EPP and (Anti-)*That*-Trace Effects: No More Weak-T

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Recent proposals by Chomsky (2013, 2015) have redefined classic syntactic puzzles like the nature of the EPP and *that*-trace-effects within a framework incorporating a labeling algorithm (LA) based on Minimal Search. In English and related languages, movement of the external argument to Spec-TP is required in finite clauses, and further extraction is restricted in various ways. (1) and (2) illustrate, respectively, the *that*-trace effect (TTE), where the subject cannot be extracted long-distance from an embedded clause without deletion of the complementizer *that*, and its inverse, the anti-*that*-trace effect (ATTE), where *that* cannot be deleted when the subject is extracted for short-distance relativization. In both cases, when non-subjects undergo movement, *that* is simply optional.

(1) a. **Who**$_i$ did he think (*that) $\boldsymbol{t}_i$ met me? — *wh*-subject = TTE
b. **Who**$_i$ did he think (that) you met $\boldsymbol{t}_i$? — *wh*-object = no effect

(2) a. I saw **the man**$_i$ *(that) $\boldsymbol{t}_i$ met you — subject RC = ATTE
b. I saw **the man** (that) you met $\boldsymbol{t}_i$ — object RC = no effect

I argue for a unified approach to these phenomena relying on the interaction between movement, feature-valuation/Agree, and the process of feature inheritance. The advantage of this account is that it eliminates a reliance on the somewhat stipulative "weak-T" analysis proposed by Chomsky (2015:7-9) for EPP-movement and the TTE, while simultaneously incorporating the ATTE, which receives no specific treatment under the "weak-T" approach.

Under Chomsky's account, both EPP-movement and the TTE are motivated by a parametric property of the Tense-head whereby, in English-type languages, T is too "weak" to be selected as a label by the LA and must be strengthened by movement of a ϕ-bearing phrase (the subject) to its specifier so that the LA may select the shared ϕ-features as label (ϕ on T being inherited from C). This provides motivation for raising of the subject to Spec-TP (=EPP), and also a requirement that the subject remain in Spec-TP at least until after labeling has occurred (=TTE). I put forward two conceptual arguments against this approach. First, it is unnecessary to motivate EPP-movement via "weak-T", since another means is independently available: the unlabelable {XP, YP} configuration created by merger of the external argument with vP. Furthermore, if T is indeed unable to be selected as label, movement of a ϕ-bearing DP will not help it to resolve the label of the relation created by initial merger of T: $\{_{<\phi,\phi>}$ DP[ϕ], $\{_{\underline{???}}$ T[ϕ], $\{_{vP}$ t_{DP}, vP$\}\}\}$.

The alternative account relies on two assumptions:

(i) Feature Inheritance from C (the phase-head) to T (the non-phase-head) does not occur unless unvalued features are successfully valued by Agree. Otherwise, they remain on C and do not lower into the phase-interior for Transfer. This follows Richards (2007) in characterizing FI as a conceptually necessary process which removes features from the derivation after valuation, but leaves the phase-head itself in the narrow syntax. More importantly, it also aligns with the most recent characterization of the timing of Agree, following Chomsky (2016), who presents Agree as occurring prior to or concurrent with inheritance. The two possibilities for inheritance are illustrated in (3) and (4), with solid arrows indicating Agree, and dashed arrows indicating inheritance from the phase-head PH to the non-phase-head H after successful valuation of unvalued features (= [uF] → [~~u~~F]). In (4), XP[...] does not carry the right valued features to satisfy [uF], and so Agree and inheritance fail.

(3) { PH[~~u~~F], { XP[F], { H[~~u~~F], … }}

(4) { PH[uF], { XP[...], { H, … }}

(ii) Agree is subject to the same conditions of Minimal Search as the Labeling Algorithm (LA). More explicitly, I propose that if a syntactic object undergoes movement, it is invisible to Agree, just as it is invisible for selection by the LA. This extends suggestions made by Chomsky (2013:45) to the effect that Agree can be unified with the LA. As a consequence, if an item extracts from the phase-interior, it will be unable to value features on the phase-head, but will still be accessible to agree with that phase-head in the next phase *if it remains in the phase-edge and does not*

move further. This is a departure from the typical approach to Agree in terms of probe/goal relations, where the domain of a probe is determined by c-command. This version of Agree has been developed elsewhere by Ginsburg (2016) to the effect that probe/goal Agree may be recast as proceeding (in tree-theoretic terms) "from the root node", rather than strictly according to c-command. Thus, under a Minimal Search-based characterization of Agree, valuation could be accomplished (informally) from head to specifier.

(5) and (6) illustrate the proposed structures for delayed valuation of features. In the case of (5), XP vacates the phase, but remains in the phase-edge, allowing valuation and inheritance in the next phase. In (6), however, XP continues moving (e.g. successive-cyclic *wh*-movement) and [uF] on PH remain unvalued, crashing the derivation.

(5) {XP[F], { PH[~~u~~F], { t_{XP}, { H[~~u~~F], … }} **(6)** {XP ... { t_{XP}, { PH[uF], { t_{XP}, { H, … }}

The combination of (i) and (ii) yields an outcome whereby if a subject in Spec-TP moves to the phase-edge, it will be unavailable to value [uϕ] on C and inheritance will not occur. Instead, [uϕ] will remain on C into the next phase. At this point, the split between TTEs and ATTEs manifests. If, as in (1) above, the subject moves further, it will once again be invisible to Agree and [uϕ] on C will remain unvalued, crashing the derivation. This is the TTE, exemplified in (6) above, since the subject extracts in the presence of C. If, however, the subject DP remains in Spec-CP, as in (2), C will be able to value its features, and inheritance proceeds. This is the ATTE, exemplified in (5), since it requires the presence of C in a local configuration with the subject. (7) and (8) provide derivations for the TTE and ATTE in English.

(7) { *who*[ϕ] { ... { t_{who}, { *that*[uϕ], { t_{who}, { T, ... }}}}}} = crash! (TTE)

(8) { DP[ϕ], { *that*[~~u~~ϕ], { t_{DP}, { T[~~u~~ϕ], ... }}}} = OK (ATTE)

Following Chomsky (2015), in order to allow long-distance extraction of the subject, an operation of C-deletion must occur *after* agreement between C and the subject, along with inheritance from C to T. Once valuation is accomplished, the only option to prevent the subject from being transferred in the phase-interior is to cancel the CP-phase by deletion of the phase-head *that*. This leaves the subject in Spec-TP, where it may undergo further movement.

(9) { ~~*that*~~[~~u~~ϕ], { *who*[ϕ], { T[~~u~~ϕ], ... }}}

The phenomena of EPP and the TTE can be captured without recourse to the notion of "weak-T", and this framework can be extended to capture the ATTE if feature inheritance is revised to be dependent upon feature-valuation and if Agree is subject to the same Minimal Search conditions as the LA. This approach aligns with a general theoretical shift away from movement being predominantly "triggered" by Agree and towards Merge-operations being completely free, with their output evaluated by operations like Agree and the LA.

References: [1] **Chomsky, N.** 2013. Problems of Projection. *Lingua 130*: 33-49. [2] **Chomsky, N.** 2015. Problems of Projection: Extensions. In E. Di Domenico, C. Hamann & S. Matteini (Eds.), *Structures, strategies and beyond – studies in honour of Adriana Belletti*, (1-16). Amsterdam: John Benjamins. [3] **Chomsky, N.** 2016. Minimal Computation, Learnability, Evaluability, and the Architecture of Language. Lectures given at University of Arizona, Tucson, AZ (March 24-31). [4] **Ginsburg, J.** 2016. Modeling of problems of projection: A non-countercyclic approach. *Glossa: a journal of general linguistics, 1(1)*, 7. DOI: http://doi.org/10.5334/gjgl.22. [5] **Richards, M.** 2007. On Feature Inheritance: An Argument from the Phase Impenetrability Condition. *Linguistic Inquiry, 38(3)*, 563-572.