A Note on Free Relative Clauses in the Theory of Phases

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1. The problem

The central question for the analysis of "headless" relative clauses, also known as free relatives (henceforth FRs),[1] concerns the position of the *wh*-phrase (*what* in (1)), and in particular whether it raises to a clause-internal or clause-external position (see van Riemsdijk 2006a for a survey and references).

(1) (I eat) [$_{FR}$ what$_i$ you cook t_i]

The crucial property of (1) is its nominal character: it occurs in a position otherwise restricted to a DP argument. This is the way in which *what you cook* in (1) differs from *what you cook* in (2), where the same string is interpreted as an indirect question:

(2) (I wonder) [$_{Q}$ what$_i$ you cook t_i]

In languages like German, where nominal elements can occur in the middle field but (finite) clausal categories can do so only very marginally, the asymmetry between FRs and embedded questions comes out clearly:

(3) Ich werde [$_{FR}$ was ich gefunden habe] niemandem (*t*) zeigen
I will what I found have nobody show
'I won't show to anybody what I found'

(4) ??Mir hat sie [$_{Q}$ wer es gesagt hat] ja nicht (*t*) gesagt
me has she who it said has PRT not said
'She didn't tell me who said it'

It is, however, not straightforward to blame the different distribution of FRs (which can occur as subjects, complements and adjuncts) and embedded interrogatives on a structural difference, since both exhibit CP-properties (cf. Rooryck 1994, Jacobson 1995). Notice, in particular, that both (1) and (2) require *wh*-movement from the object position of *cook* to the internal left periphery.

The purpose of this squib is to propose a solution to the paradoxical nature of FRs (DP-like distribution vs. CP-like form), based on cyclic Transfer of syntactic structure. I will show that the proposal also sheds light on the differences between FRs and embedded interrogatives, and on properties of FRs more generally.

2. Uninterpretable Features and Cyclic Transfer

Chomsky (2000 *et seq.*) argues that structure is transferred from the derivational workspace to the interface components cyclically, "by phase." The effect of Transfer to the phonological component (Spell-Out) is that uninterpretable features of lexical items included in the already-built structure are "stripped off," in order for the remaining syntactic object to conform to the Principle of Full Interpretation, i.e. to include only symbols that are interpretable at the semantic interface (Chomsky 1995:219, 2008:154).

For *v*P and CP as phases, this means that the complements of *v* and C are transferred, hence their uninterpretable features removed from the narrow-syntactic computation. Only the "edge" of the phase (phase head plus Spec) remains present in the derivational workspace at the next cycle (Chomsky 2000:108):

(5) $[_{CP}\ XP_i\ C\ [_{TP}\ \ldots\ t_i\ \ldots\ ]]$ (grey shading = transferred material)

(6) $[_{vP}\ XP_i\ v\ [_{VP}\ \ldots\ t_i\ \ldots\ ]]$

For reasons discussed in Richards 2007, the system requires uninterpretable features

(such as unvalued Agree-features) of a phase head *v*/C to be inherited by a subjacent non-phase head (V or T); cf. Chomsky (2008:148). As shown by Richards, in order for Transfer and feature-valuation to co-occur, only interpretable features can remain on a phase head.

3. Relabeling as a Consequence of Head-Transfer

Let us now consider what consequences the system of cyclic Transfer and feature-inheritance has for the paradox described in section 1.

In an embedded interrogative like (2), T inherits uninterpretable Agree-features from C (henceforth C_Q), in order for these features to be valued *at* Transfer. C_Q will however retain a feature, call it Q, which "determines [interrogative] clause type," hence is "plainly interpretable" (Chomsky 1995:289) and selected by the embedding predicate (Chomsky 2000:102). Crucially, inheritance dislocates *un*interpretable features only, while interpretable ones (if present) remain on the phase head (Richards 2007: 569).

The result is that TP is transferred (along with the now-valued Agree-features on T, inherited from C_Q), while the edge of CP becomes part of the next cycle:

(7) $[_{vP}$ wonder $[_{CP}$ what$_i$ C_Q $[_{TP}$ you T_φ cook $t_i]]]$ (= (2))

Notice that (7) still allows for the selectional requirements of the matrix predicate to be satisfied: C_Q (with interpretable Q) is part of the matrix-*v*P cycle, hence visible to *wonder* for selection.

What is the difference between this case and a FR? Embedded C_Q in (7) bears a Q-feature signaling interrogative force, selected by the matrix verb and attracting the *wh*-element. By contrast, in a FR like (1), C (henceforth C_{FR}) does not bear any interpretable features and is not selected by the matrix predicate.[2]

First, consider the fact that FRs, unlike embedded questions, do not have any

independent illocutionary force but merely "replace" DP arguments. One consequence of this is that embedded questions, but not FRs, allow internal modal particles (which are realizations of interpretable C-related features, cf. Struckmeier 2009):

(8) Ich frage mich, was du (wohl) empfiehlst. (German)
I ask myself what you PRT recommend
'I wonder what you recommend'

(9) Ich lese was du (*wohl) empfiehlst.
I read what you PRT recommend
'I read what you recommend'

Second, notice that C_{FR} is never selected by a matrix predicate, as evidenced by the fact that FRs are CPs occurring in DP positions, hence selected as nominals. This directly contrasts with C_Q in an embedded question (*pace* Donati 2006:33), where the matrix predicate selects for the interrogative property of that head.

We conclude that C_{FR} – unlike C_Q – bears no interpretable features but only uinterpretable (unvalued) ones, in particular Agree-features.[3] Consequently, *all* features of C_{FR} will be inherited by T (see also note 2). Suppose now, as seems natural, that if a phase head does not bear any interpretable features at Transfer, it will be removed from the workspace along with its complement. I propose that this is what happens in a FR:[4]

(10) (I eat) [$_{CP}$ what$_i$ C_{FR} [$_{TP}$ you T_φ cook t_i]] (= (1))

Notice that in (10), the *wh*-phrase is included in CP. But if the label of a phrase is identical to the projecting element in that phrase (Chomsky 1995:244, 2008:145), the CP label is lost upon Transfer of uninterpretable C_{FR}. Therefore, at the next cycle (matrix *v*P), only the *wh*-phrase will remain visible:

(11) $[_{vP}$ eat $[_{DP}$ what$_i$ C_{FR} $[_{TP}$ you T_{φ} cook t_i $]]]$

Given that the *wh*-phrase is nominal (cf. Donati 2006:31), this means in effect that due to Transfer of the head of CP (along with its complement), the remaining edge element (re-)projects on its own, yielding the DP-like distribution of FRs.[5] We can now explain the dual nature of FRs: due to the uninterpretability of C_{FR}, FRs are CPs up to the derivational stage where their head and its complement are transferred; after this cycle, the FR becomes a nominal (or a PP, see note 9).[6] Phase theory thus allows for a natural and coherent statement of the seemingly paradoxical situation that the *wh*-phrase is *both* internal to the FR (as in Groos and van Riemsdijk 1981) and external to it (as in Bresnan and Grimshaw 1978).[7]

By contrast, Transfer of the C-head is impossible in embedded interrogatives, since C_Q retains an interpretable Q-feature which is not inherited by T. Consequently, embedded interrogatives – unlike FRs – retain CP-hood across derivational cycles. The asymmetry between these closely related yet different structures thus reduces to an asymmetry of Transfer, resulting from the (un-)interpretability of the phasal C-heads involved.

4. Empirical Consequences

The standardly observed properties of FRs follow immediately from the account given above (for fuller discussion and examples of the following properties, see the references in van Riemsdijk 2006a).

FRs are straightforwardly predicted to have the distribution of DPs (but see note 9): a DP is what remains at the next-higher phase level, i.e. after Transfer of unselected C_{FR}. On the present account, no resort to a stipulated null nominal layer above the FR (as in Groos and van Riemsdijk 1981 and Harbert 1983) is necessary. The proposal developed here thus eschews the problems of these former proposals, in particular their inability to

explain why the putative nominal head is obligatorily null, and the equally awkward assumption that CP adjoined to the null-nominal head is an "obligatory adjunct."

Likewise, the present approach straightforwardly predicts matching effects to occur with FRs (see Groos & van Riemsdijk 1981), although a detailed discussion of this phenomenon is beyond the scope of this squib. The *wh*-phrase at the edge of the FR has to match selectional requirements of both matrix and embedded environments: the phrase is "shared" between both predicates, each imposing separate requirements.[8] This shared nature of the *wh*-phrase follows directly from the present proposal, since it is assumed to be part of different derivational cycles: it satisfies selectional (categorial/Case) requirements of the embedded predicate at the embedded-*v*P cycle and those of the matrix predicate after it is turned into a nominal argument at the matrix-*v*P cycle, i.e. after Transfer of its sister [C_{FR} [$_{TP}$ …]].[9] No recourse to Groos and van Riemsdijk's (1981) parametrized "COMP-accessibility," Caponigro's (2002) empty-D licensing, or other stipulative mechanisms is necessary.

For essentially the same reason, FRs thus analyzed do not require a weakening of the *θ*-Criterion, which requires a unique bidirectional mapping from arguments to thematic roles. Earlier proposals were unable to explain how it is possible for the *wh*-phrase in a FR to be *θ*-marked twice, first by the embedded predicate and again by the matrix predicate.[10] The problem vanishes once the *θ*-Criterion is construed as an interface condition that applies separately to each *v*P phase (cf. Landau 2007). Seen from this perspective, the *wh*-element in a FR is *θ*-marked only once per *v*P.

All of these properties follow naturally from the head-Transfer account, which derives and rationalizes the shared nature of the edge of a FR.[11]

As a further consequence, notice that since FRs are DPs after Transfer of C_{FR}, extractions from FRs are similar to extractions from complex noun phrases. This prediction of the account developed here is borne out: extractions from FRs are generally much worse than extractions from embedded questions (*wh*-islands). Consider the

following contrasts from English (Rooryck 1994), Italian (Caponigro 2002), and German:

(12) a. *These are the readers to whom$_i$ I buy [$_{FR}$ whatever books the *New York Times* recommends t_i]

b. ??These are the readers to whom$_i$ I know [$_{Q}$ what books the *New York Times* recommends]

(13) a. *Queste sono le ragazze$_i$ che odio [$_{FR}$ chi ha invitato t_i]
these are the girls that I hate who have invited
'These are the girls such that I hate the person they invited'

b. Queste sono le ragazze$_i$ che so [$_{Q}$ chi ha invitato t_i]
these are the girls who I.know who have invited
'These are the girls such that I know which person they invited'

(14) a. *Diesen Lesern$_i$ kaufe ich [$_{FR}$ was auch immer der *Spiegel* t_i empfiehlt]
these readers buy I what also ever the *Spiegel* recommends
'As for these readers, I buy whatever the *Spiegel* recommends to them'

b. ?Diesen Lesern$_i$ weiß ich [$_{Q}$ was der *Spiegel* t_i empfiehlt]
these readers know I what the *Spiegel* recommends
'As for theses readers, I know what the *Spiegel* recommends to them'

In the a-examples, extraction presupposes probing into a DP containing a previously-transferred CP. By contrast, the b-examples are relatively acceptable violations of Relativized Minimality. The present proposal thus shares this prediction with NP-over-CP analyses of FRs (e.g. Groos and van Riemsdijk 1981) while eschewing their inherent problems (in particular, the FR's status as an "obligatory adjunct").

5. A Comparison with Donati's (2006) Account

The account developed above is somewhat different from that of Donati (2006), who

argues that *wh*-movement in FRs can reproject because the moving element is a head, i.e. a *wh*-phrase with X^0-status.[12] According to Donati, movement of a *wh*-head to the edge of CP then results in a labeling ambiguity: the resulting structure is either a CP (if C projects) or a nominal FR (if the *wh*-phrase projects).

Both proposals are similar in that they do not assign different internal structures to FRs and embedded interrogatives. However, Donati's account relies on the assumption that the *wh*-phrase in FRs is always a head (X^0); only then is "reprojection" assumed to be possible. By contrast, the present proposal allows for the moved *wh*-element in FRs to be an XP. That this prediction is desirable is suggested by *whatever*-type FRs, where the *wh*-phrase includes further (optional) material, including a head noun:[13]

(15) Ich lese [$_{FR}$ [was (für Bücher auch immer)]$_i$ der *Spiegel* empfiehlt t_i] (German)
I read what for books also ever the *Spiegel* recommends
'I read whatever books the *Spiegel* recommends'

To maintain Donati's analysis, one might assume that *für Bücher auch immer* is an adjunct "on a different plane," so that the *wh*-phrase is still internally simple from the point of view of narrow syntax (Noam Chomsky, pers. comm.). This assumption is problematic, however, in light of the fact that the complex *wh*-phrase is transparent for extraction:[14]

(16) [Über dieses Thema]$_i$ liest Hans [$_{FR}$ [was für Bücher t_i auch immer]$_j$ der *Spiegel* empfiehlt t_j] (German)
about this topic reads Hans what for books also ever the *Spiegel* recommends
'As for this topic, Hans reads whatever books about it the *Spiegel* recommends'

This fact cannot be reconciled with Donati's account, while it follows directly from the

alternative developed in this squib. Notice, finally, that since Donati's analysis is restricted to *wh*-heads, it cannot derive FRs headed by a preposition, unlike the present proposal (see note 9). It seems, then, that the account developed here is empirically superior to Donati's, in that it does not restrict "reprojection" to moved X^0-categories.[15]

6. Conclusion

In this squib, I have argued that the dual nature of FRs is a consequence of cyclic Transfer. FRs are clausal in that they are headed by a C-head; however, since this C-head does not bear any interpretable features, it does not "survive" Transfer, leaving its Spec as the only remaining material at the next cycle (matrix *v*P). I showed that this analysis, which draws on independently motivated concepts, provides a natural explanation for a variety of properties of FRs (such as matching effects, their compliance with the θ-Criterion, and opaqueness of the interior for extraction). In addition, the account provides a natural explanation for the observed asymmetries between FRs and embedded interrogatives, which were argued to be solely determined by the choice of C (uninterpretable C_{FR} in FRs, interpretable C_Q in embedded interrogatives).

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[1]I set aside here the special case of so-called "transparent" FRs, which may be an altogether different construction (see van Riemsdijk 2006a:363-367).

[2]The only "feature" of C_{FR} is the Edge Feature which triggers *wh*-movement (Chomsky 2008:148). Edge Features, however, are clearly not *bona fide* features; in particular, they are not (un-)valued and merely encode an element's ability to be merged. They are clearly not interpretable and can be assumed to delete after triggering movement.

[3]It is interesting to note at this point that C_{FR} is never lexically realized, not even in dialects of Dutch and German which otherwise allow doubly-filled COMP rather freely (Josef Bayer and Henk van Riemsdijk, pers. comm.). This fact corroborates the claim, made below, that C_{FR} is featurally vacuous after inheritance.

[4]This presupposes a further assumption, which however follows from the system outlined by Chomsky and Richards: (*wh*-)movement coincides with valuation and Transfer (see Chomsky 2008:143). Furthermore, the proposal entails that Spell-Out can in principle target more structure than just the phase interior, an assumption that is independently necessary for root clauses (cf. Chomsky 2004:108).

[5]The notion of "reprojection" is also employed by Hornstein and Uriagereka (2002) and others, in different contexts and with different theoretical implementations.

[6]A problem for this view is that extraposition – which, in German, targets CP and PP, but not DP – is available for FRs and does not separate the *wh*-phrase from the rest of the FR. One solution to this problem would be that extraposition applies postsyntactically (Truckenbrodt 1995), after the phases are reassembled and the FR is again clausal for purposes of intonational phrasing. Another would be to assume that "extraposed" CPs are

in fact base-generated in right-peripheral position and can move leftward (Kayne 1994: ch. 9), which is unproblematic for non-CPs.

[7]Notice that since *v* always bears interpretable features that render it visible for selection by C/T, it follows (as Hiroki Narita points out) that there are no "*v*P FRs".

[8]Vogel (2001) points out that certain mismatches are relatively acceptable in German. I set aside this additional complication here.

[9]Notice that the present proposal does not require the (nominal) *wh*-phrase to be the head of the structure remaining after Transfer: the label (category) of the structure remaining at the matrix-*v*P cycle will be whatever heads the XP in the edge of the FR. This is desirable, since FRs can be headed by PPs containing the *wh*-phrase:

(i) (I'll live) [$_{FR}$ [$_{PP}$ in whatever town]$_i$ you live t_i]

[10]Harbert (1983) attempts to circumvent this problem by assuming that FRs are headed by *PRO*/*pro*. No such assumption is necessary on the present account.

[11]Van Riemsdijk (2006b) implements sharing in terms of multi-dominance ("grafts"). Since it is unclear how this powerful mechanism can be properly constrained, I take it to be a virtue of the present proposal that it avoids such complications.

[12]See already Bury 1998; also Iatridou, Anagnostopoulou, and Izvorski 2001.

[13]De Vries (2004) refers to these FRs as "head-internal free relatives." See his paper for some further discussion of the construction.

[14]To be precise, extraction is possible whenever it is permitted by the matrix predicate, a general constraint on extraction from DPs (see, e.g., Müller 1995:43). This shows again that FRs behave exactly like other complement DPs at higher derivational cycles.

[15]A further potential advantage is that the proposal made here (unlike Donati's) is compatible with head movement being a PF operation.