Extraposition, Polarity, and Late Merge[*]

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Abstract This paper extends the NPI-licensing diagnostic proposed in Overfelt 2015a,b to further investigate the mechanisms involved in the derivation of Extraposition from NP configurations. Using inverse linking environments as a testing ground, I present a quantitative investigation, the results of which further support a need for QR and Late Merge (Fox & Nissenbaum 1999).

Keywords: Extraposition from NP, Polarity Items, Late Merge, Experimental Syntax

1 Introduction

Extraposition from NP (EXNP) can refer to discontinuous constituencies like (1). A relative clause (RC) in this example has been displaced rightward out of its host DP *every bakery*. Such configurations were discussed originally by Ross (1967).

(1)   Beth visited [DP every bakery] last month [CP that was on the local news]

One influential analysis of EXNP asserts that the extraposed RC is Late Merged into a higher, silent copy of the host DP (Fox & Nissenbaum 1999). The component pieces of this analysis have played a significant role in the development of grammatical models. For example, quantification, *wh*-in-situ, and focus association have all been modeled with covert movement. Late Merge has been employed to understand anti-reconstruction effects and other discontinuous constituencies.

This model of EXNP has been criticized, however, both for its lack of empirical adequacy and for its reliance on the mechanisms of covert movement and Late Merge. This paper builds on previous work in Overfelt 2015a,b in support of this particular treatment of EXNP. I will adapt the NPI-licensing diagnostic proposed in those works for the purpose of investigating the possible points of interpretation of the extraposed RC. As predicted by Fox & Nissenbaum (1999) on the basis of a

generalization credited to Edwin Williams (1974), experimental evidence suggests that an extraposed RC and its host DP are interpreted together higher than the base-position of the host DP. This is not expected from base-generation approaches to EXNP or approaches that reject Late Merge.

2   A Model of EXNP

The literature has seen several analyses for EXNP configurations. (See Webelhuth et al. 2013 and Overfelt 2015a,b for recent overviews.) Similar to Guéron & May (1984), Fox & Nissenbaum (1999) argue that EXNP involves a mixture of operations. Quantifier Raising (QR) of the host DP precedes base-generation via Late Merge of the displaced RC in the higher, unspoken copy. The LF-interpreted representation for (1), then, is closer to (2).

(2)   Beth visited [every bakery] last month
                      ⌐·········· QR ··········▶ [every bakery [that was on the local news]]

   Perhaps the strongest argument for Late Merge, and thus QR, in EXNP comes from what Fox & Nissenbaum (1999) call *Williams's Generalization (W'sG)*, which originates in Williams 1974. We will state the generalization as in (3).

(3)   The scope of the host DP for some extraposed RC is at least as high as the attachment site of the RC.

Support for W'sG comes from the claim that EXNP in (4) forces the existential host DP *a bag* to be interpreted above the intensional predicate *look for*.

(4)   Fred looked for [a bag] yesterday [a bag [that has a picture of a cat]].
   a.   *look for* > ∃ : 'Fred looked for any bag *x* that has a picture of a cat.'
   b.   ∃ > *look for* : 'There is a certain bag *x* that has a picture of a cat and Fred looked for *x*.'

This disambiguation under extraposition is expected if the RC is Late Merged into a higher copy of the host. As the only instance of the RC, it is only in this higher position that both the RC and its host DP can be compositionally interpreted together.
   This model of EXNP is critiqued primarily on the basis of its mechanics. Webelhuth et al. (2013: 23–25) argue that QR "creates great problems" since it is possible to extrapose from elements that otherwise cannot move rightward. The relevant positions include subjects, the first object of double-object constructions, and prepositional objects. I argue in Overfelt 2015b that this is not a puzzle created by the QR-based analysis of EXNP. It is shown that quantified DPs in the positions listed here independently have the ability to QR. Thus, we are already faced with the puz-

zle of why certain types of movement out of certain positions must be covert. The puzzle, which is illuminated by this analysis of EXNP, is that attempting to linearize this movement requires rightward alignment.

Sportiche (2016) appeals to arguments that Late Merge is intractable and unmotivated in a proposal for an alternative theory: *Neglect*. Space prohibits giving due justice to the proposal. The empirical contention, however, is that W'sG is too strong. For example, subjunctive RCs in French are only licensed in intensional environments. It is surprising from the view of W'sG, then, that the subjunctive RC in (5) can be extraposed. W'sG predicts that the subjunctive RC and its host DP should be interpreted above the intensional *cherche* and, therefore, unlicensed.

(5)   Jean cherche [un cuisinier] depuis hier [qui puisse l'adier].
        'Jean has been looking for a cook since yesterday that could-SUBJ help him.'
                                                        (adapted from Sportiche 2016: 36, (93b.))

Sportiche (2016: 37) concludes that "total reconstruction of adjuncts is possible." Minding the need to compose a RC with its host DP, (5) must have an LF where both are interpreted within the scope of *cherche*, which undermines an analysis of EXNP that must employ Late Merge. While I have no account of (5), I demonstrate below that Neglect continues to overgenerate with respect to English EXNP.

The Late Merge model of EXNP also faces an apparent empirical paradox. To see this, consider the eliminative puzzle of EXNP that Rochemont & Culicover (1990: 63) present with examples such as (6). While, the non-EXNP variant can pick out a doctor who is alleged to be a doctor that forges prescriptions, the EXNP variant must pick out a individual who forges prescriptions and is alleged only to be a doctor. That is, an extraposed RC is interpreted outside the scope of *alleged*.

(6)   I met [an alleged doctor] this morning
                                    [an [alleged doctor] who forges prescriptions].
        a. *alleged* > RC : 'a doctor alleged to forge prescriptions'
        b. RC > *alleged* : 'an individual who forges prescriptions and is alleged to be a doctor'

One way to capture (6) is to restrict Late Merge from targeting embedded positions in its host.[1] Although, this might make it puzzling to observe that superlatives manage to license Negative Polarity Items in extraposed RCs; see (7). Supposedly, the extraposed RC must be interpreted in its host and within the scope of *longest*.[2]

(7)   Kim wrote [the longest abstract] yesterday [that I have *ever* had to read].

[1] A similar constraint is proposed by Landau (2007: sec.7.2) in the domain of VP fronting.
[2] Of course, one might suggest the superlative independently achieves scope over the extraposed RC.

Moreover, Müller (2004) and Strunk & Snider (2013) present intuitive, corpus, and experimental evidence from English and German demonstrating that an extraposed RC can find a host DP that is embedded in another DP. The particularly dramatic German example in (8) comes from Müller (2004: 10, (3)).

(8) Karl hat mir [eine Kopie [einer Fälschung [des Bilder [eine Frau]]]]
  gegeben [die schon lange tot ist]
  'Karl gave me a copy of a forgery of a picture of a woman who has been dead for a long time.'

Thus, Late Merge into embedded positions may be necessary after all.

3 Williams's Generalization and Inverse Linking.

I designed an experiment that extends the utility of Polarity Items as a connectivity diagnostic for the representation of EXNP configurations (Overfelt 2015a,b). The goal is to provide a new means of testing Ws'G and, in this way, to investigate the supposed Late Merge mechanic. We will make also make use of the observation that a quantificational DP embedded in a larger DP, as shown in (9), might receive an inversely linked interpretation.

(9) some country [$_{DP}$ No representative of [$_{DP}$ some country]] attended.

  'For some country x, there is no representative of x that attended.'

I will assume with May (1977) and Sauerland (2005) that inverse linking arises through QR of the embedded DP out of its containing DP.

Our interest will be in the interaction of inverse linking and EXNP particularly in structures like (10) below, which is adapted from Strunk & Snider (2013).

(10) Margaret will interview
  [$_{DP_1}$ no representative of [$_{DP_2}$ *any*/*some* country]] tomorrow
  [that has *ever* had its borders unexpectedly closed].

If EXNP from the embedded DP in (10) is possible and requires QR plus Late Merge, we could postulate one or both of the structures in (11) and (12):

(11) *Shallow Late Merge*   (12) *Deep Late Merge*

Considering (11), EXNP from the embedded DP_2 could involve inverse linking and shallow Late Merge of the RC within a single DP. As shown, this means extracting DP_2 and adjoining it to VP. Alternatively, the entire DP_1 containing DP_2 could undergo QR, as shown in (12). This derivation would require deep Late Merge of the RC within an embedded DP.

Note that the embedding DP_1 in (10) is headed by *no*. This means that, by varying the head D_2 of the embedded DP_2, we can actually influence the need to postulate one of the two structures above. The Positive Polarity Item (PPI) *some*, which resists being interpreted under negation, is expected to force the inverse linking configuration in (11). On the other hand, the Negative Polarity Item (NPI) *any*, which requires being interpreted under negation, will force the configuration in (12). It is therefore possible to state predictions about the availability these representations and their derivations on the basis of the quantifier *some* or *any*.

Let us first consider the predictions about the version of (10) with the NPI *any*. If EXNP allows only QR and shallow Late Merge in (11), W'sG leads us to expect that *any* as the head of DP_2 cannot be licensed. EXNP will effectively bleed NPI licensing since DP_2 and the RC must be interpreted together outside the scope of *no*. If QR and deep Late Merge in (12) are available, we predict that it will be possible for *any* to be licensed as the head of DP_2.

Next, so long as inverse linking and shallow Late Merge in (11) are in principle available (see section 4), it should be possible to licensed *some* in D_2. However, if the extraposed RC can in fact only be interpreted in the higher copy of its host DP_2, the additional NPI *ever* in the extraposed RC will block the structure in (11). As per W'sG, there is nowhere to interpret the PPI *some* and the NPI-containing RC together and simultaneously license both. Thus, Late Merge predicts *some* cannot be licensed in (10). In Sportiche's (2016) *Neglect*, where an extraposed RC can be interpreted in the tail of its host, *some* and *ever* are expected to be licensed in (10).

4   A Quantitative Investigation

Design   These predictions were tested in a pilot acceptability judgment study. 18 native English speakers (9 female) were recruited from Amazon's Mechanical Turk and sent to Alex Drummond's Ibex Farm for the experiment. Participants ranged in age from 21 to 60 with a mean age of 33.39.

18 experimental items like (13)—which is based on (10)—were arranged in a fully-crossed 2×3 repeated-measures design.

(13)   (Tomorrow) Margaret will interview

> no representative of a/any/some country (tomorrow)
> that has *ever* had its borders unexpectedly closed.

The factor QUANTIFIER had three levels varying D_2 between *any* and *some* in the way discussed above. The polarity insensitive *a* was also included, though no specific predictions were made regarding its behavior. The two levels of the factor SITU varied the position of a temporal adverb and, in this way, extraposition of the RC. If an extraposed RC is interpreted in a QR'ed copy of its host, EXNP is not expected to affect the judgments (Overfelt 2015a,b). The experimental items were presented randomly with 38 filler items that were intended to have similar complexity.

Results   The raw experimental means are presented in Table 1.

	A	Any	Some
In-situ	3.46 (0.23)	3.78 (0.25)	2.89 (0.21)
Ex-situ	3.28 (0.21)	3.65 (0.25)	3.00 (0.23)

Table 1   Mean acceptability rating by condition with standard error.

The data were analyzed in a linear mixed-effects regression model.[3] The most complex model justified by the data included the fixed effects and their interaction, centered around 0, and treated both subjects and items as random effects. The model revealed a significant main effect of the quantifier SOME ($\hat{\beta} = 0.37, \text{SE} = 0.08, |t| = 4.44$). Planned post-hoc comparisons of the raw subject means found a significant difference between *any* and *some* in-situ ($\Delta_{\hat{\mu}} = 0.89$, 95% CI $[0.41, 1.37]; t(17) = 3.89, p < 0.01$) and ex-situ ($\Delta_{\hat{\mu}} = 0.65$, 95% CI $[0.25, 1.04]; t(17) = 3.45, p < 0.01$).

Discussion   Even in these very complex sentences, participants considered *some* to be significantly degraded relative to *any*. This contrast suggests that participants perceived *any*, but not *some*, to be licensed in structures like (10).[4] This is consistent with the two predictions made by a model of EXNP that employs QR and Late Merge. The fact that *any* and the NPI *ever* in the extraposed RC can simultaneously be licensed in EXNP configurations suggest that both are interpreted in the scope of *no*. This is precisely what an LF employing QR like in (12) provides. The inability to license *some* in constructions like (10) is expected if EXNP is parasitic on QR and an extraposed RC must be interpreted in the higher copy of the host (W'sG; contra Sportiche 2016). This is expected if only the LFs in (11) and (12) are available for (10): neither structure allows *some* and *ever* to be licensed simultaneously. A model of EXNP that employs QR and Late Merge delivers this directly.

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3 The analysis was carried out in the R statistical computing environment (R Core Team 2017) using the lme4 package (Bates et al. 2016).

4 See Parker & Phillips (2016) to assuage fears of illusory NPI-licensing.

Among the things that this experiment did not do is provide direct evidence that structures similar to (11) with inverse linking and shallow Late Merge are generally available. The concern, then, may be that we have not actually seen that Late Merge is responsible for the ungrammaticality of *some* in (10). In support of configurations like (11), Sauerland (2005: 307, (14)) presents the Antecedent-Contained Deletion construction provided in (14).

(14)   Mary is [$_{VP}$ planning to discover [$_{DP_1}$ a planet in x_2]]

[$_{DP_2}$ every galaxy John is Δ]

($\forall > plan > \exists$) : 'For every galaxy such that John is planning to discover a planet in it, Mary is planning to discover a planet in it.'

Licensing ellipsis with the intended meaning in this sentence requires interpreting the ellipsis site outside the antecedent VP headed by *plan*. This can be achieved by QR'ing DP_2 (or something containing it). The intended meaning also relies on being able to interpret the head of the embedding DP_1 inside this same VP. Inverse linking structures with shallow Late Merge like (11) satisfy both requirements.

5   Conclusion

This paper extended the NPI-licensing diagnostic proposed in Overfelt 2015a,b to further investigate the mechanisms involved in the derivation of EXNP configurations. The interpretation of Polarity Items in inverse linking environments provided further support for Williams's Generalization, the idea that an extraposed RC and its host are interpreted together at the extraposition site. This is an expected consequence of a model of EXNP that employs both QR and Late Merge (Fox & Nissenbaum 1999). We also saw evidence that Late Merge is able to target positions relatively deep within in a DP. If this is possible, we will require an alternative analysis for Rochemont & Culicover's (1990) eliminative puzzle in (6). One possibility that makes use of embedded Late Merge is sketched in Fox (2014).

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