

A theory of structure-sharing: focusing on long-distance dependencies and parasitic gaps

Structure-sharing, that is, having two GFs with the same value, is common to the representation of both long-distance dependencies (LDD) and raising in LFG. Whereas standard LFG treats LDD and raising as unrelated phenomena, this paper presents a theory of structure-sharing that explains the properties common to these two classes of constructions, focusing on the facts of LDD and parasitic gaps. A small set of constraints on structure-sharing allows us to dispense with functional control equations, both those in lexical entries of raising predicates and those in c-structure rules dealing with LDD.

LDD occur when a structure includes a grammaticalized discourse function TOPIC or FOCUS (T/F, for brevity). In order to satisfy the Extended Coherence Condition (widely assumed since Zaenen 1980), a T/F must link to a within-clause function either through structure-sharing or anaphoric binding. Leaving anaphoric binding aside, this condition requires a T/F to be structure-shared with another GF, but does not impose any restrictions on the structural relation that must hold between the two GFs involved in order for the structure-sharing relation to be well-formed. This is the task of the theory that follows.

The first principle is the **Nonthematic Condition on Structure-Sharing (NonTh), which requires that, for every f-structure in which structure-sharing occurs, the most f-prominent GF involved in the structure-sharing relation be nonthematic**. Both raising functions (whether SUBJ or OBJ) and T/Fs are nonthematic in the sense that they do not satisfy a thematic role of the clause they appear in. The notion of f-prominence entails f-command and, in case of mutual f-command, a higher position in the GF hierarchy $DF > OBJ > OBL$, where DF (short for discourse function) is the class of GFs consisting of SUBJ and T/F, following Bresnan 2001a. While the GF hierarchy does not normally include T/F, this proposal places T/F in the same position as SUBJ. By NonTh, in raising constructions, the possibly thematic function that is structure-shared with a raising function is always in a clause embedded in that where the raising function appears: it cannot be the other way around. In LDD, the T/F may be structure-shared with a GF in the same f-structure or in an embedded f-structure, but never with a GF in a less embedded f-structure or in an f-structure not related to it by embedding.

An additional consequence of NonTh for LDD is the claim that a T/F may not be structure-shared with a SUBJ in the same f-structure: this follows from the proposal that a T/F, though nonthematic, is not more f-prominent than a clause-mate SUBJ, as they are equal in the GF hierarchy. Thus, a phrase filling the subject function, whether a wh-phrase or not, cannot be a T/F structure-shared with the subject at the top level, but is simply the subject, as assumed in different frameworks by Pollard and Sag 1994 and Grimshaw 1997, among others, accounting for the badness of (1). This, together with the assumption that the wh-T/F position is the Spec of CP and that the head of CP must be filled in a matrix clause, as in Bresnan 2001b, Grimshaw 1997, and Falk 2001, serves to explain the obligatory presence of an auxiliary (as the head of CP) preceding the subject in a matrix interrogative with a non-subject wh-phrase, in contrast with what happens in a matrix interrogative with a subject wh-phrase, as in (2):

- (1) *Dogs_i Fred is scared of and drive me crazy. / * Dogs drive me crazy and Fred is scared of.
- (2) Who did Fred meet? (cf. *Who Fred met?) / Who met Fred?

Another consequence of NonTh is that it allows for the possibility that a single nonthematic function be structure-shared with with two different thematic functions. Thus, the theory predicts the existence of multiple, or parasitic, gaps, as in (3) (a dash signals the canonical position of the structure-shared GF and coindexing signals structure-sharing). The claim that a T/F cannot be structure-shared with a subject at the top level implies that a wh subject cannot license parasitic gaps, as in (4), because there is no T/F that can structure-share with the gap, nor can the subject because it is not nonthematic. Even if the subject is structure-shared with the T/F of a higher clause, as in (5), it cannot license a parasitic gap in the embedded clause, because it would violate NonTh, which has to be satisfied in every f-structure where structure-sharing occurs: in the bracketed structure, the subject is thematic.

- (3) a. Which article_i did she review ____i without reading ____i thoroughly?
b. Who_i did you send pictures of ____i to ____i?
- (4) a. * Which author_i criticized you after you cited ____i profusely?
b. * Who_i sent pictures of ____i to Fred?

- (5) * Who_i did you say [_____i sent pictures of _____i to Fred] ?

The second principle is the **Locality Condition, which requires any f-structure that contains a GF structure-shared with a GF outside that f-structure to have a DF as one of its features that is structure-shared with said GF.** By this principle, a DF (either T/F or SUBJ) is required to be part of a structure-sharing relation in any f-structure containing the less prominent of two structure-shared GFs. Whether a T/F or a SUBJ is chosen to satisfy this requirement depends in part on the “binding” conditions that each of these GFs is subject to. We can define the relevant notion of f-binding as: α f-binds β iff α and β are different GFs with the same value, α f-commands β , and any γ that is equal to β or has β as a feature and is an argument in α 's f-structure is not higher than α in the GF Hierarchy. The third principle is the **T/F Binding Condition: a T/F can only be f-bound by a T/F.**

This principle, together with the locality condition, guarantees that the GF that undergoes raising is always a subject: as a subject, it satisfies both of these conditions; as a T/F, it would satisfy locality, but would violate the T/F Binding Condition, because it would be a T/F f-bound by a non-T/F (the nonthematic SUBJ or OBJ of the raising verb). These two conditions also ensure that, in raising, the structure-shared GFs are always in clauses at immediate levels of embedding, never skipping a clause, which explains the phenomenon known as “superraising.” As for LDD, these two conditions explain the ill-formedness of certain parasitic gap constructions such as the following (elsewhere attributed to an “anti-c-command condition” (Engdahl 1983)):

- (6) a. * Who_i did she tell _____i that I admired _____i ?
 b. * Who_i did you send _____i pictures of _____i ?

In these examples, the second complement of the matrix verb has a T/F structure-shared with its “missing” GF in order to satisfy locality. Schematically, this can be shown as in (7) for example (6a):

- (7) [T/F[who] did she tell OBJ[] [T/F[] that I admired OBJ[]]]

The T/F in the embedded clause is f-bound by a non-T/F and therefore violates the T/F Binding Condition. In contrast, the T/F in the adjunct clause in (3a) is not f-bound, satisfying this condition.

The fourth and last principle is the **SUBJ Binding Condition, which requires a subject that is structure-shared with a more f-prominent GF (a) to be f-bound in a non-subject of a clausal f-structure and (b) to be in a tenseless f-structure if its closest f-binder is a non-T/F.** Clause (a) restricts both raising and subject extraction to structures in which the raised or extracted subject is in a complement of the clause, ruling out these dependencies out of subjects and adjuncts: *Which politicians that ____ came bothers you?; *Who did you enter the room while ____ was talking on the phone?; or *To have missed the train was believed Kim. Clause (b) restricts raising to tenseless clauses: *Kim seems (that) has missed the train vs. Kim seems to have missed the train.

This theory achieves a high level of empirical coverage and formal simplicity, because it not only unifies the treatment of raising and LDD, by positing a small set of principles that apply to both classes of constructions, but makes the right predictions in the area of LDD, in particular, allowing parasitic gaps in only those structures where they are admissible, something that previous LFG work has not done. The paper will also discuss and analyze potentially problematic phenomena such as those in Icelandic, Kikuyu, and Irish discussed in Clements et al. 1983 and Zaenen 1983 and subject-licensed parasitic gaps (Haegeman 1984, Levine and Hukari 2006).

References

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