**Morpheme ordering and the Syntax Phonology Interface:**
**Encoding 'Size'**
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Workshop on Suspended Affixation, Cornell-Syracuse
October 26 2012

# 1    General Questions

1. What are the syntactic atoms?
   **features** (decompositional approaches, cartography, hierarchies ..))

2. Narrow syntax or not?
   –linkers, case markers, theme vowels, agreement features?
   –Is there pre- or post- syntactic structure building, or neither (single computational engine)?

   > Working Hypothesis
   > Syntax-PH Interface is direct.
   > No pre-, or post- syntactic structure building
   > Late spell out, cyclic interpretation
   > One single computational engine (syntax Merge)
   > Lean syntax, Lean phonology, Lean semantics

3. Syntax: How exactly are morphological objects (words) build up in the syntax?
   (head movement or by phrasal movement
   (Koopman and Szabolcsi 2000, Koopman 2005, "nanosyntax" Caha 2009, Taraldsen 2010, Starke 2011).

4. antisymmetry? [ second-merge [F [first-merge] [

5. Interface questions:
   what do the derived structures on which phonological insertion operate look like (are these constituents? are these heads (X zeros)?)
   *given late spell out, and locality of selection/strict locality (sisterhood): some spell-out strings are constituents, some are not, co-varying elements must be in strict local relations (head head) or spec head (second merge), problem: there is a considerable number of silent atoms*

6. What can PH see at spell out? How can structural atoms impose restrictions on PH size?

7. Lexical properties: How is the bound morpheme property of structural atoms coded?

8. Century old division: words and phrases. How to distinguish words and phrases?
   Turns out many "distinguishing"properties cut across words and phrases[1]

9. Lexical integrity:

   (1)   a.   Subparts of words cannot be manipulated by syntactic rules unexpected under the single computational engine.
         b.   Subparts of words are opaque for anaphoric relations (Postal 1969 CLS, Sproat 1993 in Kaisse and Hargus (eds.))

   (2)   Manipulated by syntactic rules:
         
         Internal Merge, coordinate, delete, (copy)

         a.   Internal Merge= Move: yes
         b.   Internal Merge of (X )+Min, -Max), (no); always Xmin=max)?

         c.   coordination (which phrases can be coordinated?, when can coordination succeed?)
              *Interaction coordination with Internal Merge (RNR, co-ordination reduction, ATB, Interpretation/scope (does X have scope over the coordination, or below he coordination: these translate into different )*

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| Syntax | Morpho-lexicon |
|---|---|
| *(un)-productive* | *( (un-)productive* |
| *ph listed (and "ph compositional")* | *ph listed (and predcitable)* |
| *(non-)compositional* | *(non-)compositional/listedness* |
| *competition for same slot* | *blocking* |
| move *-able* | *integrity (islands, anaphors cannot be accessed from outside* . |
| *heads (certain functional categories)* | |
| *functional categories* | *(some functional) categories* |
| *Spec H Compl, and Adj* | RRHR *(suffixes: second Merge, generalized epp)* |
| *spec head complement* | *spec/complement/modifier/head head* |

## 2    Plan of the talk

1. Morpheme ordering: General typology of morpheme ordering (seems) to match syntactic patterns (same gaps) (Cinque 2005, Koopman and Szabolcsi (K&Sz, 2000), Koopman (2005)),... .
(Suggests) output of syntax underlying morpheme ordering is regular phrasal syntax, Internal Merge (but not head movement).

   (a) 312 orders from a 1>2>3 hierarchy.
       Both Internal Merge (phrasal), and antisymmetry are necessary to account for morpheme ordering.

   (b) Argument from Japanese for antisymmetry (based on 312 order). (beyond Koopman 2005)

2. Transfer: what Ph insertion can see: the "size" property.

   (3)    a.    Individual atoms are sensitive to the max size of ph material in their Spec, calculated/measurable on the output syntactic structure.
          b.    The case of German prenominal genitives: a double encounter with failed suspended affixation.
          c.    the bound morpheme property and 'mimicking' head movement.
          d.    a better fit? comparative syntax and modeling synchronic and diachronic variability

3. Suspended affixation (where it works, where it fails)

4. Remarks on ph length (number of units), and ph size (measured hierarchically, sensitive to category).

## 3    Universal 20: From Greenberg 1963 to Cinque 2005, to morpheme ordering

Greenberg's (1963) U20:

   a.    *prenominal* position the order of demonstrative, numeral, and adjective (or any subset thereof) conforms to the order Dem Num A (virtually) uncontested

   b.   *postnominal* position the order of the same elements (or any subset thereof) conforms either to the order Dem Num A or to the order A Num Dem.
more postnominal orders are possible

- Possible Combinations (4!=24).

- Cinque 2005: 14/24 [Dem Num Adj N].

(4)     1 Dem, 2Num, 3 Adj, 4N. attested 1; unattested0.

| 1234 | 1 | 1324 | 0 |
|------|---|------|---|
| 1243 | 1 | 1342 | 1 |
| 1423 | 1 | 1432 | 1 |
| 4123 | 1 | 4132 | 1 |
| 2134 | 0 | 2314 | 0 |
| 2143 | 0 | 2341 | 1 |
| 2413 | 0 | 2431 | 1 |
| 4213 | 0 | 4231 | 1 |
| 3124 | 0 | 3214 | 0 |
| 3142 | 0 | 3241 | 0 |
| 3412 | 1 | 3421 | 1 |
| 4312 | 1 | 4321 | 1 |

(5)    a.   Universal hierarchy: (Dem(Num(A(N))))
Prenominal order directly reflects this hierarchy
    b.   orders: leftwards movements of (phrasal) constituent containing N;
(*replaces head movement, NP gets stuck at different heights*);
pied-piping options yield greater variety of orders postnominally.
    c.   Unattested patterns cannot be derived. (they all involve movement of a constituent not containing the N)

(6)    Since Cinque 2005 Similar patterns found in other syntactic domains:
    a.   verbal complexes K and Sz 2000, Abels (2012); Cinque: attributive A (1994), Adverbs (1999), circumstantial PPs (2002), ((speech act) Mood > Tense > Aspect) 2008, relative clauses (ealing 2009)..)
    b.   morphology (Koopman, various talks since 2003; Koopman 2005), nanosyntax (Caha 2009, 2011,.. )

(7)    What kinds of ordering patterns do we find in morphology?
312 Mirror order violations/Scope violations: The 312 order. Bantu. Chichewa (Hyman, 2005). linear order can be structural ambiguous

312 (1 CAUSE> 2 INST> 3V)

takas- its-        il     -  ...
stir3-  CAUSE1- INST2- ...
1= make, x use =2, stir=3

312 : 1 Chichewa, Kiitharaka (Bantu), Wolof, Bole (chadic), Japanese, Korean . . .

(8) Mirror order violations, only if check/interpret inner affixes before outer affixes
Morphological derivations mirror syntactic derivations (Baker 1985)?
Yes, ( if leftward phrasal movement, and antisymmetry. (Koopman, 2005)

(9) Patterns in morphology 3 items)

| 123 | 1 |
|-----|---|
| 132 | 1 |
| 312 | 1 |
| 321 | 1 |
| 231 | 1 |
| 213 | 0 |

(10)    •Restrictions on the computational system of syntax and morphology are identical This suggests a single computational engine: phrasal movements and antisymmetry (Cinque, 2005; Koopman and Szabolcsi, 2000).

•(Phrasal) Move within words (violates lexical integrity). This sets up rest of the talk...

# 4   Japanese DP, order of Q, and Case(K)/P

(11)    Japanese DPs. Watanabe (2006).

a.    [NP Classifier]$<$Case$_{nom,acc}$ $<$Q$<$D
b.    different DP internal word orders are derived by phrasal movements.. (evidence for functional projections in Japanese.)

(12)    A problem:

Combining Q (ka, mo) with accusative/ nominative Case with indeterminate pronouns: expected order fails to surface :

(13)    a.  *[ [ dare Cl] [~~dare class~~ ]-o] ka]

       b.  *[[dare Cl] ~~dare class~~ ]- ga] mo]

The surface order is flipped: >Q> K

(14)    a.  Dare- mo- ga kita.               Watanabe, 2006, 85
            who-MO-nom came
            Everyone came.

       b.  Dare-ka-ga kita.
            who-KA-nom came
            Someone came.

(15)    Watanabe: Order is achieved by movement in morphology
       ..why?
       "Assume that mo and ka are suffixes that must be attached to an item with lexical-conceptual content
       (footnote 30 on lexical; classifiers have lexical content (but case does not))"

A similar but not identical flipping is needed to account for the ordering of P and the quantificational particle, if it is assumed that D cannot be generated outside PP. Consider the following: *(his (87) and (88)).*

(16)    a.  *Dono gakusei- mo-kara nengajou-o moratta.      *mo-from
          which student-MO-from new.year.card-acc received

       b.  Dono gakusei- kara- mo nengajou- o moratta.      from-mo
           which student-from-MO new.year.card-acc received
           I received a new years card from every student.

(17)    a.  Dono gakusei-ka-kara   nengajou-o       moratta. ka-from
           which student-KA-from new.year.card-acc received
       b.  Dono gakusei-kara-ka   nengajou-o      moratta. from-ka
           which student-from-KA new.year.card-acc received
           I received a new years card from some student.

"This time, flipping is obligatory for *mo*, and optional for *ka*. Their special suffixal property is not relevant, if P is lexical. (analyzed as a case of head

movement)"

(18)     Disappointing conclusion: linear order is not a reliable reflection of the syntactic derivation
morphology/movement after syntax is local, idiosyncratic (treats mo different from ka), and over-powerful (no clear motivation)

(19)     An alternative analysis in light of the above:

(19)     .. linear order reflects the derivation, (Baker's Mirror Order Principle (1985), Julien (2000), Koopman 2005)

    a.     .. we have the right hierarchy but wrong starting point, (Under Kaynes 1994 antisymmetry, Japanese is not underlyingly head final, but head initial (antisymmetry)); some heads are stranded (312 orders)
        ..with leftward movement, direct fit.

(20)     Watanabes basic structure but translated into head initial structures (by phrasal movements, as he assumes, and from the same hierarchy, but under antisymmetry):

(21)     Mo/ka > K > dare
        1 > 2 > 3

3-1-2:
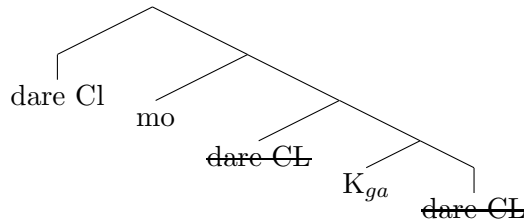
(22)     What about kara?
P (ablative) is merged outside the quantificational field.
MO universal' may merge higher in the quantificational field than ka' 'some. This is a reasonable hierarchy. *what forces stranding? (roll up to a certain level,followed by "spec" extraction.*

2 3

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[2]NB. Not explored here: predictions w.r.t. suspended affixation.

[3]For ka 'some'. The structure appears to be richer. (Yun Yashima, personal communication, who gives Martin (1975: 924) as a reference.)
the copula da is/are can optionally appear immediately before the particle ka. (datta was/were, which is the past form of da, can also appear in the same position. )
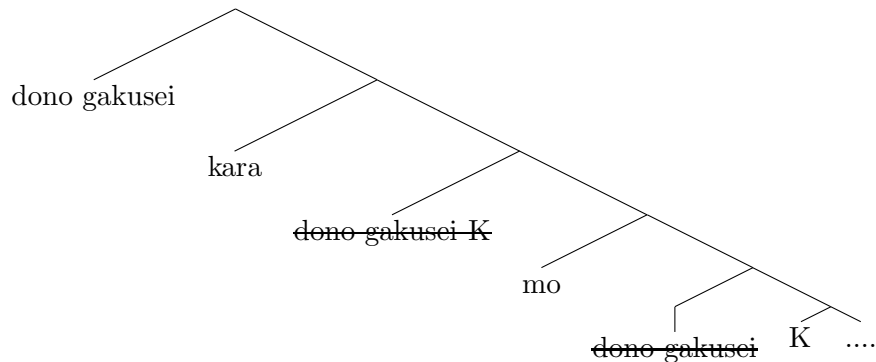
## 4.1 So far

(23)    a.  antisymmetry (reveals head initial first merged structures in Japanese )

        b.  Internal merge of phrasal kind ( behaves like Internal merge of XP rather than traditional head movement. )

        c.  Spell out can operate on the structure directly, locally. (cf further discussion of deletion/ zero case, cf Koopman (2005) on word structure and scope in Korean reanalysis of Lee's data.

## 4.2 Syntax Ph Interface

(24)    | What can "phonology" see? |

       | how to encode 'pickiness' of structural atoms |

(25)    structural atoms must encode idiosyncratic phonological properties.

        a.  Among these are properties sensitive to 'size', not in phonological primitives, but measured on the hierarchical structure at spell out

        b.  these play a role in restricting where suspended affixation fails or may occur.

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(i)    a.  Dono gakusei-da-ka-kara nengajou-o moratta.        ka-from
           which student-COP-KA-from new.year.card-acc received

       b.  Dono gakusei-kara-da-ka nengajou-o moratta.        from-ka
           which student-from-COP-KA new.year.card-acc received
           I received a new years card from some student.

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(26)    How exactly is phonological knowledge integrated into lexical properties? (part of epp)

## 4.3 German prenominal genitives

Longobardi (2001):

(27)    Marias sorgfältige Beschreibung Ottos
        Marias careful      description     of      Otto

(28)    ??Des Zeugens / *Dieser Frau      / *Meiner Schwester / sorgfältige
        The witnesss / *this      womans / *my      sisters      / careful
        Beschreibung Ottos
        description    of.Otto

(29)    Marias sorgfältige Beschreibung des      Zeugen/ dieser Frau/
        Marias careful      description    of.the witness/ this     woman
        meiner Schwester
        /my      sister

Coordination:

(30)    *[Marias und Susies ]        sorgfältige  Beschreibung Ottos
        Marias  and Susies careful description of                  Otto

(31)    *[Maria und Susie]   s]       sorgfältige  Beschreibung Ottos
        [Maria and Susie]'s careful description of                  Otto

(32)    ┌─────────────────────────────────────────────────┐
        │ Only names and pronouns 'survive' the derivation. │
        └─────────────────────────────────────────────────┘
        These are the elements independently known to occur high in the
        D region/merge with D.

(33)    a.   Head movement (*since output is small*)
        b.   [ [ Angelica Merkel]s] Vater
        c.   but: syntactic composition does not involve head movement,
             only phrasal movement: this effect must be derived:
             Q1. **how to "mimic" head movement in this case**?
             Q 2 **what, if anything does it buy us?** Capturing variability, capturing historical development.

(34)    Putting things together at the syntax phonology interface:
        Which derivations survive and which don't: why?

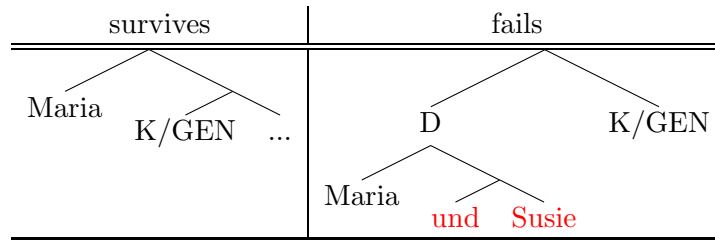(35)    The players: [D1]: epp D/K(gen) and [Kgen]: epp: max +1

| survives | does not survive |
|---|---|

D1
- D2
  - D$_{AngelicaMerkel}$
  - D/K$_{GEN}$
    - [s]
  - ....
- [D1]  ....

D1
- D2
  - dies
  - Kgen
    - [er]
  - N
    - frau
- [D1]  ....

(36)    D epp(gen), (+ph: maxsize)

    a.   nodes that can dominate [+ph] Gen is [+n] (a speaker encounters this wellformed form) (as in **??**)

    b.   anything that exceeds [n+1] does not converge.

(37)    No coordination No "suspended" affixation with the (zero) D1:

D1
- D2$_{Maria}$
- Kgen
  - [s]  ...
- und
- D3
  - Susie
  - [D/Kgen]  ....
- [D1]  ....
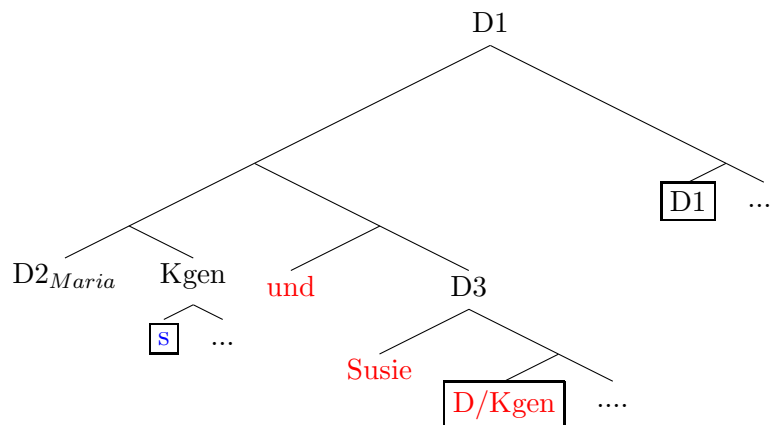
(38)    Why no suspended affixation with genitive?

(39)    *[Maria und Susie]    s]        sorgfältige  Beschreibung Ottos
       [Maria and Susie]'s careful description of                Otto

German K/GEN has a size restriction.

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       survives              |              fails
─────────────────────────────┼─────────────────────────────
                             |
   Maria                     |        D              K/GEN
        K/GEN    ...          |
                             |    Maria
                             |          und   Susie
─────────────────────────────┴─────────────────────────────
```

**Variability: synchronic and diachronic, questions of comparative syntax**

(40)   In older varieties of German (D N was possible); what about German dialects, other Germanic languages, other IndoEuropean lgs, outside of IndoEuropean?
(nb: prenominal genitives, not doubling [John [ ~~John~~ his [D house)]] ]

(41)   Expected given this view? Implicational relations which should track the syntactic structure. where are the gaps? what should not be able to coccur?

| gen | G | |
|---|---|---|
| restricted | yes (preN) | |
| restricted | no (postN) | |
| must end in GEN head | ?(yes) | |
| pronoun | yes | |
| proper name | yes | |
| first (middle) last name | yes | |
| human | | |
| D N | no | |
| compounds | no | |
| number of syllables | no | |
| sensitive to foot structure | no | |
| .... | | |

(42)   a.   cluster of properties, should follow implicational hierarchies that track the output size of the syntactic structures

       b.   coordination clusters with absence of (small) size restriction (at least D N must be possible)?

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(43)    The relevant property is not: having to end in a genitive (not suffi-
        cient) (if not, coordination of genitive proper names is expected to
        be OK
        nor number of syllables, but a size restriction sensitive to the syn-
        tactic structure at transfer.

## 4.4   Czech prenominal possessors

a further difference between proper names, compounds, and phrases.

(44)    From SSWL (Syntactic Structure of the World's Languages, an open
        souce, open ended, expert crowdsourcing data base of the syntac-
        tic (and semantic properties of the world's languages): google it:
        SSWL, sign up and use it) ).

(45)    interesting example that suggests that what is relevant is the derived
        syntactic structure, not the number of syllables. This is expected
        in the model I have been sketching.

(46)    All Czech examples from Pavel Caha, retrieved from the SSWL
        database http://sswl.railsplayground.net/http://sswl.railsplayground.net/
        accessed on 10/18/2012

(47)    Petrova    kniha
        Petr.poss book
        Peter's book
        **Comment**: The possessor has to be
        (i) human
        (ii) syntactically simple.
        A single word is always fine (i.e., John yes, but John Smith no), but
        a compound is ok too.
        The restriction on prenominal possessors thus has to make reference
        to "word-hood" in some sense.

(48)    *Petr(ova) Novákova    kniha
        Petr.poss Novák.poss book
        Petr Novák's book


(49)    *psova      bouda
        dog.poss shed
        Translation: the dog's shed

(50) místo-prezidentova / žabožroutova   kniha
vice-president.poss / frog.eater.poss book
the vice-president's / frog-eater's book
Illustrates the availability of compounds in the prenominal possessor position.

(51) coordination? *(expected to be impossible, but needs to be verified)*

(52) prenominal genitives: Again: how to mimik head movement, such that compounds pass the filter (count as single N head, but complex D (first name and second name D) don't?
(could be done with GEN perhaps)
What counts is category N vs D and size

## 5   Suspended affixation

(53)  a.  *he $[_V$ [close $[-v$ e ] ] [and $[_V$ [open $[-v$ e ] ] ] -ed the doors every day
    b.  *[ $[_V$ foul smell] and $[_V$ crazy look]]-ing
    c.  [ eat and drink] able
    d.  $[_{DP}$$_{DP}$The king of England] [and $[_{DP}$the queen of France ]]]s offspring
    e.  $[_{DP}$$[_{DP}$John], $[_{DP}$Mary] [or $[_{DP}$Bill]]]s house
    f.  $[_{DP}$$[_{DP}$$[_{DP}$my] brother]s friend]s car              DP recursion

(54) Explanation? size restrictions and/or coordination (and ?).

(55) Size restriction:
    a.  Same as with prenominal gentitives. Coordination forms a bigger spell out sized: -ed and -ing restrict the size of spell out PH (but these sizes may be different language internally, and across languages)
    (English T, yes, Japanese T no. )
    b.  But -able does not restrict size at +ph, nor does 's.
    c.  Still- able takes a small size: the relative small possible size with -able must be due to the height where - able (A, Mod, Pass) is merged
    ............... (Mod(able) > Voice(pass))) [ ............ ]

(56) Coordination

Can we motivate the idea that *close* and *open* cannot coordinate below -ed?

a.  (Chomsky, 2012 Problems of Projection, Lingua, building on Andrea Moro 'antisymmetry):
    How does labeling work in coordinated structures? The coordination does not project a label, the label must come from one of the members .

    (i)  labeling fails in this order: T [ v$_l$*abel* > and >] (order must be T and v v: fine in Japanese, but not in English ). This forces Janapese T to be higher in the structure, than English T.
         Related to sequence of tense?

# 6   Size and Length

(57)   Size and length: syntactic analysis is required.

a.  a long ph constituent can imply a big spelled out structure (but does not have to as in Czech compounds).

b.  a light ph constituent can imply a light syntactic constituent (German prenominal genitives), but does not have to (Dutch infinitives, Hungarian 312 orders show a light ph constituent (the size of a a foot), but for the purposes of dyntactic size, they are heavy. (see Koopman 2002)

Bresnan and Ford (2009).

(58)   double object construction in American and Australian English varieties.

|  | O1 | O2 |
|---|---|---|
| Australian English | [+max] | |
| American English | [[max] +n] | |

(59)   this suggests a different settings of the [+ph max] settings for the head hosting the first object, with Australian English allowing a small max, and American English a much bigger one. This looks comparable to the difference between German prenominal genitives and English prenominal genitives, or the difference between the different sizes Japanese T and English T can host (see Koopman 2012).

(60)   +Ph Max may reflect an absolute size restriction,(no bigger than,

but anything smaller is fine) or statistical knowledge about with the [+ph] properties about particular phonological shapes (a further hypothesis is that these are associated only with the epp):Thus, the [+ph] properties grafted on the structure-building epp could be the very locus where all such knowledge is represented and stored.

## 6.1 More on the Dutch 312 order. See KSz2000, Koopman 2002 and 2012

(61)     Curious fact: Dutch 312 orders are fine, with participles, small clauses, but not with infinitives. Why?

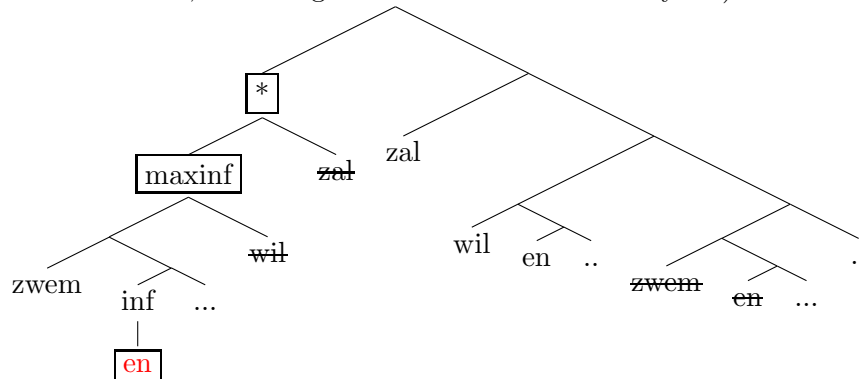(62)     a.    zwemmen wil.                                                    2 1
              swim.inf want.T

         b.    wil zwemmen                                                    1 2
              want.T swim.inf

(63)     a.  * zwemmen zal.T willen.                                          *312
              ...swim.inf will.T want.inf
              will want to swim

         b.  *zwemmen willen zal                                             *321
              zwim.inf want.inf will

Violates max size of a specific preverbal head: (i.e. these are dominated by additional nodes, the size grows with the number of cycles)



(64)     Not due to prosody, or phonology, but cares about category.

312 * with infinitives, but 3 12 OK with participles

(65)  a.  Dat hem toch zoiets (*overkomen) zou moeten/ zou moeten
          overkomen!
          that him PART so-something (overcome.inf) would must.inf
          /would must.inf overcome.inf
          That something like this should have to happen to him!

      b.  Dat hem toch zoiets overkomen zou zijn / zou zijn overkomen!
          that him PART so-something overcome.part would be / would
          be overcome.part
          That something like this should have happened to him!

(66)  lesson: to exclude the 312 context, reference to the category label
      infinitive is required, participles and infinitives look alike prosodi-
      cally, or in number of syllables (for certain types of verbs, expect
      for morphosyntactic structure.
      This is of course nothing else than a well-known case of structural
      ambiguity.

(67)  These examples are important in other ways as well; they show that
      purely surface prosodic constraints play no rule in excluding these
      examples, though they might look very relevant (and people have
      tried to use these, as well as processing accounts ).

# 7   Selected References

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