and the other after Agree. The empirical basis for this claim are morphological reflexes of successive-cyclic movement: Looking at the typology of patterns of such reflexes, we can see that in some languages final movement steps feed Agree whereas intermediate steps counter-feed them (or vice versa). I show that analyses of opacity working on the basis of enriched representations cannot be formulated in Minimalism; (re)ordering of elementary operations, however, provides a simple analysis for cross-linguistic variation. In general, the paper argues for a more fine-grained approach to elementary operations: Merge not only needs to be ordered with respect to Agree; different types of Merge have to be distinguished. Being based on the timing of operations, the approach argues for a strictly derivational model of grammar.

Background (i) Counter-feeding opacity: It cannot be read off of the surface representation why a rule B has not applied although its context is created by the application of a rule A. (ii) In recent years, it has been argued on the basis of feeding and bleeding interactions that, if a head triggers both Merge and Agree, these operations have to be ordered. The order is assumed to be language-specific (e.g. Bruening 2005, van Koppen 2005, Heck & Müller 2007, Halpert 2012, Kalin & van Urk 2012, Richards 2013). (iii) Under this view, the data I look at present a paradox: We have evidence for both Merge before Agree and Agree before Merge *in a single language*. Solution: There are two types of Merge that can be ordered differently relative to Agree. And indeed, the split is systematic: It is between final and intermediate movement steps.

Data: In a number of languages, Ā-movement leaves a morphological reflex on an element, e.g. the C head. In one type of language, this reflex occurs on the C head of every clause crossed by overt movement (pattern I, e.g. C-agreement in Kinande). This has been taken as evidence for the successive-cyclic nature of movement. However, there are more patterns. Pattern II: The reflex only occurs on the C head of the clause where the Ā-moved phrase surfaces but not in intermediate clauses (e.g. *no*-marking in Duala, C-agreement in Chamorro), (1-a). Pattern III: The reflex only occurs on the C head of intermediate clauses but not in the clause where the Ā-moved phrase surfaces (e.g. *ke*-stranding in Dinka, C-agreement in Wolof *an*-constructions), (1-b). The patterns are illustrated in (2) for a reflex R on C, triggered by long wh-movement:

(1) *PII (no-marking in Duala) and PIII (class-Agr on C with the moved phrase in Wolof)*:

    a.   njika buna o ta **no** o kwalane mba na o mende **(*no)** timba
          which day you PST NO you tell me that you FUT (NO) return
          'When$_i$ did you tell me that you would return t$_i$?'   *Duala, Epée 1976*

    b.   **K-an** l-a-ñu/**(*k-u)**-ñu wax **k-u** jigéén j-i foog **k-u** ma dóór?
          CL-who EXPL-a-3PL/(CL-u)-3PL say CL-u woman CL-DEF think CL-u 1SG hit
          'Who$_i$ did they say that the woman thinks that I hit t$_i$?'   *Wolof, Torrence 2012*

(2) *Patterns of reflexes of successive-cylic movement*:

    a.   PI: [$_{CP1}$ XP$_{wh}$ [$_{C'}$ **C-R** ... [$_{CP2}$ **C-R** ... [$_{CP3}$ **C-R** ... t$_{XP}$]]]]
    b.   PII: [$_{CP1}$ XP$_{wh}$ [$_{C'}$ **C-R** ... [$_{CP2}$ C ... [$_{CP3}$ C ... t$_{XP}$]]]]
    c.   PIII: [$_{CP1}$ XP$_{wh}$ [$_{C'}$ C ... [$_{CP2}$ **C-R** ... [$_{CP3}$ **C-R** ... t$_{XP}$]]]]

Opacity As for PII, it has been assumed that there is no reflex in intermediate clauses because there is no movement through the embedded SpecCP positions (e.g. Epée 1976, Schneider-Zioga 1995, Cheng 2006), either due to base-generation of the wh-phrase or because movement applies in one fell swoop. This analysis cannot account for all languages with PII: Base-generation is out because the relevant movement is island-sensitive and shows cross-over effects (see e.g. Biloa 1993 on Duala); movement in one fell swoop cannot handle languages in which a PI and a PII reflex co-occur, triggered by a single instance of movement (e.g. Chamorro: wh-agreement = PI, C-agreement = PII): This movement would have to apply successive-cyclically

(for PI) and in one fell swoop (for PII) at the same time. Conclusion: At least in some PII languages there is evidence for successive-cyclic movement. Hence, we have opacity: Movement usually feeds agreement on C, but counter-feeds it on intermediate C heads (vice versa for PIII).

Opacity by enriched representations Some authors acknowledge intermediate movement steps in languages with PII. They account for the difference between PI and PII as follows: (i) There are two different types of traces – one that can trigger agreement (PI) and one that cannot (PII) (Haïk 1990, Biloa 1993, Ouhalla 1993); (ii) Agreement between the moved phrase and C applies at S-structure, traces do not count as controllers in PII languages but they do so in PI languages (Chung 1998); (iii) Constraints on traces in PII languages: The relevant features are deleted on traces, hence agreement is no longer possible (cf. Haïk 1990, see Collins 1993 for a related proposal). These accounts cannot be easily transfered to Minimalism (a) if traces do not exist (Epstein & Seely 2002), and/or (b) if all constraints are imposed by the interfaces and thus can't refer to traces (Chomsky 2001), (c) since there is no designated S-structure anymore. Replacing traces with a multidominance approach to movement does not help for (i) / (iii): PII cannot be produced because there is only a single representation of the moved phrase. Deleting features on it automatically affects all positions in the structure to which it is linked (no distinction between intermediate and final landing sites). The only reanalysis that works is to adopt the copy theory of movement and to apply constraints on intermediate copies (presupposing that they can be distinguished from final copies). I will instead present an analysis that doesn't require constraints on intermediate representations and that is compatible with various Minimalist approaches to movement. Furthermore, it provides a unified account of all patterns, which is lacking so far.

Analysis *Assumptions*: [A1] The reflex is the phonological realization of an Agree relation between C and the moved XP. [A2] Agree is triggered by probe features [∗F∗] and applies upwards in a Spec-head configuration (accounting for the absence of a reflex with wh-in-situ in the languages that have it, e.g. Duala, cf. Baker 2008). [A3] Intermediate movement steps are triggered by designated features, the edge features [●EF●]; final movement steps are triggered by criterial features, e.g. the wh-feature on C [●WH●]. [A4]: If a head triggers more than one operation, the operation-inducing features are ordered on a stack; only the topmost feature is accessible. [A5]: If a probe [∗F∗] doesn't find a goal, it is valued and deleted by default (Preminger 2011). *Core idea*: Due to [A2], movement that applies before Agree *feeds* Agree between the XP in SpecCP and C. If movement to SpecCP applies after Agree, it comes *too late* to feed Agree (*counter-feeding*). Due to [A5], the derivation converges nevertheless. If final and intermediate movement steps apply at different points relative to Agree, only the step applying early feeds Agree (and leads to a reflex). *Derivations*: There are four permutations of the three operation-inducing features, leading to the aforementioned patterns: PI [●WH●], [●EF●] ≻ [∗F∗]; all movement steps feed Agree. PII: [●WH●] ≻ [∗F∗] ≻ [●EF●]; only final movement steps feed Agree. PIII: [●EF●] ≻ [∗F∗] ≻ [●WH●]; only intermediate movement steps feed Agree. PIV (complete absence of a reflex): [∗F∗] ≻ [●WH●], [●EF●]; no movement step feeds Agree. *Discussion*: All reorderings lead to attested patterns (in contrast to earlier claims on the interaction of Merge with downward Agree, Author (2012)). The analysis is incompatible with approaches that assume that all movement steps are triggered by the same feature (cf. McCloskey 2002, Abels 2012): This feature must be ordered either before or after Agree. The implementation of this distinction with edge vs. criterial features is just *one* option; it also works e.g. with feature-driven vs. non-feature-driven movement. It's also irrelevant *how* intermediate steps are represented (copies, multidominance, nothing left); it's only relevant *when* they apply.

Selected references: Abels, K. (2012): Phases: An essay on cyclicity in syntax. • Biloa, E. (1993): Clitic Climbing in Bantu. Papers from the XXI Annual Conference on African Linguistics. • Epée, R. (1976): On Some Rules That Are Not Successive Cyclic in Duala, LI 7. • Haïk, I. (1990): Anaphoric, Pronominal and Referential INFL, NLLT 8. • Ouhalla, J. (1993): Subject-Extraction, Negation and the Antiagreement Effect, NLLT 11. • Torrence, H. (2012): The morpho-syntax of silent wh-expressions in Wolof, NLLT 30.