Linear Order in Syntax: Selection in Coordination

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NELS 46, October 16, 2015

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Asymmetries in Coordination: Agreement

(1) Modern Standard Arabic (Al Khalaf 2015, 137, (301a))

    qadam-at   at-tilmiið-ah   wa at-tilmiið   al-imtiħan
    take-3F.SG the-student.F.SG and the-student-M.SG the-test

    'The student (female) and student (male) took the test.'

Asymmetries in Coordination: Selection

(2) a.   You can depend on my assistant and that he will be on time.
          (Sag et al. 1985, 165, (124b))

     b. * You can depend on that my assistant will be on time and his
          intelligence.

Previous Accounts: Prominence

Previous analyses of asymmetries in coordination have posited a special status for the first conjunct.

- Conjunct Agreement:
    1. Exceptional Government (Munn 1999)
    2. Late Merge (Soltan 2006)
    3. Late Labelling (Larson 2013)

- Selection: feature transference (Johannessen 1996; Zhang 2010)

New Facts: Closest Conjunct Agreement

Final conjuncts can also control agreement (Marušič et al. 2007, van Koppen 2007, Benmamoun et al. 2009, Bhatt and Walkow 2013):

(3) Slovenian (Marušič et al. 2007, 5, (8–9))

    a.   Včeraj   so   odšle/*odšla   [krave   in
         yesterday AUX went.F.PL/*went.N.PL [cow.F.PL and
         teleta]   na pašo.
         calf.N.PL] on graze
         'Yesterday cows and calves went grazing.'

    b.   [krave   in teleta]   so   odšla/*odšle   na
         [cow.F.PL and calf.N.PL] AUX went.N.PL/*went.F.PL on
         pašo
         grazing
         'Cows and calves went grazing.'

Proposals for Closest Conjunct Agreement

- Marušič et al. (2007), van Koppen (2007), Benmamoun et al. (2009), and Bhatt and Walkow (2013) propose that CCA is valued at PF.
- Assumption: Linear precedence relations are only specified at PF;
- The syntax only includes hierarchical order (Kayne 1994, Fox and Pesetsky 2005, many others).
- CCA must therefore take place at PF, where hierarchical order has been turned into linear order.

This Talk

We re-examine selectional violations in coordination.

- The last conjunct can also satisfy selectional restrictions.
- Linear order is the factor that determines which conjunct satisfies selectional restrictions.
- Selectional restrictions must be satisfied in the syntax and cannot be delayed until PF.
- It follows that linear order must be part of syntax.
- Adds to evidence from binding, superiority, etc. for the role of linear order in syntax (Bruening 2014).
- (CCA can also be computed in the syntax rather than at PF.)

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Four Cases

- Two coordinate phrases YP and ZP may enter into a selectional relation with X:

(4) a. X [YP & ZP]
    b. [YP & ZP] X

- Two selecting elements X and Y may be coordinated and enter into a selection relation with a phrase ZP:

(5) a. [X & Y] ZP
    b. ZP [X & Y]

- In (4b) and (5a), the *last* conjunct matters.

Case 1: X [YP & ZP]

(6) You can depend on [my assistant] and [that he will be on time]. (Sag et al. 1985, 165, (124b))

(7) a. Pat was annoyed by [the children's noise] and [that their parents did nothing to stop it]. (Sag et al. 1985, 165, (124c))

b. Pat was annoyed by [the children's noise].

c. * Pat was annoyed by [that their parents did nothing to stop it]. (Sag et al. 1985, 165, (125c))

d. * Pat was annoyed by [that they were so noisy] and [their inability to sit still].

(8)   a.   At one point, she reportedly became [disheartened] and [on the verge of giving up her studies],...

           http://www.isms.nsw.edu.au/about-montessori

     b.   She reportedly became disheartened.

     c.   * She reportedly became on the verge of giving up her studies.

Case 2: [YP & ZP] X

(9) a. * [That he was late all the time] resulted in his being dismissed.
   (based on Pollard and Sag 1987, 131)

b. [His constant harassment of co-workers] resulted in his being dismissed.

c. [That he was late all the time] and [his constant harassment of co-workers] resulted in his being dismissed.

d. * [His constant harassment of co-workers] and [that he was late all the time] resulted in his being dismissed.

(10)   a.   [That Quentin was a werewolf] and [twenty other crazy rumors] were heard by all the students in the department.

       b.   * That Quentin was a werewolf was heard by all the students in the department.

       c.   Twenty crazy rumors were heard by all the students in the department. (b and c based on Alrenga 2005, 184, footnote 8)

Case 2: [YP & ZP] X

(11) a. That she got third place and her injury in the final round notwithstanding, she felt good about her performance in the Olympics.

b. Her injury notwithstanding,...

c. * That she got third place notwithstanding,...

Case 3: [X & Y] ZP

(12) a. So the fox thought about and decided to carry the scorpion across the river,...

      `http://www.killermovies.com/forums/archive/index.`
      `php/t-520314-did-obi-wan-forget-about-leia.html`

    b. The fox decided to carry the scorpion across the river.

    c. * The fox thought about to carry the scorpion across the river.

    d. * The fox proposed and thought about to carry the scorpion across the river.

Case 3: [X & Y] ZP

(13) a. I had hoped and recommended that the school be named in honor of Don Clayton...

http://www.lampasasdispatchrecord.com/news/
2009-02-10/PDF/Page_06.pdf

b. * I had hoped that the school be named in honor of Don Clayton.

c. I had recommended that the school be named in honor of Don Clayton.

d. * I had recommended and hoped that the school be named in honor of Don Clayton.

(14) a. The Once and Future King (T. H. White, published 1958)

  b. * the once king

  c. the future king

- Bruening (2010, 2013): Adjuncts select the category of the phrase they adjoin to.
- APs select projections of N;
- AdvPs select projections of other categories.

Case 3: [X & Y] ZP: *the Adv and Adj N*

(15) a.   The Once and Future World (*the once world)
            book title, by J.B. MacKinnon

       b.   the twice and future caesar (*the twice Caesar)
            `http://www.risingshadow.net/library/book/`
            `47397-the-twice-and-future-Caesar`

       c.   . . . that expression can be applied to the thrice-and-future prime
            minister of Israel. . . (*the thrice prime minister)
            `http://www.lobelog.com/`
            `too-clever-by-half-netanyahu-strengthens-obamas-hand/`

Case 3: [X & Y] ZP: *the Adv and Adj N*

(16) a. ...cataclysmic events were pointing to the soon and coming
       return of the Lord for His church. (*the soon return)
       https://books.google.com/books?isbn=1602661790

     b. The Soon and Coming King (*the soon king)
        https://www.youtube.com/watch?v=mVj7D1Ic3D4

     c. A Soon and Distant Christmas (*a soon Christmas)
        http://www.nature.com/nature/journal/v504/n7480/
        full/504476a.html

Case 3: [X & Y] ZP: *the Adv and Adj N*

(17) a. The Now and Future Kingdom (book title) (*the now kingdom)
        http://www.americancatholic.org/Newsletters/JHP/
        aq0506.asp

   b. The Now and Future Caliphate (*the now caliphate)
        http:
        //townhall.com/columnists/carterandress/2014/12/31/
        the-now-and-future-caliphate-n1937283/page/full

   c. The now and future world of restricted work hours for surgeons
        (*the now world)
        http://www.ncbi.nlm.nih.gov/pubmed/12874571

Case 3: [X & Y] ZP: *the Adv and Adj N*

(18) a. the now and future winners (*the now winners)
          http://mocoloco.com/
          a-design-awards-competition-the-now-and-future-winner

      b. Hillary: The now and future democrat (*the now democrat)
          http:
          //www.chicagotribune.com/news/opinion/commentary/
          ct-perspec-hillary-0916-20140915-story.html

Case 4: ZP [X & Y]

(19) a. That images are waterproof cannot be true and is incoherent.

    b. * That images are waterproof is incoherent. (Pollard and Sag 1987, 131)

(20) a. That Quentin might be a werewolf was discussed by the Scooby Gang last night and was heard by all his classmates the next morning.

    b. * That Quentin might be a werewolf was heard by all his classmates the next morning. (based on Alrenga 2005)

(21) Where X is an element that a coordinate phrase enters into a
      selectional relationship with, only the conjunct that is *closest* in linear
      order to X must select X or be selected by X.

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- Suppose linear order was absent from syntax, at PF hierarchical relations are converted into precedence relations.
- To capture findings, selection would have to be checked or satisfied at PF.
- Linear relations are not what matter for selection, hierarchical ones are:

(22) a. a brilliant independent thinker
     b. a brilliantly independent thinker

Linear Order Irrelevant to Selection

(23) a. # Maria frightens sincerity.

   b. # It's sincerity that Maria frightens.

(24) a.   The Spartans dined on parched corn.

   b.   It is only on parched corn that the Spartans dined.

   c. * The Spartans dined parched corn.

   d. * It is only parched corn that the Spartans dined.

Semantic selection and categorial selection must be checked at some level of representation other than the level of surface word order.

The Syntax Must Include Linear Order

- Selection cannot be delayed to PF.
- Selection in coordination refers to linear order.
- It follows that linear order must be specified in the syntax.

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Ellipsis Analysis of Category Mismatch

- Wilder (1994): all coordination is either NP coordination or CP coordination;
- All other types of coordination are derived via ellipsis.

(25) John is a republican and proud of it. (NP and AP)
(Sag et al. 1985, 117, (2b))

(26) [$_{CP}$ John is [NP a republican]] and [$_{CP}$ ~~John is~~ [AP proud of it]]
(Wilder 1994, 304, (59e))

Ellipsis Account: Case 1

- For the ellipsis account to capture category mismatch it has to be supplemented with movement:

(27)   You can depend on my assistant and [[that he will be on time] ~~you can depend on t~~]

- Movement is known to resolve some category mismatches (e.g., Alrenga 2005, Takahashi 2010).

(28)   That he will be on time, you can depend on.

(29)   a.   [That images are waterproof] and [many of his other pronouncements] are all incoherent.

       b.   * That images are waterproof is incoherent.

       c.   That images are waterproof I am told is incoherent.

       d.   [That images are waterproof] ~~t is incoherent~~ and many of his other pronouncements are all incoherent.

Ellipsis Account: Case 4

(30) a. That images are waterproof cannot be true and is incoherent.

b. * That images are waterproof is incoherent.

c. That images are waterproof I am told is incoherent.

d. That images are waterproof cannot be true and ~~[that images are waterproof]~~ *t* is incoherent.

Ellipsis Account: Case 2

No application of ellipsis will result in the right order, even after we move the adverb:

(31)   *leftward movement, left conjunct elided:*
    a.   once ~~the *t* king~~ and the future king
    b.   once ~~Arthur is the *t* king~~ and Arthur is the future king.

(32)   *rightward movement, left conjunct elided:*
    a.   ~~the *t* king~~ once and the future king
    b.   ~~Arthur is the *t* king~~ once and Arthur is the future king.

(33)   *leftward movement, right conjunct elided:*
    a.   the once king and future ~~the *t* king~~
    b.   Arthur is the once king and future ~~Arthur is the *t* king~~.

(34)   *rightward movement, right conjunct elided:*

    a.   the once king and ~~the *t* king~~ future

    b.   Arthur is the once king and ~~Arthur is the *t* king~~ future.

Ellipsis would have to apply to a non-contiguous string that is not a constituent, without movement of the adverb:

(35)   the once ~~king~~ and ~~the~~ future king

Since movement is supposed to be what resolves category mismatch, not even this will help.

Ellipsis Cannot Account for the Generalization

In order to capture our linear order generalization, the ellipsis account would have to say:

- If the coordinate phrase follows its selector/selectee, ellipsis and movement apply to the second conjunct;

(36) You can depend on [my assistant] and [[that he will be on time] ~~you can depend on *t*~~]

- If the coordinate phrase precedes its selector/selectee, ellipsis and movement apply to the first conjunct.

(37) [[That images are waterproof] ~~*t* is incoherent~~] and [the pronouncement he made yesterday] are both incoherent.

- Complete stipulation, no explanation.
- Note also agreement and floating quantifier in (37).

Coordination Permits Mismatching Categories

(38) (Sag et al. 1985, 117–118, (2–3))

    a.   Pat is a Republican and proud of it. [NP and AP]

    b.   Pat is healthy and of sound mind. [AP and PP]

    c.   That was a rude remark and in very bad taste. [NP and PP]

    d.   Pat has become a banker and very conservative. [NP and AP]

PredP Analysis

(39) Pat is [$_{PredP}$ a Republican] and [$_{PredP}$ proud of it].

Not just predicates:

(40) a. We walked [slowly and with great care]. [AdvP and PP]
(Sag et al. 1985, 140, (57))

b. They wanted to leave [tomorrow or on Thursday]. [NP and PP]
(Sag et al. 1985, 143, (69a))

c. You can depend on [my assistant and that he will be on time].
[NP and CP].

Disjunctive Selection

- Bayer (1996): Selectors can permit several different categories;
- A verb like *remember* is listed in the lexicon as allowing CPs and NPs as arguments;
- As long as all the categories are permitted coordinating different categories is fine:

(41) Pat remembered [the appointment and that it was important to be on time]. (Bayer 1996, 958, (8a))

- Bayer's analysis does not permit selectional violations, wrongly:

(42) a. You can depend on [my assistant] and [that he will be on time].
     b. * You can depend on [that my assistant will be on time].

Interim conclusion

- Ellipsis cannot account for all cases of category mismatch.
- Coordination of mismatched categories is allowed by the syntax.

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Background: Coordinate Structure

- Syntax includes linear order: Merge specifies order (Bruening 2014).
- Syntactic structures are built left-to-right (Phillips 2003; Bruening 2014).
- Al Khalaf (2015): Coordinators adjoin to each conjunct, trigger Set Label (Collins 2002).
- Closed coordinator ($\&_C$) adjoins to initial conjuncts, open coordinator adjoins to others.
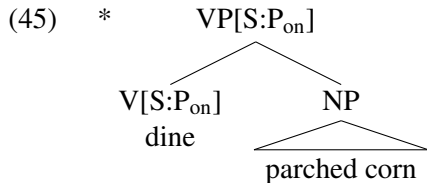
(43)

$$
\begin{array}{c}
\{X, Y\} \\
\diagup \quad \diagdown \\
X \qquad Y \\
\diagup\diagdown \quad \diagup\diagdown \\
\&_C \quad X \quad \&_O \quad Y \\
| \\
\text{and}
\end{array}
$$
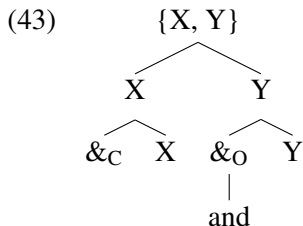
Set Label and Union

- The label of the coordinate as a whole is the union of the labels of the conjuncts.
- Union resolves agreement features (Dalrymple and Kaplan 2000):
- E.g., singular and singular resolve as dual, first and second person resolve as first inclusive.
- In the case of syntactic category, different categories must be resolved to one of the categories.
- We hypothesize that selection must be satisfied immediately when possible and can force immediate resolution;
- Otherwise, when the coordinate is completed, the category becomes the category of the most recently read conjunct (the last one).

Background: Selectional Features

- Bruening (2013): Heads have selectional features (P[S:N], V[S:P_{on}], etc.).
- Selectional features are satisfied when they do not project.
- Selectional features project *unless* the sister of the node with the feature is the right category.
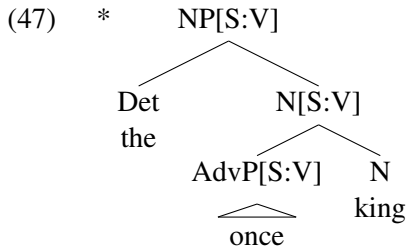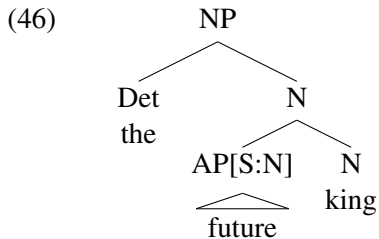
(44)

```
                    VP
                   /  \
        V[S:P_on]      PP
         depend       /  \
              P[S:N]      NP
                on        /\
                      my assistant
```

(45)   *   VP[S:P$_{on}$]

V[S:P$_{on}$]   NP
  dine
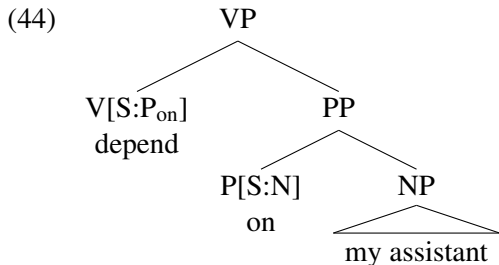
        parched corn

The structure crashes if a phrasal node has unchecked selectional features.

(46)

```
            NP
          /    \
       Det       N
       the      / \
           AP[S:N]  N
             /\    king
          future
```

(47) *

```
           NP[S:V]
          /      \
       Det        N[S:V]
       the        /   \
           AdvP[S:V]    N
              /\        king
            once
```

(48) the once and future king

(49) Step 1:
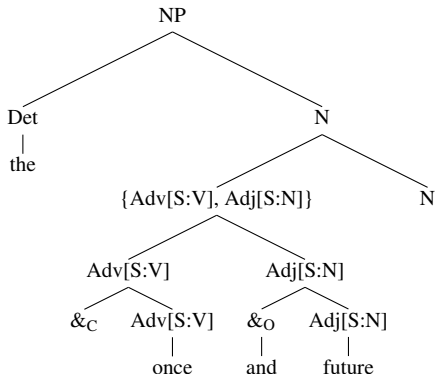
(50) Step 2:
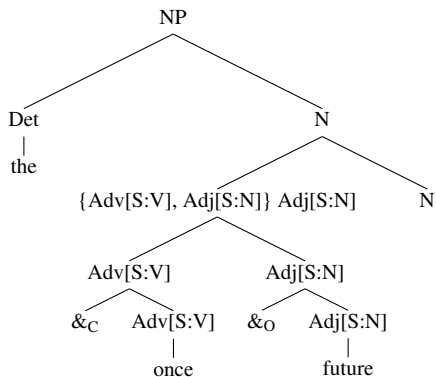
Resolving Mismatching Categories in Coordination
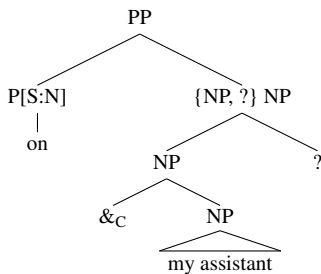
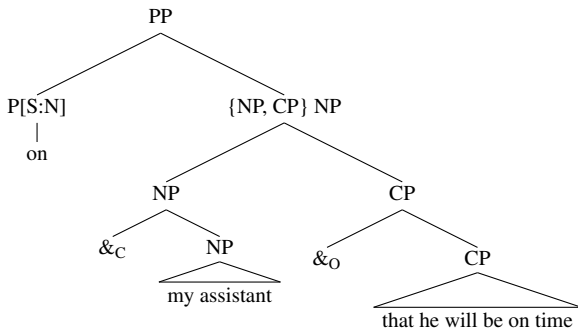(51) You can depend on my assistant and that he will be on time.

(52) Step 1:
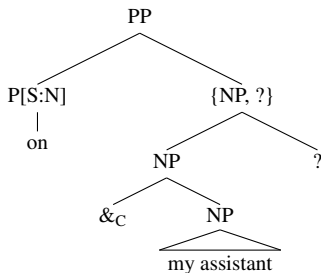
(53) Step 2:

Resolving Mismatching Categories in Coordination

(54) Step 3:

Tree diagram:
- PP
  - P[S:N] — on
  - {NP, CP} NP
    - NP
      - &_C
      - NP — my assistant
    - CP
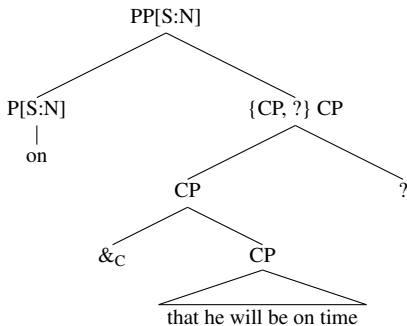   - &_O
      - CP — that he will be on time

Incorrect Order

Selection forces immediate resolution:

(55) * You can depend on that he will be on time and his intelligence.

(56) * Step 2:

Incorrect Order
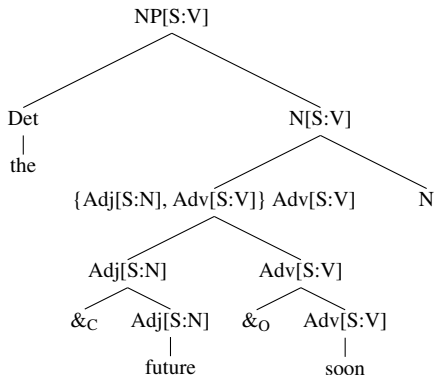
(57)   * the future and soon king

(58)   * Step 2:

```
                          NP[S:V]
                     /              \
                  Det               N[S:V]
                   |              /        \
                  the    {Adj[S:N], Adv[S:V]} Adv[S:V]     N
                            /              \
                       Adj[S:N]          Adv[S:V]
                       /     \           /      \
                     &_C   Adj[S:N]    &_O    Adv[S:V]
                            |                   |
                          future              soon
```

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Conclusion

- The first conjunct does not enjoy special status;
- Agreement, selection, etc. all depend on linear order;
- The last conjunct can also control these.
- Selection cannot be delayed to PF, must be part of syntax.
- To capture linear effects, linear order must be part of syntax.
- Adds to evidence from binding, superiority, etc. for the role of linear order in syntax (Bruening 2014).
- Our account captures the facts using Set Label, resolution, selectional features, all necessary anyway.
- In agreement, there is no need to delay agreement to PF; CCA can be handled in the syntax.

Thank you!

Acknowledgments:
For helpful comments, we thank Satoshi Tomioka, Alan Munn, and Peter Cole.

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Morphophonological Parallelism

- Our account does not predict the following cases:

(59) a. * the justly and proud king
      b. * He always works [carefully and thorough]

- If an adjective is conjoined with an adverb that does not end in *-ly* in postverbal position, the result is much better for many English speakers:

(60)   ? He always works [hard and thorough]

- It appears that in coordination, there is a morphophonological matching requirement.

Morphophonological Matching

(61) a. * Ich kenne   und helfe   diesen Mann.
    I   know(Acc) and help(Dat) this.Acc man
    'I know and help this man.'

b. * Ich kenne   und helfe   diesem Mann.
    I   know(Acc) and help(Dat) this.Dat man
    'I know and help this man.' (Müller and Wechsler 2014, 27, (24b,c))

c. Er findet   ud hilft   Frauen.
    he finds(Acc) and helps(Dat) women.Dat/Acc
    'He finds and helps women.' (Pullum and Zwicky 1986, 40)

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