Repairing Final-Over-Final Constraint Violations: Evidence from Basque verb clusters[*]

Ricardo Etxepare (CNRS)
Bill Haddican (CUNY-Queens College)

April 5, 2013

1 Introduction

- **Focus:** The Final-over-Final Constraint (FOFC), a generalization originally by Holmberg (2000) about the interaction between dominance relations and {head, complement} ordering cross-linguistically (Hawkins, 1983, 1995; Holmberg, 2000; Biberauer et al., 2008, to appear; Sheehan, 2013, 2012a,b; Biberauer et al., 2009, 2010).

(1)

```
        γP                  γP                  γP                    *γP
       /  \                /  \                /  \                  /   \
      γ    βP            βP    γ              γ    βP              βP     γ
          /  \          /  \                      /  \            /  \
         β    α        α    β                    α    β          β    α
```

(a) Harmonic,   (b) Harmonic,   (c) Disharmonic,   (d) Disharmonic,
right-branching   left-branching   attested   unattested (in relevant domains)
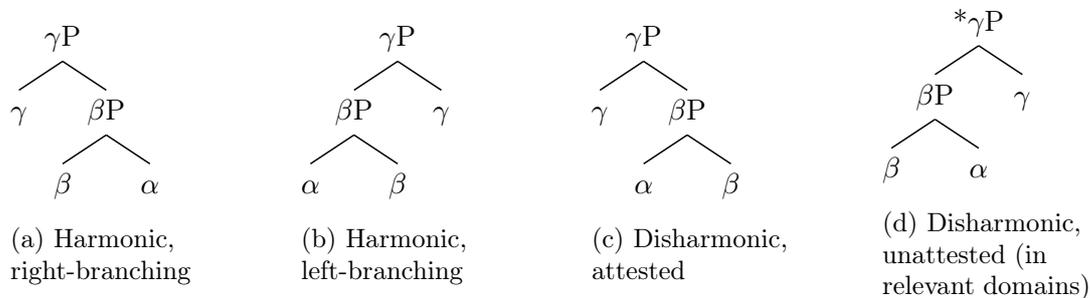
(2)   ***The Final-over-Final constraint*** (preliminary version)
    If β is a head-initial phrase and γ is a phrase immediately dominating β, then γ must be head-initial. If β is a head-final phrase, and γ is a phrase immediately dominating β, then γ can be head-initial or head-final.
    (adapted from Biberauer et al. (to appear))

- **Two main approaches to FOFC effects**

    1. **The Syntactic approach** (Biberauer et al., to appear): Assuming the LCA, Biberauer et al. (to appear) take effects such as (1) to reflect restrictions on roll-up movement (Kayne, 1994), which follow, in turn, from minimality effects on the spreading of features which drive such movement.

    2. **The PF approach** (Sheehan, 2013, 2012a,b) structures such as (1-d), are bad because they cannot be linearized by the LCA (Sheehan's modified version) at PF. (See also Koopman and Szabolcsi (2000); Williams (1982).)

- **A prediction to be tested:** The PF approach and narrow syntax approach make different predictions about derivational repair: the former approach but not the latter predicts FOFC-violating structures should reparable by copy deletion.

- **Empirical focus**: Variation between infinitival phrase>modal and modal>infinitival phrase orders in Basque (Etxepare and Uribe-Etxebarria, 2011).

(3)   a.   [Horrelakoak maiz-ago   ikusi] nahi nituzke.
              like.that.PL   often-more see   want AUX
       b.   Nahi nituzke [horrelakoak maiz-ago   ikusi.]
              want AUX   like.that.PL   often-more see
              'I'd like to see things like that more often.'
              (Etxepare and Uribe-Etxebarria, 2011)

- Etxepare and Uribe-Etxebarria (2011) argue that this word order variation is structure-sensitive:

(4)   a.   **Infinitival>Modal orders:** [T [Modal [v [V]]]]
       b.   **Modal>Infinitival orders:** [T [Modal ([Neg) [T [v [V]]]]](()

Main claims:

1. The smaller-than-TP restriction on the infinitival in (3-a) is a FOFC effect.

2. The possibility of TPs in the (3-b) order reflects subextraction of the non-finite constituent from its FOFC-violating position. That is, FOFC violations are reparable by copy-deletion, pace Biberauer et al. (to appear)

- *Talk outline:*

    Section 2: Previous approaches to FOFC effects

    Section 3: Etxepare and Uribe-Etxebarria's observations about word order and restrictions on complexity of modal complements.

Section 4: Etxepare and Uribe-Etxebarria's data as instances of FOFC-violation and FOFC-repair.

Section 5: Left/Right edge interactions in FOFC

2 The Final-Over-Final constraint

2.1 Word order (dis)-harmony in mixed-head languages

- **Ordering {V, O, Aux} in Finnish** (Holmberg, 2000)

(5)   a.   Milloin Jussi olisi   kirjoittanut romaanin?
              when   Jussi would-have written   INDEF-novel
              'When would Jussi have written a novel?'   [Aux-V-O]
       b.   Milloin Jussi olisi   romaanin   kirjoittanut?
              when   Jussi would-have INDEF-novel written
              'When would Jussi have written a novel?'   [Aux-O-V]
       c.   Milloin Jussi romaanin   kirjoittanut olisi?
              When   Jussi INDEF-novel written   would-have
              'When would Jussi have written a novel?'   [O-V-Aux]
       d.   *Milloin Jussi kirjoittanut romaanin   olisi?
              when   Jussi written   INDEF-novel would-have
              'When would Jussi have written a novel?'   **[*V-O-Aux]**
              (Holmberg, 2000)

- **Ordering {Modal, Infin, Obj} in Basque**. Basque is canonically OV but many speakers allow objects–especially heavy objects–to occur postverbally (Rijk, 1969; Ortiz de Urbina, 1989; Elordieta, 2001).

(6)   a.   Nahi zuen [bere ingelesa hobetu]
              want AUX REFL English improve
              'He/She wanted to improve his/her English'   [Modal-Infin-Obj]
       b.   Nahi zuen [hobetu bere   ingelesa]
              want AUX improve REFL English
              'He/She wanted to improve his/her English'   [Modal-Obj-Infin]
       c.   [Bere ingelesa hobetu] nahi zuen
              REFL English improve want AUX
              'He/She wanted to improve his/her English'   [Obj-Infin-Modal]
       d.   *[Hobetu bere ingelesa] nahi zuen
              improve REFL English   want AUX
              'He/She wanted to improve his/her English'   **[*Infin-Obj-Modal]**

- Biberauer et al. (to appear) note that without further qualification (2) incorrectly rules out commonplace, well-formed structures in German of the kind shown in (7) where a head-final VP contains a head-initial DP.

(7)   a.   Johann hat [$_{VP}$ [$_{DP}$ einen Mann] gesehen].
           John   has   a   man   seen
           'John has seen a man'
      b.   Johann ist [$_{VP}$ [$_{PP}$ nach Berlin] gefahren].
           John   is   to   Berlin gone
           'John has gone to Berlin'
           (Biberauer et al., to appear)

- Biberauer et al. note that such exceptions differ from the Basque and Finnish cases just discussed in that the relevant β and γ heads in (7), are categorially distinct– V is clearly of a different categorial status from both D as in (7-a) and P as in (7-b). Biberauer et al. capture this class of exceptions to (2) by restricting FOFC evaluation to a sequence heads in an extended projection.

- A second class of exceptions concerns A'-movement. Biberauer et al. note that, across, languages, topic- and focus-movements appear able to violate FOFC as defined in (2).

(8)   We expected John to eat the pies, and [eat the pies] he did <eat the pies>.
      (Biberauer et al., to appear)

- Following Biberauer et al. (to appear), we exclude A'-movement from the scope of FOFC, and adopt as our working characterization of FOFC, the following from Biberauer et al. (to appear).

(9)   **The Final-over-Final constraint** (amended version)
      If β is a head-initial phrase and γ is a phrase immediately dominating β, then γ must be head-initial. If β is a head-final phrase, and γ is a phrase immediately dominating β, then γ can be head-initial or head-final, where
      (adapted from Biberauer et al. (to appear)), where:
      i. β and γ are in the same Extended Projection;
      ii. βP has not been A'-moved to Spec, γP.

2.2   Biberauer et al.'s narrow syntactic account of FOFC effects

- Biberauer et al. (to appear) assume syntactic structures are universally linearized in the order Spec-Head-Complement. Complement>Head orders reflect "roll up"– within a spine, iterative remerger of complements as the specifier of their selecting heads Kayne (1994).

- FOFC effects, from this perspective, are explained if the following two conditions apply to roll up:

    1. it must start at the base of a given extended projection;
    2. it proceeds monotonically, that is, it cannot start and stop and start again.

- Biberauer et al. model these restrictions as minimality effects of spreading of a general movement-driving feature, "$^\wedge$". When $^\wedge$ associates with c-selectional features, it triggers movement of a complement to the spec of its selecting head.

- $^\wedge$ can "spread" up a tree, but it can't skip intervening heads as it spreads (cf. (Travis, 1984)):

(10)   If a head α_i in the Extended Projection E of a lexical head L has $^\wedge$ associated with its selection feature for a lower head α_{i+1}, then so does α_{i+1}.

- The assumption of monotonic spreading therefore excludes the unattested start-stop-start pattern that will produce FOFC violations:

(11)   ***Non-monotonic spreading of** $^\wedge$*
        *[X$^\wedge$ [Y [Z$^\wedge$]]]

2.3   Sheehan's PF approach

- Sheehan (2013, 2012a,b) proposes that FOFC effects can be derived from a modified version of the LCA. In Sheehan's LCA, linearization determined not just by c-command relations, but also c-selection:

(12)   ***Sheehan's (to appear-b) revised LCA***
        i.   If a category A c-selects a category B, then A precedes/follows B at PF
        ii.   If no order is specified between A and B by the sum of all precedence pairs defined by (i), then A precedes B at PF if A asymmetrically c-commands B.
        (Sheehan, 2012a).

(1)

(a) Harmonic, right-branching

(b) Harmonic, left-branching

(c) Disharmonic, attested

(d) Disharmonic, unattested (in relevant domains)
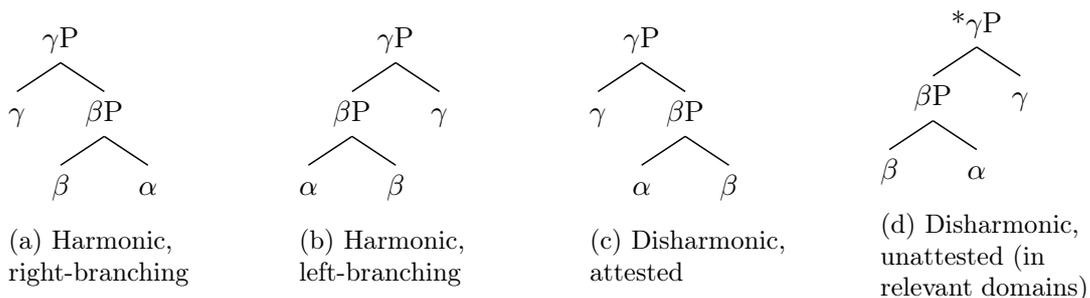
- In the harmonic (a) and (b) structures in (1), precedence relations are established by parameter settings for relevant c-selection relations.

- In the attested disharmonic order, (c), c-selectional relations will determine the orders $\gamma > \beta$ and $\alpha > \beta$, but the relative order of γ and α is underdetermined. The fall back c-command criterion in (12-ii) however, determines $\gamma > \alpha$.

- In (d), c-selection determines $\beta > \gamma$ and $\beta > \alpha$, leaving underdetermined the relative order of γ and α. Crucially, the c-command condition in (12-ii) will then determines $\gamma > \alpha$, yielding the output $\beta > \gamma > \alpha$, and *not*, the FOFC-violating order, $\beta > \alpha > \gamma$.

- One possible case of FOFC repair noted in previous literature involves "Head-Final Filter" violations (Greenberg, 1963; Williams, 1982; Sheehan, 2012b)

(13)   a.   the proud man
        b.   John is proud of his children.
        c.   *the [$_{\gamma}$P [$_{\beta}$P proud [$_{\alpha}$P of his children]] man]
              (adapted from Williams (1982))

- A popular solution is extraposition of CP/PP complements of the prenominal adjective:

(14)   a difficult book [PP for anyone to read]
        (adapted from Sheehan (2012b))

(15)   zavesten otrok, [CP da   je   vojna]
        aware.M child.M   that is.3SG war.F
        'a child aware that there is a war.'   [Slovenian]
        (adapted from (Sheehan, 2012b))

- Sheehan (2012b) takes prenominal adjectives to be reduced relative clauses where the adjective raises from a postnominal position (Kayne, 1994). HFF/ FOFC-violations repaired at PF by "scattered deletion".

(16)   [$_{DP}$ [$_{CP}$ [$_{AP}$ Adj] C [$_{NP}$ Noun <AP>]]]

3   Word order and the functional richness of modal complements in Basque

- **Core facts:** Variation in placement of the non-finite constituent in Basque modal constructions (Etxepare and Uribe-Etxebarria, 2011).

(17)   a.   [Horrelakoak maiz-ago   ikusi] nahi nituzke.
              like.that.PL   often-more see   want AUX
        b.   Nahi nituzke [horrelakoak maiz-ago   ikusi.]
              want AUX   like.that.PL often-more see
              'I'd like to see things like that more often.'
              (Etxepare and Uribe-Etxebarria, 2011)

- Variation in (17) correlates with four other properties suggesting that the Modal>Infinitival order ((17-b)) can involve a functionally richer infinitival complement than the Infinitival>Modal order ((17-a)) (Etxepare and Uribe-Etxebarria, 2011, 2012; Balza, 2010).

1. Temporal modification

- In Modal>Infinitival but not Infinitival>Modal orders, the infinitival phrase can contain a temporal modifier forcing a temporal interpretation of the event in the infinitival phrase, different from that of the modal.

(18)   a.   *Jon-ek [(gaur) atzo   ego-n]   behar zuen (gaur) etxe-a-n
            Jon-ERG today yesterday be-INFIN need AUX today house-DEF-in

        b.   Jon-ek   atzo   behar zuen [gaur etxe-a-n   ego-n.]
            Jon-ERG yesterday need AUX today house-DEF-in be-INFIN
            'Yesterday Jon needed to be home today.'
            (Etxepare and Uribe-Etxebarria, 2011)

2. Non-finite auxiliaries

- In Modal>Infinitival but not Infinitival>modal orders, the infinitival phrase can contain a non-finite auxiliary (for some speakers at least).

(19)   a.   *[Hori eros-i   iza-n]   nahi nuke
            that buy-INFIN AUX-INFIN want AUX

        b. %Nahi nuke [hori eros-i   iza-n.]
          Want AUX that buy-INFIN AUX-INFIN
          'I would like to have bought that.'

3. Agreement

- Open class finite verbs in Basque are formed periphrastically, with a verb root (bearing any aspectual morphology) and an auxiliary that agrees in person and number with ergative, absolutive and dative arguments of the main verb.

(20)   a.   Ni   joa-n   na-iz.
            I.ABS go.PERF 1SG-be
            'I have gone.'   [unaccusative]

        b.   Katu-ek   ni ikus-i   na-u-te.
            cat-3PL.ERG I see-PERF 1SG.ABS-have-3PL.ERG
            'The cats have seen me.'   [monotransitive]

        c.   Ni-k liburua   Jon-i   ema-n   d-i-o-t.
            I-ERG book-ABS Jon-DAT give-PERF 3SG.ABS-have-3SG.DAT-1SG.ERG
            'I have given Jon the book.'   [ditransitive]

    d. Ni   Jon-i   gusta-tzen   na-tzai-o.
       I-ABS Jon-I-DAT like-I-IMPERF I-1SG.ABS-be-I-3SG.DAT
       'Jon likes me.' (lit. 'I please Jon.')   [applicative unaccusative]

- Modals are transparent to plural absolutive and dative agreement marking in transitive constructions. In sentences with the modal *behar* 'must,' agreement marking on the auxiliary is exhaustively determined by the argument structure of the lower verb:

(21)   a. %Joan behar na-iz
          go   must 1.ABS-ROOT
          'I must go.'   [unaccusative]
      b. Ni-k   liburu-ak   ikusi behar d-it-u-t
          you-ABS book-PL.ABS see   need 2.ABS-ROOT-1.ERG
          'I must see the books.'   [monotransitive]
      c. Jon-i   liburu-ak   eman behar
          Jon-DAT books-PL.ABS give   need
          d-i-zki-o-t
          3.ABS-ROOT-PL.ABS-3SG.DAT-1SG.ERG
          'I must give Jon the books.'   [ditransitive]

- Both absolutive plural agreement and dative agreement patterns are optional in the Modal>Infinitival order. Plural absolutive agreement:

(22)   a. Nahi n-**it**-u-z-ke   [horr-ela-ko-a-k
          want 1ABS-**PL.ABS**-ROOT-PL.ABS-IRR that-like-GEN-DEF-PL
          maiz-ago   ikus-i]
          frequent-more see-INFIN
      b. Nahi n-u-ke   [horr-ela-ko-a-k   maiz-ago   ikus-i]
          want 1ABS-ROOT-IRR that-like-GEN-DEF-PL frequent-more see-INFIN
          'I'd like to see things like that more often.'
          (Etxepare and Uribe-Etxebarria, 2011)

(23)   a. [Horr-ela-ko-a-k   maiz-ago   ikus-i]   nahi
          that-like-GEN-DEF-PL frequent-more see-INFIN want
          n-**it**-u-z-ke
          1ABS-**PL.ABS**-ROOT-PL.ABS-IRR
      b. *[Horr-ela-ko-a-k   maiz-ago   ikus-i]   nahi nuke
          that-like-GEN-DEF-PL frequent-more see-INFIN want 1ABS-ROOT-IRR
          'I'd like to see things like that more often.'
          (Etxepare and Uribe-Etxebarria, 2011)

- Dative agreement behaves similarly.

(24)   a. Behar zen-i-e-ke   [zure guraso-ei   obeditu]
          must 2ABS-ROOT-DAT.PL-IRR your parent-DAT.PL obey

b. Behar zen-u-ke   [zure guraso-ei   obeditu]
    must 2ABS-ROOT-IRR your parent-DAT.PL obey
    'You should obey your parents.'
    (Etxepare and Uribe-Etxebarria, 2011)

(25)   a. [Zure guraso-ei   obeditu] behar zen-i-e-ke
            your parent-DAT.PL obey   must 2ABS-ROOT-DAT.PL-IRR
        b. [*Zure guraso-ei   obeditu] behar zen-u-ke
            your   parent-DAT.PL obey   must 2ABS-ROOT-IRR
            'You should obey your parents.'
            (Etxepare and Uribe-Etxebarria, 2011)

- These facts stand to reason if the loci for dative and absolutive case is vP-internal (Rezac, 2008) and the infinitival T, where present, blocks raising to the matrix T (Rezac, 2008).

4. Negation

- Finally, in Modal>Infinitival, but not Infinitival>Modal orders, sentential negation is possible inside the non-finite constituent.

(26)   a. *[Ez eros-i]   nahi/behar n-u-ke.
            NEG buy-INFIN want/need 1ABS-ROOT-IRR
        b. Nahi/behar n-u-ke   [ez   eros-i]
            want/need 1ABS-ROOT-IRR NEG buy-INFIN
            'I want/need not to buy it.'
            (Etxepare and Uribe-Etxebarria, 2011)

- Note that sentential negation in Basque but not constituent licenses a higher clause-mate NPI.

(27)   a. *Inork   (ere) du ez   eros-i.
            Nobody (at-all) AUX NEG buy-INFIN
            'Nobody at all bought it.'
        b. Inork   (ere) ez   du eros-i.
            Nobody (at-all) NEG AUX buy-INFIN
            'Nobody at all bought it.'

(28)   Nahi nuke deus (ere) ez eros-i.
        Want/need AUX nothing at all NEG buy-INFIN
        'I'd like to not buy anything (at all).'

- To summarize, we have described four sets of facts drawn mainly from Etxepare and Uribe-Etxebarria (2011, 2012) and Balza (2010) suggesting that the two word orders discussed above correspond to different internal structures of the non-finite constituent.

(29)   a.   **Infinitival>Modal orders:** [T [Modal [v [V]]]]
        b.   **Modal>Infinitival orders:** [T [Modal ([Neg) [T [v [V]]]]]([)

4   FOFC and word order in Basque verb clusters

4.1   Antisymmetry and polarity-sensitive word order alternations

- Relative placement of Aux and V sensitive to polarity (Laka, 1990; Elordieta, 2001; Haddican, 2004).

(30)   ***Affirmative main clauses***

    Miren-ek   Jon   ikus-i   du
    Miren-ERG Jon-ABS see-PERF PERF AUX.3SG.ERG
    'Miren hasn't seen Jon.'

(31)   ***Negative main clauses***

    Miren-ek   ez   du   Jon   ikus-i
    Miren-ERG PERF AUX.3SG.ERG Jon-ABS see-PERF
    'Miren hasn't seen Jon.'

(32)   ***The head directionality parameter approach***(Laka, 1990; Elordieta, 2001, 2008)

```
                        ΣP
                   /          \
            [Σ[Aux]]           TP
                            /        \
                        AspP          <Aux>
                       /      \
                    vP        [[[V]v]Asp]
                  /     \
               VP       <v>
               |
              <V>
```
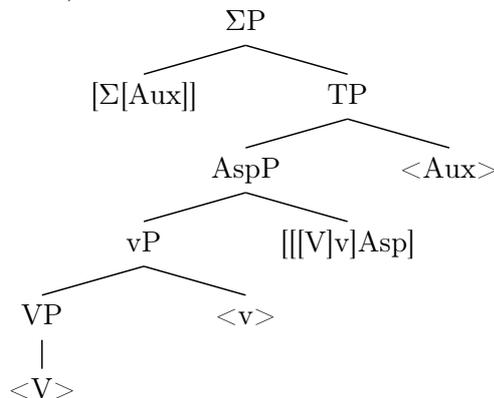
- An approach that does without local head-directionality parametrization requires a different approach to the effect of polarity on word order. Assume:

    1. Left-branching verbal complexes are derived by roll-up.
    2. A TP-external Σ head Laka (1990) with a *u*Pol feature. (See also Kramer and Rawlins (2009) and Holmberg (2013).)

- In negative sentences, Σ probes *ez*, merged in spec of TP-internal PolP will satisfy these features.

(33)   ***Negative orders***

ΣP
  ez   Σ'
        Σ [~~EPP,uPol~~]   TP
                        Aux   PolP
                                    ez   Pol
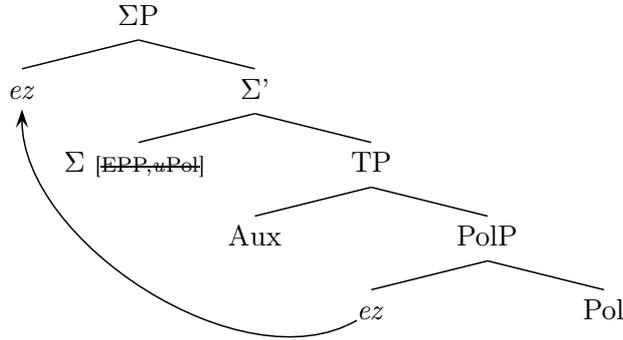
- In affirmative root contexts, PolP fronts (Haddican, 2004, 2008; Etxepare and Uribe-Etxebarria, 2011) (cf. Massam (2000, 2001, 2010); Coon (2010, 2012)).

(34)   ***Affirmative orders***

ΣP
  PolP   Σ'
        Σ [~~EPP,uPol~~]   TP
                        Aux   PolP
                              Pol [Aff]   . . . VP
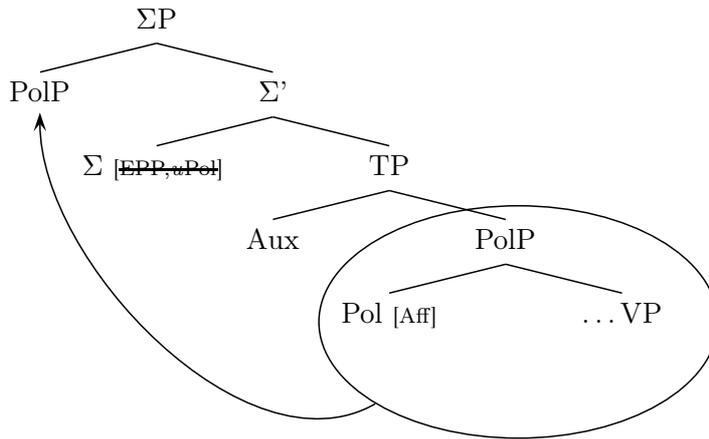
- Evidence of predicate fronting in affirmative clauses comes from TP ellipsis:

(35)   Jon-ek   kafea erosi   du, eta Ane-k,   [$_{ΣP}$ [$_{PolP}$ liburu-a leitu] Σ ~~[TP du]~~
        Jon-ERG coffee bought has and Ane-ERG   book-the read
        'Jon bought a book and Ane read a journal'

- Evidence that this is XP movement comes from the position of the VP relative to particles and *ba-*, 'if':

(36)   Etorri [al/omen/ote]   da   ?/.
        come   INTER/EVID/CONJECT AUX
        'He/she supposedly came'/ 'Did/might he/she have come.'

(37) Etorri ba-da.
      come if-AUX
      'If he/she has come.'

- **Importance for FOFC:** TP is left-headed and does not participate in roll-up. Assuming that non-finite T is like finite T in this respect Etxepare and Uribe-Etxebarria's observations are predicted as a vanilla FOFC effect: vP can spellout in spec, ModalP because it participates in roll-up; TP does not roll-up so it cannot.

(38) ***FOFC-violating TP-raising***
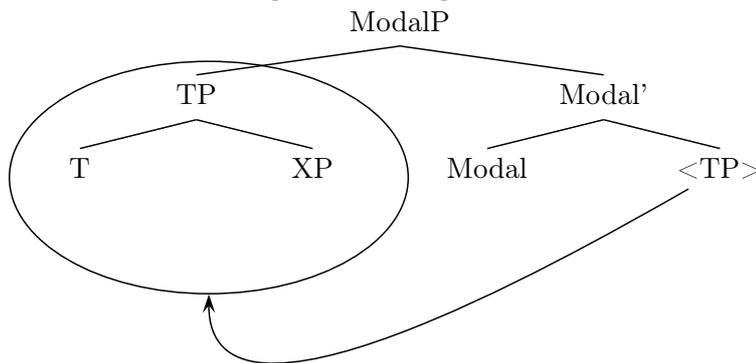
(39) ***FOFC-compliant vP-raising***
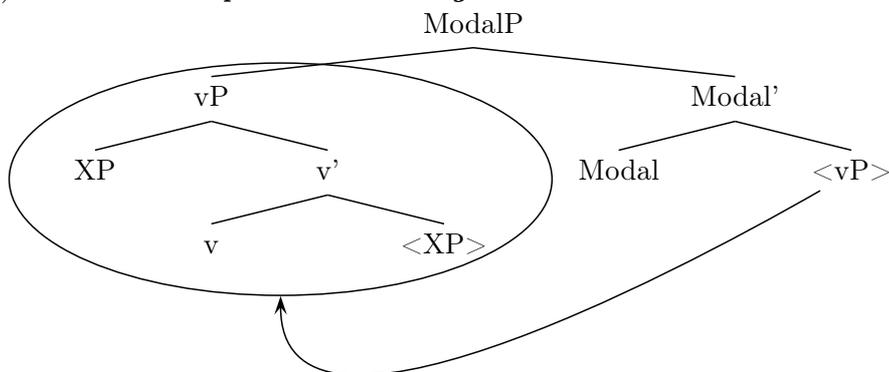
4.2 Repairing the violation

- **Unaddressed so far:** Why are TP-sized modal complements licit when they appear to the right of the modal. Note that the Modal>Infinitival order is best when non-finite constituent focused. These are reminiscent of cases of right peripheral focus constructions as in (40) and (41).

(40)   Ardoa ekarri   diot (#)   ANDONI-RI.
        wine   brought AUX Andoni-DAT
        I brought the wine to ANDONI.
        (Elordieta, 2001)

(41)   Monjak egin zigun [barruan utz-i.]
        nuns   do AUX inside   leave-INFIN
        The nuns LEFT US INSIDE.
        (Haddican, 2007)

- We follow Ortiz de Urbina (2002) and Uribe-Etxebarria (2003) in taking these to involve focus movement followed by remnant topicalization.

(42)   [$_{TopP}$ [*Ardoa ekarri diot*] Top [$_{FocP}$ [*Andoniri*]...]

- Some support for remnant movement comes from the relative scope of focus and negation. When following the lexical verb, the favored scope of the focal constituent is maximal with regard to negation, as diagnosed by the continuation *and not DP*. In this regard, it behaves as overtly displaced foci in Basque, when they precede negation (Ortiz de Urbina, 2002).

(43)   a. Ez diot liburua   oparitu ANDONI-RI, eta ez   Miren-i.
            NEG AUX book-the offered Andoni-DAT, and NEG Miren-DAT
            'The one I did not offer the book to is Andoni, and not Miren'
        b. ANDONI-RI ez   diot liburua   oparitu, eta ez   Miren-i.
            Andoni-DAT NEG AUX book-the offered   and NEG Miren-dat
            'It is Andoni that I didn't offer the book to, not Miren'

- Also, the kind of wide scope focus required in those cases must occupy the right edge of the clause:

(44)   a. Jon-ek   ez   du liburu-rik irakurri BULEGOAN, eta ez   trenean.
            Jon-ERG NEG AUX book-PART read   office-in   and NEG train-in
            'The place Jon did not read any book is the office, not the train'
        b. Jon-ek   ez   du irakurri (liburu-rik) BULEGOAN (*liburu-rik), eta
            Jon-ERG NEG has read   book-part   office-in   book-PART   and
            ez   trenean.
            NEG train-in
            'The place Jon did not read any book is the office, not the train'

- **Crux of proposal:** In Modal>Infinitival orders affirmative PolP moves to ΣP, as usual. In the (3-b) order, the FOFC-offending infinitival TP then subextracts to a Focus phrase, followed by remnant topicalization. Crucially, because the TP targets an A-bar position, this movement step is FOFC-exempt. (See Biberauer et al. (to appear) for discussion.)

13

(45)   ***PolP movement to ΣP and sub-extraction of infinitival TP***
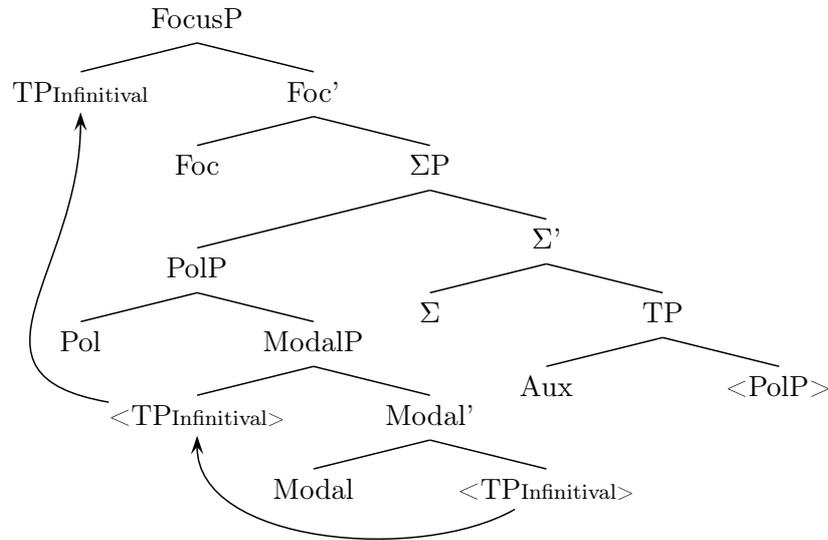
- This derivation requires that freezing effects do not apply in this context (Collins, 2005a,b). Independent evidence of the ability of foci to subextract come from examples like:

(46)   Nor-ekin pentsa-tu   duzu [$_{CP}$ <norekin> ezkondu behar naiz-ela]   agindu
        who-with think-PERF AUX   who-with   marry   must AUX-COMP order
        didate-la   <CP>?
        AUX-COMP
        'Who did you think they told me I had to get married with'
        (Elordieta, 2008)

- **Interim summary:** On an antisymmetric approach, Etxepare and Uribe-Etxebarria's observations suggest a derivation whereby FOFC-violating structure is buildable in syntax but rescuable by copy-deletion, a result in keeping with the PF approach to FOFC (Sheehan, 2013, 2012a,b), but not the narrow syntactic approach (Biberauer et al., to appear).

5   Left/Right edge interactions in FOFC

- We conclude with an additional set of facts suggesting that FOFC-repair crucially involves movement through the left periphery. Note, first that with the modal *behar*, rightward infinitivals are incompatible with matrix negation:

(47)   a.   Behar du   garaiz   etorr-i
              need   AUX on-time come-INFIN
              'He/she must come on time'
        b.   *Ez du   behar garaiz   etorr-i
              neg AUX need on-time come-INFIN
              'She/he must not/does not need to come on time'

- Similarly, Eastern dialects like Navarro-Labourdin, which can merge a focal constituent in the position immediately preceding the auxiliary ((48-b)), do not accept rightward infinitivals in this context:

(48)   a.   JON-EK du   garaiz   etorr-i   behar
              Jon-ERG AUX on-time come-INFIN need
              'It is Jon who must come on time'
        b.   *JON-EK du   behar garaiz   etorr-i
              Jon-ERG AUX need on-time come-INFIN
              'It is Jon who must come on time'

- Those restrictions must be somehow related to the fact that rightward infinitivals result from a derivation which necessarily targets those positions.

5.1   Negation and Focus as Phasal heads

- Let us adopt the following basic clausal structure for Basque:

(49)   [Σ [T [Aux [Pol [Modal [Infinitival Clause TP]]]]]]

- Roll-up will create the FOFC-violating configuration:

(50)   [Focus [Σ [T [Aux [Pol [[Infinitival Clause TP] Modal <Infinitival Clause TP>]]]]]]

- (47) and (48) suggest that movement to Σ is crucial to FOFC repair. We relate this to evidence suggesting that Σ is a phase. One kind of evidence to this effect comes from the clitic-hood of auxiliaries (Ortiz de Urbina, 1993, 1994).

(51)   a.   *da   etorri
              AUX come
              'He/she has come.'
        b.   Ez/ba-   da   etorri
              NEG/AFF AUX come
              'He/she hasn't come.'/'He/she HAS come.'
        c.   Etorri da
              come   AUX
              'He/she has come.'

- For the sake of concreteness, let us assume that the head of the phase is Σ.

- The cross-dialectal differences in the relevant phasal domain are also emerge in ellipsis contexts.

(52)

A: Nor etorri da?
      who come AUX
      'Who has come?'

B: [FocP *inor* Foc [ΣP *ez* Σ [TP]]]
          nobody   NEG
      'Nobody.'   [Central dialects]

B: [FocP *nehor* Foc [ΣP *ez* Σ [TP]]]
          nobody   NEG
      'Nobody.'   [Eastern dialects]

Negation is necessary to license negative polarity items in all dialects, as shown by (9):

(53)   Nehor   *(ez) da   etorri.
        Anyone NEG AUX come
        "Nobody came."

- Central and Eastern varieties also differ in terms of the domain of elision in positive sentences.

(54)   Jon   etorri da, eta [TopP Miren   Top [FocP ere [ΣP bai Σ [TP]]]
        Jon.ABS come AUX and   Miren.ABS   also   AFF
        'Jon has come and Miren has too.'

(55)   Jon   etorri da, eta [TopP Miren   Top [FocP ere [ΣP bai Σ [TP]]]
        Jon.ABS come AUX and   Miren.ABS   also
        'Jon has come and Miren has too.'

- So, elision in central dialects crucially involves the Polarity Phrase, whereas in eastern dialects, it seems to involve focus. The point of transfer that results in the PF licensing of the auxiliary is thus reached at the level of the Polarity Phrase in the central dialects, and at the level of the Focus Phrase in the astern ones. This makes (48-a) a possible syntactic configuration in eastern dialects. Configurations such as those in (48) are on the other hand, incompatible with a rightward infinitival, as shown in (48-b), repeated here.

(48-b) *JON-EK du   behar garaiz   etorr-i
         Jon-ERG AUX need   on-time come-INFIN
         'It is Jon who must come on time'

- Assuming that these dialectal differences should be expressed in phasal terms, we reach the following descriptive conclusion:

(56)   Rightward infinitivals in Basque are only compatible with 'free' phasal edges (non-occupied edges)

- Let us come back now to the basic structure in (50), with a configuration that violates the FOFC. We formulate the Phase Impenetrability Condition in the following way (Chomsky, 2001):

(57)   **The Phase Impenetrability Condition**
        Given structure [ZP Z ... [HP α [H YP]]], with H and Z the heads of phases: the Domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.

- Assuming that Polarity Phrases are Phases in Basque, (57) gives rise to the following problem: once the derivation reaches the higher phase, the modal phrase will be trapped in the domain of the lower polarity phase. After transfer to PF, the complement of the lower phase produces a FOFC-violating configuration (in boldface):

(58)   [$_{PolP}$ Neg Pol [$_{TP}$ Aux [$_{PolP}$ <Neg> Pol **[ModalP [TP Infinitival Clause] modal <TP>**]]]]

- Evidence that the infinitival cannot be directly accessed by FocusP comes from the impossibility of sentences like (59) in Eastern dialects:

(59)   *ETORRI du behar.
        come AUX need
        'He/she must COME.'

- If negation is not there (perhaps in this case, the polarity phrase is not, either), the edge of the lower polarity phrase offers an escape hatch for the Modal Phrase, which can reach the higher Polarity Phrase (as verbal predicates typically do), and will continue to be active for the derivation. From that position, the TP can move out of the Modal Phrase and reach the higher focus phrase, paving the way for the repair derivation.

5.2   The verb *nahi* 'want'

- We have shown that the infinitival complements of *nahi* can also occur to the right, with the same temporal restrictions affecting the infinitival complements of *behar*. There is an intriguing difference however between *behar* 'need' and *nahi* 'want', in the sense that the latter can be combined with negation and focus, even with a rightward infinitival (Etxepare and Uribe-Etxebarria, 2011, 2012):

(60)   a. Ez   du   nahi etorr-i
            NEG AUX want come-INFIN
            'He/she does not want to come.'
        b. JONEK du   nahi etorr-i
            Jon-ERG AUX want come-INFIN
            'It is Jon who wants to come.'

- However, there are reasons to think that *nahi* does not have the same lexical status as *behar*. It looks more like a contentful verb (Harves, 2008). First, it can head absolute clauses when combined with stative morpheme *-rik*.

(61)   a. Garaiz etorri nahi-rik,   goizegi ager-tu   da
            On-time come   want-STATIVE early-too show.up-INFIN AUX
            'Wanting to come in time, he arrived too early'
        b. Lasterr-egi abiatu-rik,   goizegi irits-i   da
            fast-too   depart-STATIVE early-too arrive-INFIN AUX
            'Having left too fast, he arrived too early'

- Nothing like that is possible with *behar*.

(62)   *Garaiz irits-i   beharr-ik
        On-time arrive-INFIN need-STATIVE
        'Needing to arrive in time'

- *Nahi* (63-a), unlike *behar* (63-b), also licenses non-finite relative constructions (Oyharçabal, 2003). In this way, it behaves as an ordinary lexical verb (63-c).

(63)   a. Jon-ek nahi liburu-ak 200 orrialde ditu
            Jon-ERG want book-ERG 200 pages   has.
            'The book that Jon wants has 200 pages.'
        b. *Jon-ek   behar liburu-ak 200 orrialde ditu
            Jon-ERG want book-ERG 200 pages   has.
            'The book that Jon needs has 200 pages.'
        c. Jon-ek erosi   liburu-ak 200 orrialde ditu
            Jon-ERG bought book-ERG 200 pages   has.
            'The book that Jon bought has 200 pages.'

- The modal *behar* does not admit (under its modal meaning) any of the non-finite forms available to lexical verbs (Etxepare and Uribe-Etxebarria, 2012):

(64)   a. *Behar-tu
            Need-INFIN
            'To need'   [infinitival form]
        b. *Behar-tze
            need-NOMINAL
            'Needing'   [nominalization form]

    c. *Behar dezagun
       need   aux.SUBJUNCT
       'So that we need it'   [stem form]

- To use *behar*, in these environments, the general purpose auxiliary *izan* 'have/be' is used (Bjorkman, 2011).

(65)   a. Behar izan
            Need be/have
            'To need'   [infinitival form]
    b. Behar izate
            need be/have-NOMINAL
            'Needing'   [nominalized form]
    c. Behar izan   dezagun
            need be/have aux-SUBJUNCT
            'So that we need it'   [stem form]

- The modal *nahi* admits the stem form, unlike *behar*:

(66) Nahi dezagun
      want AUX.SUBJUNCT
      'So that we want it'

- In colloquial registers, *nahi* also admits verb doubling by *egin* in cases of verbal focus, unlike *behar*:

(67)   a. Horreraino iris-teko nahi egin behar da
            there   arrive-for want do   need AUX
            'In order to get there one needs to really want it.'
    b. *Horreraino iris-teko behar egin behar da
            there   get-for need do   need AUX
            'In order to get there one has to badly need it.'

- Assuming that in Basque do-support cases the doubled verb combines with a possibly silent infinitival head Haddican (2007), and for that to be the case the doubled element must be a verb, we are led to conclude that the modal *nahi* must of verbal category.

- We must add to this that unlike the modal *behar*, which may combine with an intransitive auxiliary if the selected verb is unaccusative, *nahi* can only be transitive in central dialects, regardless of the transitive or intransitive status of its selected complement:

(68)   a. Etorri   behar du/da.
            Come-INFIN need   AUX.TRANS/INTR
            'He/she needs to come'

b. Etorr-i   nahi du/*da.
   Come-INFIN want AUX.TRANS/INTR
   'He/she needs to come'

- Etxepare and Uribe-Etxebarria (2012) note that the modal verbs *behar* and *nahi* exist independently in Basque as the nouns *behar* 'need' and *nahi* 'wish'. They argue that modal constructions based on *behar* and *nahi* in Basque are introduced in the derivation via a small clause, which has the content of the 'need' or the 'wish' as its subject, and the modal as the predicate. In the case of *behar*, this clausal constituent merges to an adpositional head that introduces an independent argument, external to the clause: the DP for which the need or the obligation is relevant, what we will call the experiencer of the modal predicate:

(69)   …BE [PP DP P [Small Clause [Infinitival TP T] *behar*]]

- In the case of *behar* the adposition merges with a higher copula, yielding the matrix transitive auxiliary have. One possibility is that in the case of *nahi*, the small clause merges with a verbal category. Let us represent the verbal category as a small v:

(70)   [vP v [Small Clause [TP] *nahi*]

- *Nahi* moves into the Spec of v, accounting for the limited verbal occurrences that it allows (basically the stem form):

(71)   [vP *nahi* v [Small Clause [TP] <*nahi*>]

- This movement breaks the offending configuration that violates FOFC. We can say that in this case, FOFC is locally circumvented by short head movement. Since FOFC is circumvented in a local domain, it does not have to invoke the left periphery, so these cases are compatible with both negation and focus.

- An issue arises however if negation is not present: the whole predicate must again raise to the Spec of the Polarity Phrase, and in that position, an illicit configuration is created, with a left headed phrase being dominated by a right headed one:

(72)   [ΣP [vP *nahi* v [Small Clause [TP] …] Σ [TP T …]]]]

- In this case, the TP is led to follow the same repair strategy that we observed for the *behar* cases: it sub-extracts to a higher focus position, and is followed by remnant movement. This derivation yields a linear order in which the temporal infinitival ends up at the right of the auxiliary:

(73)   a. [FocP TP Foc [ΣP [vP *nahi* v [Small Clause <TP> …] Σ [TP Aux …]]]]
         b. [TopP [ΣP [vP *nahi* v [Small Clause <TP> …] Σ [TP Aux …]]] Top [TP Foc …]]

6   Conclusion

- The analysis of Basque verb clusters presented, if correct, entails that Biberauer et al.'s narrow syntactic approach to FOFC effects is not correct and instead recommends a PF-based approach. How this might be achieved, whether by Sheehan's promising analysis or another approach might usefully be investigated.

References

Balza, I., 2010. Clausal architecture and morpho-syntactic structure from the point of view of modal verbs. Ms, the University of the Basque Country (UPV/EHU) .

Biberauer, T., Holmberg, A., Roberts, I., 2008. Structure and linearization in disharmonic word orders. In: Proceedings of the 26th west coast conference on formal linguistics.

Biberauer, T., Holmberg, A., Roberts, I., to appear. A syntactic universal and its consequences. Linguistic Inquiry .

Biberauer, T., Newton, G., Sheehan, M., 2009. Limiting synchronic and diachronic variation and change: the final-over-final constraint. Language and Linguistics 10, 699–741.

Biberauer, T., Sheehan, M., Newton, G., 2010. Impossible changes and impossible borrowings. In: Breitbarth, A., Lucas, C., S.Watts, Willis, D. (Eds.), Continuity and Change in Grammar. John Benjamins, Amsterdam, pp. 35–60.

Bjorkman, B., 2011. BE-ing Default: The Morphosyntax of Auxiliaries. Ph.D. thesis, MIT.

Chomsky, N., 2001. Derivation by phase. In: Kenstowicz, M. (Ed.), Ken Hale. A Life in Language. MIT Press, Cambridge, MA, pp. 1–52.

Collins, C., 2005a. A smuggling approach to raising in english. Linguistic Inquiry 36, 289–298.

Collins, C., 2005b. A smuggling approach to the passive in english. Syntax 8, 81–120.

Coon, J., 2010. Vos as predicate fronting in chol. Lingua 120, 354–378.

Coon, J., 2012. Predication, predicate fronting, and what it takes to be a verb.

Elordieta, A., 2001. Verb Movement and Constituent Permutation in Basque. LOT, Utrecht.

Elordieta, A., 2008. Oa hizkuntzak: oinarrizko hurrenkeraz eta hurrenkera eratorriez. In: Arteatx, I., Artiagoitia, X., Elordieta, A. (Eds.), Antisimetriaren hipotesia vs. buru parametroa: euskararen oinarrizko hurrenkera ezbaian. EHUko Argitalpen Zerbitzua, Bilbao, pp. 93–126.

Etxepare, R., Uribe-Etxebarria, M., 2011. Hitz hurrenkera eta birregituraketa euskaraz. Anuario del Seminario de Filología Vasca Julio de Urquijo 43.

Etxepare, R., Uribe-Etxebarria, M., 2012. Denominal necessity modals in Basque. Noun Phrases and Nominalization in Basque: Syntax and Semantics .

Greenberg, J. H., 1963. Some universals of grammar with particular reference to the order of meaningful elements. Universals of language 2, 73–113.

Haddican, B., 2007. On egin: do-support and vp focus in central and western basque. Natural Language & Linguistic Theory 25, 735–764.

Haddican, B., 2008. Euskal perpausaren oinarrizko espez-buru-osagarri hurrenkeraren aldeko argudio batzuk. In: Arteatx, I., Artiagoitia, X., Elordieta, A. (Eds.), Antisimetriaren hipotesia vs. buru parametroa: euskararen oinarrizko hurrenkera ezbaian. EHUko Argitalpen Zerbitzua, Bilbao, pp. g9–96.

Haddican, W., 2004. Sentence polarity and word order in basque. Linguistic Review 21, 87–124.

Harves, S., 2008. Intensional transitives and silent have: Distinguishing between want and need. In: Proceedings 27th West Coast Conference on Formal Linguistics.

Hawkins, J. A., 1983. Word order universals. Academic Press, New York.

Hawkins, J. A., 1995. A performance theory of order and constituency, vol. 73. Cambridge University Press, New York.

Holmberg, A., 2000. Deriving ov order in finnish. In: Svenonius, P. (Ed.), The Derivation of VO and OV. Amsterdam: John Benjamins, pp. 123–152.

Holmberg, A., 2013. The syntax of answers to polar questions in english and swedish. Lingua .

Kayne, R. S., 1994. The antisymmetry of syntax, vol. 25. MIT Press, Cambridge, Mass.

Koopman, H., Szabolcsi, A., 2000. Verbal complexes, vol. 34. MIT Press.

Kramer, R., Rawlins, K., 2009. Polarity particles: an ellipsis account. In: Proceedings of NELS, vol. 39.

Laka, I., 1990. Negation in syntax, on the nature of functional categories and projections. Ph.D. thesis, Massachusetts Institute of Technology, Dept. of Linguistics and Philosophy.

Massam, D., 2000. VSO and VOS: Aspects of Niuean word order. In: Carnie, A., Guilfoyle, E. (Eds.), The syntax of verb initial languages. Oxford University Press, Oxford, pp. 97–116.

Massam, D., 2001. Pseudo noun incorporation in niuean. Natural Language & Linguistic Theory 19, 153–197.

Massam, D., 2010. V1 or V2?: On the left in Niuean. Lingua 120, 284–302.

Ortiz de Urbina, J., 1989. Some Parameters in the Grammar of Basque. Foris Publications, Dordrecht.

Ortiz de Urbina, J., 1993. Feature percolation and clausal pied-piping. In: Hualde, J. I., de Urbina, J. O. (Eds.), Generative studies in Basque linguistics. John Benjamins, Amsterdam, pp. 189–219.

Ortiz de Urbina, J., 1994. Verb-initial patterns in basque and breton. Lingua 94, 125–153.

Ortiz de Urbina, J., 2002. Focus of correction and remnant movement in basque. In: Artiagoitia, X. (Ed.), Erramu Boneta. Festschrift for Rudolf PG de Rijk. University of the Basque Country, Bilbao, Basque Country, pp. 511–524.

Rezac, M., 2008. The syntax of eccentric agreement: The person case constraint and absolutive displacement in basque. Natural Language & Linguistic Theory 26, 61–106.

Rijk, R. P. d., 1969. Is Basque an SOV language? Fontes linguae vasconum: Studia et documenta 1, 319–352.

Sheehan, M., 2012a. Explaining the Final-over-Final Constraint: Formal and functional approaches. In: Biberauer, T., Holmberg, A., Roberts, I., Sheehan, M. (Eds.), to appear in: The Final-over-Final Constraint: A Word-Order Universal and its Implications for Linguistic Theory. MIT Press, Cambridge, Mass.

Sheehan, M., 2012b. The Final-over-Final Constraint and the Head-Final Filter. In: Biberauer, T., Holmberg, A., Roberts, I., Sheehan, M. (Eds.), to appear in: The Final-over-Final Constraint: A Word-Order Universal and its Implications for Linguistic Theory. MIT Press, Cambridge, Mass.

Sheehan, M., 2013. Some implications of a copy theory of labeling. Syntax .

Travis, L., 1984. Parameters and Effects of Word Order Variation. Ph.D. thesis, MIT.

Uribe-Etxebarria, M., 2003. Euskararen eta hizkuntza erromanikoen foko egituren arteko zenbait paralelotasunez. In: Euskal Gramatikari eta literaturari buruzko Jardunaldiak XXI. mendearen atarian (I-II). Euskaltzaindia.

Williams, E., 1982. Another argument that passive is transformational. Linguistic Inquiry 13, 160–163.