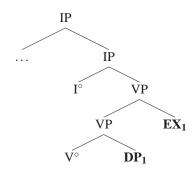# The Heterogeneity of Extraposition from NP

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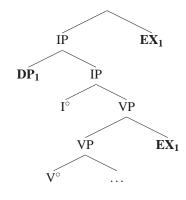
1 Introduction

1.1 The Empirical Domain

- **Extraposition from NP.** EXNP is a phenomenon originally discussed in Ross (1967) whereby a PP (1) or relative clause (RC) (2) is displaced rightward away from its host DP.

  (1)   *PP-EXNP*
          I met [DP a linguist] yesterday [PP from East Africa].

  (2)   *RC-EXNP*
          I met [DP a linguist] yesterday [RC who is from East Africa].

- **The General Consensus.** Ross (1967) shows that EXNP is constrained to the first CP (i.e., *Right Roof Constraint*; Grosu 1973). Subsequent research found that locality is a function of the position of the host (Baltin 1978, 1981, Guéron 1980, Rochemont & Culicover 1990).

  (3)   *EXNP from Objects*   (4)   *EXNP from Subjects*

- **Island Insensitivity.** EXNP is presented as an apparent exception to the *Subject Condition* (Guéron 1980, Culicover & Rochemont 1990).

  (5)   *Subject Condition*
          A DP in Spec,IP is opaque for subextraction.

  (6)   * [Which animal]$_2$ was [a documentary about e_2]$_1$ reviewed e_1 last week?

  (7)   [A man e_1] walked in [PP with blonde hair]$_1$

Strunk & Snider (2013) present experimental evidence that RC-EXNP is not subject to the *Embedded-NP Constraint* (see Chomsky 1973).
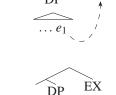
  (8)   *Embedded-NP Constraint*
          An NP embedded in another NP is opaque for subextraction.

  (9)   * [What]$_1$ did you take [a picture of a book about e_1]?

  (10)   I consulted [DP the diplomatic representative of
              [DP a small country with [DP border disputes e_1]]] early today
              [which threaten to cause a hugely disastrous war]$_1$.

1.2 Modelling Extraposition from NP

- **The Extraposition Mechanism.** Analyses of the EXNP mechanism are traditionally divided up based on whether or not the extraposed material undergoes movement.

  - *Move EX*

    Ross (1967), Baltin (1978, 1981), Rochemont & Culicover (1997)

  - *Base-Adjoin EX*

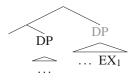   Rochemont & Culicover (1990), Koster (2000), Kiss (2005), Webelhuth et al. (2013)

- **Calls for Base-Adjunction.** The largely irregular properties of EXNP and other rightward displacement phenomena have produced resistance to movement analyses.

– *Island Violations.* Based on the lack of Subject Condition effects, Rochemont & Culicover (1990) argue that EXNP can only be analyzed as base-adjunction.

– *Split Antecedents.* Webelhuth et al. (2013), based largely on the observation by (Perlmutter & Postal 1970) that EXNP can have split antecedents, have recently argued that base-adjunction is most promising.

(11)   [$_{DP}$ A man]$_1$ entered the room and [$_{DP}$ a woman]$_1$ went out
                               [$_{RC}$ who were quite similar]$_1$.

• **Entertaining the Alternative.** In as far as these data support the availability of a base-generation mechanism, they are not evidence that only base-adjunction is available to derive EXNP configurations.

– First, Fox & Nissenbaum's (1999) QR-Theory of EXNP provides a means of obviating the island constraints above.

(12)   i.   *Quantifier Raising*   ii.   *Late-Merge*

            DP   DP

    DP   DP
        . . .   . EX$_1$
        . . .   . . .

– Second, Postal (1998) observed that *cumulative agreement* (Grosz 2009) is found with known instances of Right Node Raising (RNR).

(13)   (?) The pilot claimed that the first nurse e_1 and
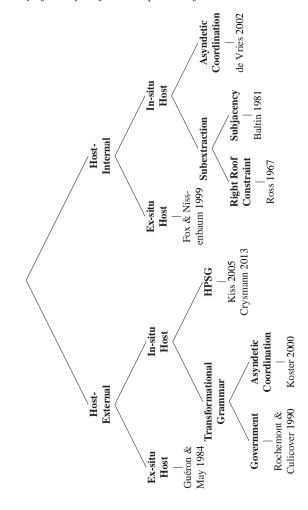   the sailor proved that the second nurse e_1 – [were spies]$_1$

If EXNP can feed RNR (Kluck & de Vries 2013), (11)/(14) does not reveal anything about the EXNP operation.

(14)   [[$_{DP}$ A man]$_1$ entered the room __] and [[$_{DP}$ a woman]$_1$ went out __]

                                  [$_{RC}$ who were quite similar]$_1$.

1.3   Outlook

• **A Different Cut.** A potentially more revealing division among EXNP analyses pivots on the derivational relationship between the host and the extraposed material.

> **Host-Internal : Extraposed material is base-generated *inside* its host DP.**
> **Host-External : Extraposed material is base-generated *outside* its host DP.**

(15)   *A Taxonomy of Analyses for Extraposition from NP*

Host-Internal

    In-situ Host
       Asyndetic Coordination — de Vries 2002
       Subextraction
          Subjacency — Baltin 1981
          Right Roof Constraint — Ross 1967

    Ex-situ Host
       Fox & Nissenbaum 1999

Host-External

    In-situ Host
       HPSG — Kiss 2005, Crysmann 2013
       Transformational Grammar
          Asyndetic Coordination — Koster 2000
          Government — Rochemont & Culicover 1990

    Ex-situ Host
       Guéron & May 1984

PROPOSALS

Host-Internalism. The ability of *every* to license an NPI in extraposed material suggests that a Host-Internal strategy is available to derive EXNP.

(16)   I bought [every book]$_1$ yesterday [that I had *ever* been told to buy]$_1$.

A New Empirical Generalization. Experimental evidence from the licensing of NPIs by *every* reveals the generalization in (17).

(17)   EXNP *can* target a RC in Spec,IP but *cannot* target a PP in Spec,IP.

The Heterogeneity of EXNP. The positional asymmetry in (17) is the result of RC-EXNP and PP-EXNP employing different Host-Internal mechanisms.

   i.)   RC-EXNP : QR + Late Merge (Fox & Nissenbaum 1999)

   ii.)   PP-EXNP : Subextraction (Ross 1967)

Putative PP-EXNP. Truth-conditional equivalence between the intended NP-modification and predicate-modification produces an illusion of PP-EXNP from subjects.

(18) $\llbracket \exists_x[(NP_x \cap PP_x) \cap VP_x] \rrbracket \Leftrightarrow \llbracket \exists_x[NP_x \cap (PP_x \cap VP_x)] \rrbracket$

2   A New Connectivity Diagnostic

- *Every* **Licenses NPIs.** Ladusaw (1979) observed that *every* is capable of licensing a negative polarity item (NPI) like *any* or *ever* in its restrictor argument, but not in its nuclear scope.

(19)   a.   Every [$_{NP}$ boy who ate *any* of the potato salad] [$_{VP}$ became ill].

     b.   * Every [$_{NP}$ boy who became ill] [$_{VP}$ ate *any* of the potato salad].

(20)   a.   Every [$_{NP}$ girl who *ever* becomes bored] [$_{VP}$ leaves early].

     b.   * Every [$_{NP}$ girl who leaves early] [$_{VP}$ *ever* becomes bored].

- **Something Special about *Every*.** Ladusaw (1979) also observes that there is something special about *every* that is key to licensing an NPI as opposed to *some*.

(21)   a.   We met [$_{DP}$ every biker [$_{CP}$ who has *ever* ridden on these trails]].

     b.   * We met [$_{DP}$ some bikers [$_{CP}$ who have *ever* ridden on these trails]].

(22)   a.   The company considered [$_{DP}$ every applicant
                              [$_{CP}$ who was from *any* of the local temp agencies]].

     b.   * The company considered [$_{DP}$ some applicants
                              [$_{CP}$ who were from *any* of the local temp agencies]].

- **Something Special about the Restrictor Argument.** These examples show that *every* is unable to license an NPI in material that is adjoined to its nuclear scope.

(23)   a.   We met every biker [$_{CP}$ while riding on these trails].

     b.   * We met every biker [$_{CP}$ while *ever* riding on these trails].

(24)   a.   The company considered every applicant
                        [$_{CP}$ because they were from one of the local temp agencies].

     b.   * The company considered every applicant
                        [$_{CP}$ because they were from *any* of the local temp agencies].

This is so even if the DP headed by *every* c-commands the NPI.

(25)   a.   [$_{DP}$ Every girl]$_1$ leaves after she$_1$ becomes bored.

     b.   * [$_{DP}$ Every girl]$_1$ leaves after she$_1$ *ever* becomes bored.

- **NPI-Licensing Generalization.** Based on the data above, we can formulate the following generalization regarding when an NPI is licensed by *every*.[1]

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(26)   **An NPI is licensed by *every* iff that NPI is contained in some phrase that is in the restrictor argument of *every*.**

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3   EXNP Models and their Predictions

3.1   Host-Internal Analyses of EXNP

- **Ross 1967.** The extraposed material is subextracted from its host and adjoined to the edge of VP.

(27)   We met [$_{DP}$ a linguist e_1] yesterday [$_{CP}$ who is from East Africa]$_1$.

- **Fox & Nissenbaum 1999.** The host undergoes an application of Quantifier Raising (QR) and the extraposed material is late-merged into the higher copy, which is subsequently the copy that is deleted at LF.

  (28) a. [$_{VP}$ [$_{VP}$ we met [$_{DP}$ a linguist] last week] [$_{DP}$ a linguist]]
        b. [$_{VP}$ [$_{VP}$ we met [$_{DP}$ a linguist] last week] [$_{DP}$ ~~a linguist~~
                                                  [$_{CP}$ who is from East Africa]]]

- **de Vries 2002.** Extraposed material is part of a second occurrence of the matrix clause conjoined with an initial occurrence of the matrix clause via asyndetic coordination (cf. Koster 2000). Ellipsis targets everything in the second conjunct except for the extraposed material.

  (29) I [$_{\&:P}$ [$_{VP}$ met a linguist this morning] [$_{\&:P}$ &:
        [$_{VP}$ ~~met~~ [$_{DP}$ ~~a linguist~~ [$_{CP}$ who is from East Africa]] ~~this morning~~]]]

- **Interpretive Prediction.** Extraposed material will behave as if it were at some point in the restrictor argument of the host

  > **Host-Internal : An NPI in the extraposed material WILL be licensed by _every_**

3.2   Host-External Analyses of EXNP

- **Rochemont & Culicover 1990.** Expanding on Guéron 1980 and Guéron & May 1984, extraposed material is adjoined to the verbal spine. The definition of Government in (31) allows extraposed material to act as the complement of an NP/DP as per (30).

  (30) *Complement Principle*   (adapted from Rochemont & Culicover 1990:35)
        β is a potential complement of α (α, β = X^{max}) only if α and β are in a government relation.

  (31) *Government*   (adapted from Rochemont & Culicover 1990:35–36)
        α governs β iff α c-commands β and for every γ (γ = X^{max}) that dominates β and excludes α, either
        (i)   β = γ°, or
        (ii) β = SPEC, γ, or
        (iii) there exists a segment of γ that does not dominate β.

- **Koster 2000.** Extraposed material is conjoined via an asyndetic conjunction with some XP in the matrix clause that contains the acting host (32). Extraposed material is semantically interpreted as giving "further specification" to the acting host DP via "set intersection" (Koster 2000:22–23, 25).

  (32) I [$_{:P}$ [$_{XP}$ met [$_{DP}$ a linguist] this morning]
                                    [$_{:P}$: [$_{CP}$ who is from East Africa]]]

- **Interpretive Prediction.** Extraposed material will behave as if it were never in the restrictor argument of the host.

  > **Host-External : An NPI in the extraposed material will NOT be licensed by _every_**

4   An Acceptability Judgment Study

4.1   Experimental Design

- **Questions.** Experiment 1 was designed to address the following questions:

  - Is an NPI licensed in extraposed material?

  - Does the category of the extraposed material affect the licensing pattern?

  - Does the position of the host affect the licensing pattern?

- **Participants.** 128 native English speakers were recruited using Amazon's Mechanical Turk. Participants were required to have an IP address in the US and a 95% success rate on HIT completion.

- **Procedure.** The experiment was hosted on Alex Drummond's Ibex Farm. Participants were trained to provide acceptability judgments on a scale of 1–7.

- **Items.** Sixteen experimental items with varying prepositions manipulated the *Host* quantifier (every/some), its *Argument* position (object/subject), and whether the restrictor underwent *Extraposition*. The *Category* of the restrictor (PP/RC) was a between-subjects factor.[2]

(33)   a.   *Ex-situ/Every/Object*
Park rangers removed every camper yesterday
(who was) at any of the sites with significant flooding.

    b.   *Ex-situ/Some/Object*
Park rangers removed some campers yesterday
(who were) at any of the sites with significant flooding.

    c.   *Ex-situ/Every/Subject*
Every camper was removed yesterday
(who was) at any of the sites with significant flooding.

    d.   *Ex-situ/Some/Subject*
Some campers were removed yesterday
(who were) at any of the sites with significant flooding.

    e.   *In-situ/Every/Object*
Yesterday park rangers removed every camper
(who was) at any of the sites with significant flooding.

    f.   *In-situ/Some/Object*
Yesterday Park rangers removed some campers
(who were) at any of the sites with significant flooding.

    g.   *In-situ/Every/Subject*
Yesterday every camper
(who was) at any of the sites with significant flooding was removed.

    h.   *In-situ/Some/Subject*
Yesterday some campers
(who were) at any of the sites with significant flooding were removed.

- **Empirical Predictions.** The empirical predictions can be summarized as follows:

  – *Host-Internal Prediction*: If an XP is generated in the restrictor of DP, an NPI in XP WILL be sensitive to the alternation between *every*/*some* in that DP.

      (34)   *Unlicensed-NPI Penalty*

         a.   ✓ [DP every …] … [XP NPI]   b.   * [DP some …] … [XP NPI]

  – *Host-External Prediction*: If an XP is not generated in the restrictor of DP, an NPI in XP will NOT be sensitive to the alternation between *every*/*some* in that DP.

      (35)   *NO Unlicensed-NPI Penalty*

         a.   * [DP every …] … [XP NPI]   b.   * [DP some …] … [XP NPI]

4.2   The Results

- **Statistical Analysis.** Separate LMER models detected a significant effect ($\alpha = 0.05$, $|t| = 1.96$) of Host×Argument×Extraposition for the PP data ($\hat{\beta} = 0.132, t = 3.260$) but not for the RC data. The full 4-way interaction was marginally significant ($\hat{\beta} = 0.058, t = 1.810, p \approx 0.07$).

  A post-hoc analysis of Ex-situ subject conditions showed a significant effect of Host×Category ($\hat{\beta} = -0.131, t = -1.990$).

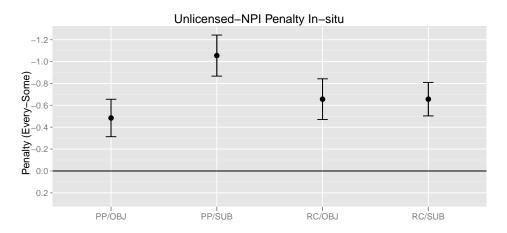- **In-Situ Data.** The results for the In-Situ data are as follows:

Figure 1: Mean difference between responses for every *and* some *by condition for In-Situ data with standard error bars.*

	PP In-situ		RC In-situ	
	Object	**Subject**	**Object**	**Subject**
Every	4.38 (0.15)	4.65 (0.16)	5.24 (0.14)	5.20 (0.12)
Some	3.90 (0.16)	3.59 (0.15)	4.59 (0.14)	4.54 (0.13)
$\Delta_{\hat{\mu}}$	0.48 (0.17)	1.05 (0.19)	0.66 (0.19)	0.66 (0.15)

Table 1: Mean response by condition for In-Situ data with standard error in parentheses.

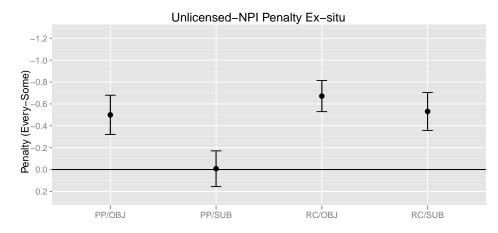- **Ex-Situ Data.** The results for the Ex-Situ data are as follows:

Figure 2: Mean difference between responses for every *and* some *by condition for Ex-Situ data with standard error bars.*

	PP Ex-situ		RC Ex-situ	
	Object	**Subject**	**Object**	**Subject**
Every	4.20 (0.16)	3.22 (0.15)	5.19 (0.13)	4.40 (0.14)
Some	3.70 (0.15)	3.21 (0.14)	4.52 (0.14)	3.87 (0.14)
$\Delta_{\hat{\mu}}$	0.50 (0.18)	**0.01 (0.16)**	0.67 (0.14)	**0.53 (0.17)**

Table 2: Mean response by condition for Ex-Situ data with standard error in parentheses.

4.3 Interpretation of Experimental Results

- **Host-Internalism.** The observed Unlicensed NPI Penalties suggest that an NPI in extraposed material can be licensed by *every*.

> **A Host-Internal strategy is available to derive RC-EXNP and PP-EXNP.**

- **New Empirical Generalization.** The non-difference between *every*/*some* in Ex-situ/Subject/PP suggests that:

> (36)   **EXNP** *can* **target a RC in Spec,IP but** *cannot* **target a PP in Spec,IP.**

5   The Source of RC-EXNP

5.1   Not Subextraction (Ross 1967, Baltin 1981)

- **NPI-Licensing under Reconstruction.** NPIs are licensed in the scope of their licensor at LF and reconstruction can satisfy this requirement (Linebarger 1980, Uribe-Etxevarria 1994, de Swart 1998). Linebarger (1980) provides the following evidence in (37)–(38).

(37)   A doctor was not available.

   a. $\neg > \exists$: It is not the case that there is a doctor x such that x was available.

   b. $\exists > \neg$: There is a doctor x such that x was not available.

(38)   A doctor who knew *any*thing about acupuncture was not available.

   a. $\neg > \exists$: It is not the case that there is a doctor x such that x knew about acupuncture and x was available.

   b.   *$\exists > \neg$: There is a doctor x such that x knew about acupuncture and it is not the case that x was available

- **A Problem.** Extraposed material, if it has undergone subextraction, will need to be reconstructed into the restrictor of *every* if the NPI is to be licensed. This is incorrectly expected to conflict with the requirement to interpret an Antecedent-Contained Deletion (ACD) site outside the VP (e.g., Fiengo & May 1994).

(39)   I bought [DP every book [CP that I had *ever* been told to Δ]] today
                                        [CP that I had *ever* been told to Δ]1.

5.2   Not Asyndetic Coordination (de Vries 2002)

- **An Interpretation Problem.** Webelhuth et al. (2013) point out that, given a quantificational head, the phrases being coordinated could potentially have different truth conditions.

- **Incorrect Truth-Conditions.** Given a universal quantifier, the truth conditions of the first conjunct entail the truth conditions of the second. This sentence is incorrectly predicted to mean *They took every guest to the hospital*.

    (40)   They [$_{\&:P}$ [$_{VP}$ took [$_{DP}$ every guest] to the hospital] [$_{\&:P}$ &:
    [$_{VP}$ ~~took~~ [$_{DP}$ ~~every guest~~ who ate *any* of the potato salad] ~~to the hospital~~]]]

5.3   Quantifier Raising and Late-Merge (Fox & Nissenbaum 1999, Fox 2002)

- **Just Right.** The QR-Theory avoids the interpretive problem of asyndetic coordination by interpreting the quantifier only once (*Trace Conversion*; Engdahl 1980, Sauerland 1998, Fox 2002). The extraposed material can simultaneously be interpreted inside its host to license an NPI and outside the VP to license Antecedent-Contained Deletion.

    (41)   *Phonological Form*
    I bought [$_{DP}$ every book]$_1$ today [$_{CP}$ that I was ever told to]$_1$.

    (42)   *Logical Form*
    [$_{DP}$ every book λ1 [$_{CP}$ that I was *ever* told to [$_{vP}$ buy *the book* x_1]]]
                     λ1 I [$_{vP}$ bought [$_{DP}$ *the book* x_1]] yesterday.

5.4   Summary

- The QR-Theory provides a means of handling many of the peculiar properties of EXNP, including our new connectivity facts.
    - *Locality* : The locality of EXNP, like QR (e.g., Fox 2000, Reinhart 2006), is economical.
    - *Exceptional Displacement* : RCs are late-merged not subextracted.
    - *Island Insensitivity* : QR and late-merge provide means for obviating islands.
    - *Scope Marking* : The host is interpreted at the point of late-merge (see Williams 1974, Fox & Nissenbaum 1999).

- *NPI-Licensing* : **Accounts for NPI-licensing in extraposed material by the host.**

RC-EXNP is able to employ the QR-Theory of Fox & Nissenbaum (1999).

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6   The Source of PP-EXNP

- **Narrowing the Possibility Space.** Recall the new empirical generalization.

    (43)   EXNP *can* target a RC in Spec,IP but *cannot* target a PP in Spec,IP.

Various scenarios could give rise to the asymmetry.

  i. *A Single Mechanism*: PP-EXNP employs the QR+Late-Merge mechanism but it is unavailable for targeting a PP in subject position.

  ii. *Distinct Mechanisms*: PP-EXNP employs some mechanism distinct from QR+Late-Merge that is unable to target subjects.

6.1   Single Mechanism Analysis

- **Restricting Late-Merge.** The most promising execution asserts that QR+Late-Merge always derives EXNP, but Late-Merge is somehow limited.

- **PPs Don't Late-Merge?** If PPs cannot be late-merged, then we already need an additional mechanism for PP-EXNP from objects.

- **Subjects Don't Permit Late-Merge?** Blocking Late-Merge from targeting subjects loses us the explanation of RC-EXNP.

- **Problem.** We would require a very construction-specific rule: Late-Merge is unavailable in the case that a PP in a subject host is being displaced rightward.

6.2   Distinct Mechanism Analysis

- **The Subject Condition.** The subject/object asymmetry we are observing with PPs is reminiscent of the well-known positional asymmetry observed for leftward movements.[3]

  (44)   *Subject Condition*
  A DP in Spec,IP is opaque for subextraction.

  (45)   a.   * [Which linguist]$_2$ is [a statue of e_2]$_1$ being built e_1 in your yard?
        b.   ? [Which linguist]$_2$ is there [a statue of e_2]$_1$ being built e in your yard?

- **Subextraction.** I suggest that PP-EXNP is derived via Subextraction. We therefore expect that it is unable to obviate the *Subject Condition*.

  (46)   We invited [$_{DP}$ every linguist e_1] yesterday [$_{CP}$ from East Africa]$_1$.

  (47)   * [$_{DP}$ Every linguist e_1] was invited yesterday [$_{CP}$ from East Africa]$_1$.

- **Reconstruction.** Allowing this movement to be reconstructed to be interpreted in the restrictor of *every* will permit the licensing of NPIs.

  (48)   Park rangers removed
  [$_{DP}$ every camper [$_{PP}$ at any of the sites with significant flooding]] yesterday
  [$_{PP}$ at any of the sites with significant flooding]

6.3   Summary

- Subextraction can account for the properties of PP-EXNP discussed here.
  - Subjects are opaque for subextraction.
  - Reconstruction produces an LF compatible with NPI-licensing.

  > **The positional asymmetry in (36) is the result of RC-EXNP and PP-EXNP employing different Host-Internal mechanisms.**
  >
  >   **i.)   RC-EXNP : QR + Late Merge (Fox & Nissenbaum 1999)**
  >
  >   **ii.)   PP-EXNP : Subextraction (Ross 1967)**

7   Putative PP-EXNP from Spec,IP

- **Counterexamples.** I argue that the large number of examples of PP-EXNP from subjects in the literature (e.g., Guéron 1980) can and must receive a Host-External analysis. Two candidates include:

  - *Pseudoarguments of the Verb.* A rightward aligned NP is a complement-like modifier of the predicate.

  - *Truth-Conditional Equivalence.* The associative property of intersective quantification produces the illusion of NP-modification from an underlying predicate-modification structure.

7.1   Pseudoarguments of the Verb

- **Akmajian 1975.** Akmajian (1975) noted that apparently displaced PPs might be better analyzed as predicate-modifiers.

  (49)   [$_{DP}$ A number of pictures] were taken [$_{PP}$ of John]$_1$.

  (50)   I only had three pictures left in the camera, so I took them of John.

  (51)   * Them of John were the best photos.

Moreover, Büring & Hartmann (1997) noted that the extraposed material in an EXNP configuration must be phrase-final.

  (52)   a.   [$_{DP}$ The information]$_1$ was passed on to their new classmates
                                       [$_{CP}$ that the party stopped]$_1$.
        b.   * [$_{DP}$ The information]$_1$ was passed on [$_{CP}$ that the party stopped]$_1$
                                         to their new classmates.

The fact that the *of*-PP in (53) need not be phrase-final suggests that it is has not undergone EXNP.

  (53)   a.   A number of pictures were taken [$_{PP}$ of Johnny] yesterday
        b.   A number of pictures were taken e_1 yesterday [$_{PP}$ of Johnny]$_1$.

7.2 Truth-Conditional Equivalence

- **Intersectivity.** A subset of natural language quantifiers have the property of intersectivity. These are typically quantifiers that are 'symmetric' or 'weak' or fit into existential-*there* construction (Milsark 1974).

  (54)   INTERSECTIVITY
  A generalized quantifier Q is *intersective* (Q_I) iff the truth conditions of $Q(A, B)$ depend only on $|A \cap B|$.

  (55)   A linguist walked in.
  $\exists x.[x \in \llbracket \text{linguist} \rrbracket \wedge x \in \llbracket \text{walked in} \rrbracket]$
  "There is an x such that x is a linguist and x walked in."

- **Associativity.** Intersectivity is an associative property (56). The consequence is that the truth conditions of a sentence like (57) and (58) will mutually entail each other.

  (56) $\llbracket \exists_x [(\text{NP}_x \cap \text{PP}_x) \cap \text{VP}_x] \rrbracket \Leftrightarrow \llbracket \exists_x [\text{NP}_x \cap (\text{PP}_x \cap \text{VP}_x)] \rrbracket$

  (57)   a.   A linguist with a bag walked in.
        b. $\exists x.[x \in \llbracket \text{linguist with a bag} \rrbracket \wedge x \in \llbracket \text{walked in} \rrbracket]$
        c.   "There is an x such that x is a linguist with a bag and x walked in."
             $\models$

  (58)   a.   A linguist walked in with a bag.
        b. $\exists x.[x \in \llbracket \text{linguist} \rrbracket \wedge x \in \llbracket \text{walked in with a bag} \rrbracket]$
        c.   "There is an x such that x is a linguist and x walked in with a bag."

  This presents a confound whereby grammatical predicate modification structures produce truth conditions equivalent to the intended NP-modification structure.

- **Depictive Modification.** That predicate-modification does mimic NP-modification is evidenced by the sensitivity of the phrase-final PP to *i*-level/*s*-level predication, which is characteristic of depictives but not NP-modifiers.

  Observe that *with*-PPs come in two flavors: possessive (*i*-level) and commitative (*s*-level).

  (59)   a.   A linguist with *a sister* walked in.   *possessive*
        b.   A linguist with *his sister* walked in.   *commitative*

Possessive *with*-PPs only modify NPs while commitative *with*-PPs modify NPs or predicates (60). The inability to interpret the *with*-PP in (61) as a possessive PP (*i*-level) suggests it is more depictive-like than it is an NP-modifier.

(60)   a.   # He walked in with a sister.   *possessive*
      b.   He walked in with his sister.   *commitative*

(61)   a.   # A linguist arrived early with a sister.   *possessive*
      b.   A linguist arrived early with his sister.   *commitative*

As expected, the relevant reading reappears once the host is out of subject position.

(62)   I met [$_{DP}$ a linguist] this morning [$_{PP}$ with a sister].

(63)   ? There is [$_{DP}$ a linguist] arriving early [$_{PP}$ with a sister].

- **Universal Quantification.** If predicate-modification imitates NP-modification through the associativity of intersection, then we predict that the illusion of PP-EXNP will disappear when associativity is interrupted.

  This is the case with a non-intersective quantifier like *every*. The two possible parses no longer mutually entail each other. The predicate-modification reading now entails the NP-modification, but not vice versa.

  (64) $\llbracket \forall_x [(\text{NP}_x \cap \text{PP}_x) \rightarrow \text{VP}_x] \rrbracket \Leftarrow \llbracket \forall_x [\text{NP}_x \rightarrow (\text{PP}_x \cap \text{VP}_x)] \rrbracket$

  (65)   a.   Every linguist with a bag walked in.
        b. $\forall x.[x \in \llbracket \text{linguist with a bag} \rrbracket \rightarrow x \in \llbracket \text{walked in} \rrbracket]$
        c.   "For all x, if x is a linguist with a bag, then x walked in." $\not\models$

  (66)   a.   Every linguist walked in with a bag.
        b. $\forall x.[x \in \llbracket \text{linguist} \rrbracket \rightarrow x \in \llbracket \text{walked in with a bag} \rrbracket]$
        c.   "Fox all x, if x is a linguist , then x walked in with a bag."

- **Right-Adjoined Topics.** Topics restricting the domain of quantification also seem able to produce some kind of truth-conditional equivalence.

  (67)   Everyone was fired in those departments.
        a.   Everyone in those departments was fired. $\models$
        b.   In those departments, everyone was fired.

7.3 Unaccusative Residue

- **Guéron 1980.** Guéron (1980) argued that PP-EXNP from subjects is only possible with predicates of appearance or appearance into the discourse. Johnson (1985) and Coopmans & Roovers (1986) argued that the relevant class is unaccusatives. Indeed (68) does not obviously fit into either of the analyses above.

  (68)   A book arrived today by Chomsky.

- **A Third Mechanism?** Perhaps leftward movement and stranding analyses (Kayne 1994, Wilder 1995, Rochemont & Culicover 1997, Vicente 2003, Sheehan 2010) is available with true unaccusatives. However, it is worth pointing out that unaccusatives show the same effects that we have observed above.

  (69)   # A linguist arrived today with a sister.

  (70)   * Every movie began simultaneously by undergraduate film major.

8 Conclusion

> **Host-Internalism.** The ability of *every* to license an NPI in extraposed material suggests that a Host-Internal strategy is available to derive EXNP.
>
> (71)   I bought [every book]$_1$ yesterday [that I had *ever* been told to buy]$_1$.
>
> **A New Empirical Generalization.** Experimental evidence from the licensing of NPIs by *every* reveals the generalization in (72).
>
> (72)   EXNP *can* target a RC in Spec,IP but *cannot* target a PP in Spec,IP.
>
> **The Heterogeneity of EXNP.** The positional asymmetry in (72) is the result of RC-EXNP and PP-EXNP employing different Host-Internal mechanisms.
>
>   i.)   RC-EXNP : QR + Late Merge (Fox & Nissenbaum 1999)
>
>   ii.)   PP-EXNP : Subextraction (Ross 1967)
>
> **Putative PP-EXNP.** Truth-conditional equivalence between the intended NP-modification and predicate-modification produces an illusion of PP-EXNP from subjects.
>
> (73) $[\![\,\exists_x[(\mathrm{NP}_x \cap \mathrm{PP}_x) \cap \mathrm{VP}_x]\,]\!]$ $\Leftrightarrow$ $[\![\,\exists_x[\mathrm{NP}_x \cap (\mathrm{PP}_x \cap \mathrm{VP}_x)]\,]\!]$

Notes

[1] Giannakidou (1998) and Hoeksema (2012) present challenges for the monotonicity (Ladusaw 1979, von Fintel 1999) and the Anti-Additivity (Zwarts 1998) analyses of NPI-licensing by *every*.

[2] The NPI always appeared in a partitive construction to discourage a free-choice interpretation (e.g., Dayal 2009).

[3] See Haegeman et al. (2014) for an interesting discussion of ameliorating effects for the Subject Condition.

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Appendix A : Experiment 2

- **The Question.** Experiment 2 was designed to answer the following question:

    – Does the ambiguity of a phrase final PP as an NP-modifier or predicate-modifier contribute to the observed asymmetric licensing pattern?

- **Participants.** 64 native English speakers were recruited using Amazon's Mechanical Turk. Participants were required to have an IP address in the US and a 95% success rate on HIT completion.

- **Procedure.** See Experiment 1.

- **Items.** 16 experimental items manipulated the *Host* quantifier (every/some), its *Argument* position (object/subject), and whether the restrictor underwent *Extraposition*. The preposition *of* was always used to deter participants from a predicate-modification parse.

    (74)   a.   *Ex-situ/Every/Object*
                 Park rangers removed every resident yesterday
                                       of any of the sites with significant flooding.

           b.   *Ex-situ/Some/Object*
                 Park rangers removed some residents yesterday
                                       of any of the sites with significant flooding.

    c.   *Ex-situ/Every/Subject*
         Every resident was removed yesterday
                               of any of the sites with significant flooding.

    d.   *Ex-situ/Some/Subject*
         Some residents were removed yesterday
                               of any of the sites with significant flooding.

    e.   *In-situ/Every/Object*
         Yesterday park rangers removed every resident
                               of any of the sites with significant flooding.

    f.   *In-situ/Some/Object*
         Yesterday Park rangers removed some residents
                               of any of the sites with significant flooding.

    g.   *In-situ/Every/Subject*
         Yesterday every resident
                               of any of the sites with significant flooding was removed.

    h.   *In-situ/Some/Subject*
         Yesterday some residents
                               of any of the sites with significant flooding were removed.

- **Empirical Predictions.** The empirical predictions can be summarized as follows:

    – *Attachment Ambiguity Effects*: If a phrase-final PP can be an NP-modifier, an Unlicensed-NPI Penalty WILL be observed with subject hosts.

    (75)   *Unlicensed-NPI Penalty*

           a.   ✓ $[_{DP}$ every …] … $[_{XP}$ NPI]   b.   * $[_{DP}$ some …] … $[_{XP}$ NPI]

    – *Positional Asymmetry Effects*: If an phrase-final PP cannot be an NP-modifier, an Unlicensed-NPI Penalty will NOT be observed with subject hosts.

    (76)   *NO Unlicensed-NPI Penalty*

           a.   * $[_{DP}$ every …] … $[_{XP}$ NPI]   b.   * $[_{DP}$ some …] … $[_{XP}$ NPI]

- **The Results.** An LMER model failed to detect a significant effect ($\alpha = 0.05$, $|t| = 1.96$) of Host×Argument×Extraposition for the PP data ($\hat{\beta} = 0.073, t = 1.448$).
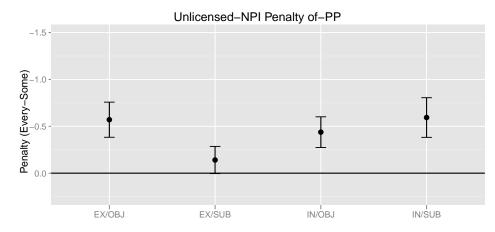
Figure 3: Mean difference between responses for every and some by condition with standard error bars.

	PP Ex-situ		PP In-situ	
	Object	**Subject**	**Object**	**Subject**
Every	3.85 (0.15)	3.03 (0.14)	3.90 (0.14)	4.23 (0.15)
Some	3.28 (0.14)	2.89 (0.13)	3.46 (0.13)	3.64 (0.14)
$\Delta_{\hat{\mu}}$	0.57 (0.19)	0.14 (0.14)	0.44 (0.16)	0.59 (0.21)

Table 3: Mean response by condition with standard error in parentheses.

- **Summary.** The results of Experiment 2 reveal that:

  - The difference in the presence of an Unlicensed-NPI Penalty suggests that an NPI in a phrase-final PP is not licensed by *every* in subject position.

  - The data trend in the direction of the Positional Asymmetry Account.

Appendix B : Is Late-Merge Unavailable for PPs?

- **Is Late-Merge Unavailable for PPs?** I assert that the positional asymmetry we are working with is empirical evidence that Late-Merge cannot derive to PP-EXNP.

  - *Condition C Amelioration.* Fox & Nissenbaum (1999) interpret Taraldsen's (1981) discovery that EXNP ameliorates Condition C effects as the Lebeaux-effects thought to be diagnostic of counter-cyclic adjunction.

    (77)   a.   * I gave him_1 a picture yesterday [$_{PP}$ of $John_1$'s mother].

            b.   I gave him a picture yesterday [$_{PP}$ from $John_1$'s collection].

    The reliability of these contrasts have been called into question by Safir (1999), among many others, and through a series of experiments by McCarthy (2003). The following examples are adapted from Merchant 2000 into PP-EXNP configurations.

    (78)   * I gave him_1 every report this morning [$_{PP}$ on Bob_1's division]

    (79)   * I reported her_1 to every cop last night [$_{PP}$ in $Abby_1$'s neighborhood]

    (80)   * I showed her_1 every picture today [$_{PP}$ from $Abby_1$'s mantlepiece]

  - *Scope-Marking Effects.* A more telling diagnostic might be the scope-marking effects of extraposition (Williams 1974, Fox & Nissenbaum 1999).

    (81)   *Generalized Extraposition-Scope Generalization*
    When a phrase β is extraposed from a host α, the scope of α is exactly as high as the attachment site of β.   (adapted from Bhatt & Pancheva 2004)

    I have not provided judgments for the following sentences adapted from Fox 2002.

    (82)   Sam read [$_{DP}$ every book] before you did Δ [$_{PP}$ with a red leather cover].
         a.   *before* $> \forall$: Sam read the entire set before you read the entire set.
         b. $\forall >$ *before* : Sam read each book before you read it.

    (83)   Kim met [$_{DP}$ everyone] before you could Δ
                               [$_{PP}$ from the Psychology department].
         a.   *before* $> \forall$: Kim met them all before you could meet them all.
         b. $\forall >$ *before* : Sam talked to each guest before you could talk to him/her.