Structure-building in the verbal domain

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1 From selection to structure building

1.1 The big picture

- In introductory syntax classes, we talk about *subcategorization*:

    - i.e. the property of *devour* that requires it to have a DP sister

        (1) Beth devoured *(the cookie).

- Less often discussed: meta-restrictions on what kinds of subcategorization requirements verbs can have within and across languages

    - **Common patterns**:
        1. Subcategorization for 1 internal argument

            (2) Beth devoured the cookie. (DP)

            (3) Meg turned blue. (AP)

            (4) Marmie depends on Laurie. (PP)

            (5) Jo hopes that people read her book. (CP)

        2. Subcategorization for 2 internal arguments

            (6) Beth introduced Jo to Laurie. (DP+PP)

            (7) Laurie can count on Jo to make a mess. (PP+TP)

            (8) Jo told Meg that people would read her book. (DP+CP)

        3. Subcategorization for 3 internal arguments

            (9) Jo bet Meg a day's pay that people would read her book.

    - **Unattested patterns**:
        1. Subcategorization for 4 (or more) internal arguments
   2. Subcategorization for 3 or more DP arguments

3. Subcategorization for 3 or more non-DP arguments

- Why is the range of subcategorization requirements limited this way?

    - Two options:

        1. The lexicon is constrained to only contain certain kinds of verbs – the syntax could in principle generate more complicated structures, but there are no lexical items that select for these other structural contexts.
        2. The syntax is constrained to only produce certain kinds of structures – lexical items whose subcategorization requirements cannot be realized by one of the allowed structures cannot exist.

- Both options have been pursued in the context of various research programs.

    - This talk advances a novel version of the latter perspective.

1.2   How syntax might constrain argument structure

- A suggestion from Chomsky (1995): **Merge is feature-driven**

    (10)   Uninterpretable features in the numeration get checked/deleted by merging constituents together with certain features
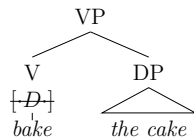
- **Question**: where do these instructions for Merge come from?

    - **A lexicalist view** (along the lines of Chomsky 1995): individual lexical items' selectional requirements drive structure-building

        * In other words, V merges with DP in (10) because *bake* selects for a DP complement. Other verbs might not have a $[\cdot D \cdot]$ feature, or might have other features.

    - **A non-lexicalist view** (taking inspiration from Wood & Marantz 2017 and Merchant 2019): structure-building features are general properties of syntactic categories

        * In other words, V merges with DP in (10) because the category V has $[\cdot D \cdot]$. On this view, all verbs have $[\cdot D \cdot]$.

- Some suggestive evidence for the **non-lexicalist** view: when lexical items of the same category have different selectional requirements but the same structure-building features

    - *Case 1*: successive cyclic wh-movement proceeds through different kinds of CPs

        (11)   [$_{CP}$ What did Jo say [$_{CP}$ ~~what~~ that Lauri ate ~~what~~?]]

* Different C-heads needed:
  1. an interrogative C in the matrix clause
  2. a non-interrogative C in the embedded clause
* Both have the same syntactic feature, which attracts a wh-element as a specifier.

- *Case 2*: v always hosts a DP specifier, but doesn't always assign a theta role to it (building on work by Legate 2003; Sauerland 2003; Deal 2009; Wu 2018; Longenbaugh 2019)

  (12) a. Lauri ate a cake in the parlor.
        b. There arrived a train at the station.
        c. A train arrived at the station.

  * "Flavors" of v that we need:
    1. an agentive v in (12a), which selects for an entity to which it assigns an agentive theta role
    2. a non-agentive v in (12b,c), which does not select for an entity, and assigns no theta roles
  * Both have the same syntactic feature, which induces Merge of a DP specifier.

- The non-lexicalist view capitalizes on these observations:

  - If the category C is endowed with $[\cdot wh \cdot]$, every C can host a wh-specifier.
  - If the category v is endowed with $[\cdot D \cdot]$, every v can host a DP specifier.

- **Proposal**: the distribution of structure-building features is not subject to lexical variation

  (13) *Categorial Merge Hypothesis*
        Merge features are assigned to syntactic categories rather than individual lexical items.

- *Potential problem*: doesn't this predict that every structure should look the same?

  - Not if we adopt the following two proposals:

    (14) In the absence of a phrase that can check them, Merge features may unproblematically go unchecked (Preminger, 2014; Longenbaugh, 2019).[1]

    (15) Some Merge features are *underspecified* – the feature $[\cdot X \cdot]$ can be checked by any element (cf. Chomsky's (2005) unspecified edge features).

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[1]If features are permitted to go unchecked, what enforces the presence of a DP complement in *Beth devoured *(the cookie)*? We could imagine that lexical items like *devour* have a lexical/semantic requirement to discharge a theta role. If the structural context that such a lexical item finds itself in does not support theta role-assignment, the result should crash at the interfaces.

- In what follows, we will explore a theory based on this worldview, and see how it explains a range of facts about verb phrase construction.

  - **The proposal**:

    (16) Proposed inventory of structure-building features in the verbal domain: [·D·], [·V·], [·wh·], and [·X·]

    (17) Proposed inventory of functional categories in the verbal domain: V ([·D·],[·X·]) and v ([·D·],[·X·],[·wh·],[·V·])

    (18) Main results:

      a. An explanation for why DPs behave as though they are c-selected but other arguments behave as though they are s- or l-selected rather than c-selected (Grimshaw, 1979; Pesetsky, 1982; Elliott, 2017).

      b. An explanation for why, when a head selects for both a DP and a non-DP argument, the DP always surfaces to the left of the non-DP.

      c. An explanation for why clauses have a maximum of four arguments cross-linguistically, without adding additional lexical verbs.

      d. A small typology of verb phrases that captures the various argument configurations that we find.

      e. An explanation for why many languages permit either object of a ditransitive clause to raise to subject in a passive clause.

      f. An explanation for why wh-movement sometimes affects which argument may be the surface subject of the clause.

    (19) *Norwegian symmetric passives of DOCs* (Haddican & Holmberg, 2015, ex. 145)

      a. Boka ble gitt Jon _.
         the.book was given Jon

         'The book was given to Jon.'

      b. Jon ble gitt _ boka.
         Jon was given the.book

         'Jon was given the book.'

    (20) **"Double object movement asymmetry"** (DOMA): the direct object cannot be the subject of a passive in which the indirect object has wh-moved (subjects in bold) (Holmberg et al., 2019, p.680)

      a. *Hvem ble **boka** gitt _ _?
         who was the.book given

         intended: 'To whom was the book given?'   *DO=subject; IO=wh-phrase*

      b. **Hvem** ble gitt _ boka?
         who was given the.book

   'Who was given the book?'   *IO=subject; IO=wh-phrase*

2 Conditions on structure-building

- Recall the proposal: that structure-building features are assigned to categories, not individual lexical items.

  - Looking at the distribution of features and categories, as well as conditions on their combination should predict a set of possible and impossible structures.

(21) Background assumptions:

   a. All Merge is feature driven (Chomsky, 1995), and the Merge features involved in wh-movement, A-movement, and external Merge all have the same properties (Müller, 2010)

      i. $[\cdot\alpha\cdot]$ = an instruction to Merge with an element bearing α

   b. Merge features on a head are *unordered* (Longenbaugh 2019, contra e.g. Adger 2003; Müller 2010), and can *fail* (Preminger, 2014)

   c. Feature Maximality/Multitasking/Free Rider condition: Given a head H with features $[F_1]...[F_n]$, if XP discharges $[F_i]$, XP must also discharge each $[F_j]$ that it is capable of (Chomsky, 1995; Pesetsky & Torrego, 2001; Rezac, 2013; van Urk & Richards, 2015; Longenbaugh, 2019)

(22) Merging a bearer of F or G (but not both) checks one feature on H. Merging a bearer of *both* F and G checks both features on H.
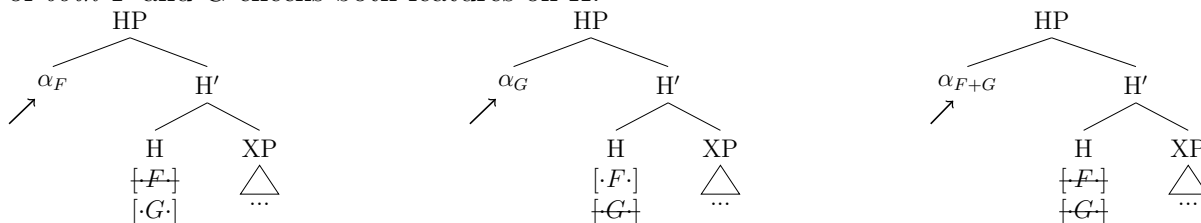
- These assumptions make it possible for one instance of Merge to bleed another.

  - If α_{F+G} merges before α_G, it checks the feature that would license α_G, which prevents a subsequent Merge step involving α_G.

- Result: If both α_{F+G} and α_G are to appear in the same phrase, they must merge in a particular order.

(23) If both α_G and α_{F+G} appear in HP, α_G must have merged first.

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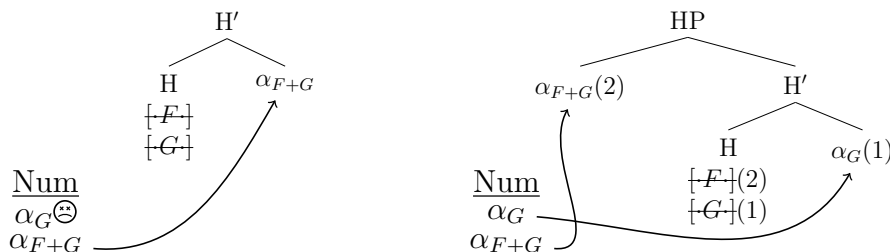
- Some researchers have argued that economy considerations also play a role in the order of operations.

    – E.g. If the derivation can check the same features in fewer operations, then it should.

- I argue that this is almost right – the derivation likes to check more features in fewer operations if it can, but this need is tempered by the need to also merge all of the elements in the numeration.

    – Result: Economy applies only when no bleeding is at stake.

        (24) Weak Economy (revised from Pesetsky & Torrego 2001; van Urk & Richards 2015)
              At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing A bleeds B. In the latter case, the grammar optionally allows A or B.

- Lastly, we will be looking at some multiple specifier configurations:

    (25) **Generalized tucking in** (Paillé 2021, generalizing from Richards 1997):
          Specifiers merge as close to the head licensing them as they can, so that each successive specifier tucks in under previously merged specifiers.

    (26) If α_F and α_{F+G} are specifiers that obey (25)
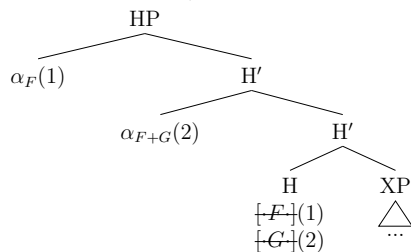
- In what follows, we will look at the bleeding logic and these conditions on structure-building in two contexts:

    1. When a DP and a non-DP merge with the same head

    2. When a DP and a wh-DP are both accessible for movement to the edge of vP

- The same logic in both cases affects resulting vP-structures, accounting for generalizations about...

    1. verb phrase syntax, and

   2. wh-movement/Voice interactions

3 The inventory of features

- My proposal: two verbal categories (V, v), with the following Merge features

  (27) Features for each verbal category
  a. V = $[\cdot D\cdot]$, $[\cdot X\cdot]$
  b. v = $[\cdot D\cdot]$, $[\cdot X\cdot]$, $[\cdot V\cdot]$ (and $[\cdot wh\cdot]$ for wh-movement)

- The framework guides these choices to some extent.

  – Logical consequence of feature-driven Merge: Since Merge is feature driven, every argument introduced in a clause needs a corresponding Merge feature.

    * Some verbs host two internal arguments (e.g. *introduce DP PP*) → V needs two features

  (28) Multiple of the same feature does not license multiple phrases of the same kind
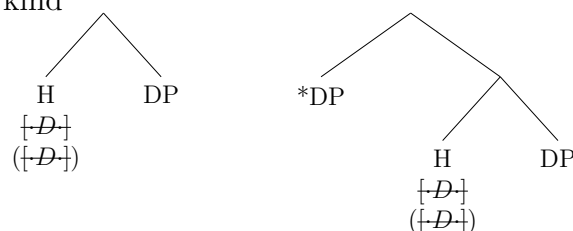
    * V can't host two DPs, so we need at least two verbal categories with $[\cdot D\cdot]$ to build a transitive clause.

- **Important point**: because Merge features can fail, $[\cdot D\cdot]$ and $[\cdot X\cdot]$ do not represent *requirements* for DP/XP arguments – just the *capacity* to host such arguments.

  (29) Arguments of V:
  a. Marmie laughed. (no object)
  b. Jo enjoys <u>fruit</u>. (DP object)
  c. Amy turned <u>blue</u>. (AP object)
  d. Beth depends <u>on Lauri</u>. (PP object)
  e. Meg wants <u>to go camping</u>. (TP object)
  f. Jo thinks <u>that Marmie likes carrots</u>. (CP object)
  g. Meg introduced <u>Jo</u> <u>to Lauri</u>. (DP+PP objects)
  h. Amy told <u>Beth</u> <u>that Marmie likes carrots</u>. (DP+CP objects)

- Why $[\cdot D\cdot]$ and $[\cdot X\cdot]$?

  – Alternative proposal (rejected): V has $\{[\cdot D\cdot]; [\cdot A\cdot]; [\cdot P\cdot]; [\cdot T\cdot]; [\cdot C\cdot]...\}$
    * Following Grimshaw (1979); Pesetsky (1982); Elliott (2017), finding evidence for $\{[\cdot A\cdot]; [\cdot P\cdot]; [\cdot T\cdot]; [\cdot C\cdot]\}$ is not easy.

* S(emantic)-selection and l(exical)-selection account for the behaviors of clausal and prepositional complementation respectively.

  (30) Elliott (2017), example 150
      a. Sam promised/said/explained/thought that he would give an extra lecture.
      b. Sam promised/said/explained/thought something.

  (31) Grimshaw (1979); Pesetsky (1982)
      a. Sue asked whether Bill likes carrots.
      b. Sue asked the time.
      c. Sue asked for the salt.

  (32) L-selection for particular vocabulary items (Pesetsky (1995), p. 246, fn. 86, citing Donca Steriade p.c.)
      a. Sue relies **on/*to/*of/*for the bus**.
      b. Sue bristled **at/*to/*of/*for Sally's insult**.

* By contrast, the distribution of DPs looks conditioned in part by category.

  (33) Jo devoured a/the/one/every/each/... cake.

– Comparing the predictions of D+X vs. the alternative:

  * Verbs can have two internal arguments: DP+non-DP, but not e.g. four: DP+AP+PP+CP

    (34) a. Beth told [Lauri] [about syntax].
        b. Jo told [Marmie] [that Beth likes carrots].
        c. *Jo told [Marmie] [blue] [about syntax] [that Merge is a structure-building operation].

  * Because DP can check $[\cdot X\cdot]$, but non-DPs cannot check $[\cdot D\cdot]$, *non-DPs must Merge first.*

(35) The two kinds of VPs: XP is only licensed if it is merged first.
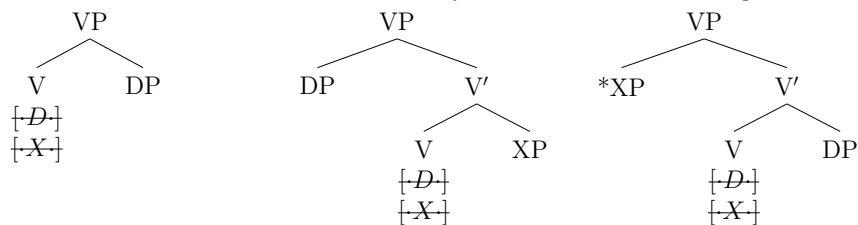
(36) a. I told (*about syntax) Lauri's favorite poet's cat (about syntax).
    b. I promised (*to eat a carrot) Marmie's mother's friend Ed (to eat a carrot).
    c. I told (*that the world is round) Beth's nephew's stuffed animal (that the world is round).

- **Result:** V can host at most two arguments, at most one of which is a DP – if a non-DP is licensed, it must have merged first (and therefore shows up further to the right than DP arguments, since non-DPs must be complements, which makes everything else a non-complement).

- **Recall:** To build a transitive clause, we need a second argument introducing head, v.

  - v can also host DP and non-DP arguments
  - ...I propose that we treat one of the arguments of *bet* as a dative argument, which could be housed in a prepositional KP, as in Lamontagne & Travis 1987; Bittner & Hale 1996; Neeleman & Weerman 1999; Rezac 2008; Caha 2009; Pesetsky 2013; Levin 2015

    (37) Arguments of v:
      a. Jo enjoys fruit. (DP subject)
      b. The book seems to Beth to be interesting. (experiencer PP)
      c. Amy was introduced to Lauri by Beth. (agentive PP Collins 2005)
   d. Meg bet Amy.DAT a day's pay that Jo would forget her scarf. (dative argument)

  - v also needs an extra feature to select for VP
    $\rightarrow$ v has (at least) $[\cdot D\cdot]$, $[\cdot X\cdot]$, $[\cdot V\cdot]$

  (38) Conditions on the orders of operations:
    a. DPs are always licensed $\rightarrow$ can be merged at any time
    b. non-DPs are only licensed if merged first $\rightarrow$ can only be complements of V and v
    c. v can't take both a VP and a non-DP complement $\rightarrow$ non-DP arguments of v force VP to become a specifier

  (39) vPs: a non-DP, non-VP argument is only licensed if it merges first $\rightarrow$ makes VP a specifier.
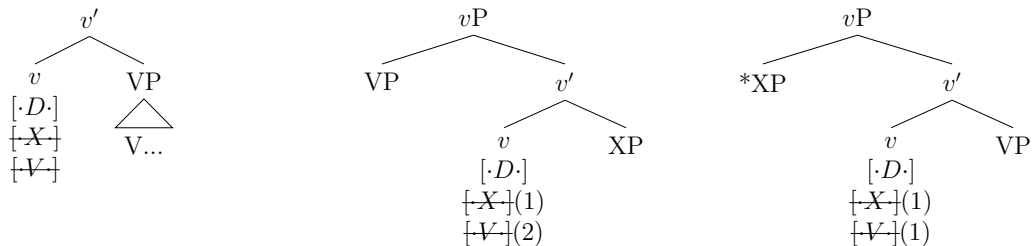
- **Summary**:

  - Verb phrases can have at most four arguments, at most two of which are DPs.
  - The number and category of arguments has implications for the complement-hood of VP.
  - The possible verb phrases we can build are tightly constrained.

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4 Building verb phrases

- The features and categories of §3 produce the following possible structures.

  - Because of the categorial merge hypothesis, the structures in (40) represent *all and only* the possible structural contexts for verbs.

(40) Possible numbers/types of arguments in verb phrases containing just V and v.

arguments in V→ arguments in v ↓	∅	DP	XP	DP+XP
∅		1DP	1XP	1DP,1XP
DP	1DP	2DPs	1DP,1XP	2DPs,1XP
XP	1XP	1DP,1XP	2XPs	1DP,2XPs
DP+XP	1DP,1XP	2DPs,1XP	1DP,2XPs	2DPs,2XPs

(41) Ascribing names to each structure.

arguments in V→ arguments in v ↓	∅	DP	XP	DP+XP
∅	*weather* verbs	unaccusatives	raising verbs	ditr. unaccusatives
DP	unergatives	transitives	ECM verbs	**ditransitives**
XP	raising verbs	*star/puzzle/delight*	*seem/appear*	*find*
DP+XP	*wager*	**ditransitives**	*hear*	*bet*

- Both of the extremes are attested – *weather* verbs take no arguments, instantiating the top left quadrant (42)...

  (42) *Weather* verbs
     a. It's raining.
     b. It's snowing.

  (43) Llueve.   (Spanish leaves D unchecked)
        rain.PRES.IPFV
   'It's raining.'

  (44) Verbs of *betting*
     a. Bugs bet Tweety.DAT 7 dollars that Road Runner would escape.
     b. Bill wagered me.DAT a day's pay that the world would end on Wednesday. (Pesetsky, 1995, ex. 478)
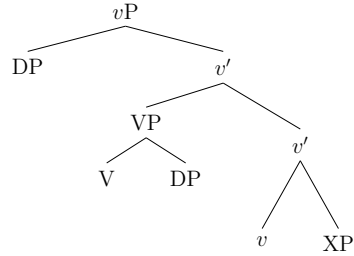
- Clauses with two DPs and one non-DP (i.e. ditransitives) occupy two quadrants in the table in (40), → clauses with three arguments have structural ambiguity.

(45) Two ditransitive structures

     a. XP is V's complement
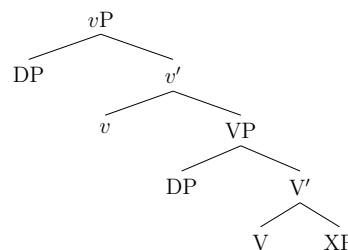
b. XP is v's complement

- Some observations about ditransitives on this view:

  1. In one of the ditransitive structures, one argument asymmetrically c-commands the other (when VP is a complement).

  2. In the other ditransitive structure, neither argument c-commands the other (when VP is a specifier).

- Though we won't have time to discuss the dative alternation in great detail, this structural ambiguity will figure prominently in our discussion of passives of ditransitives cross-linguistically.

  - Imagine for the time-being that (45a) corresponds to the prepositional dative construction crosslinguistically...

    (46) Lauri gave a book to Jo.

  - ...and that (45b) corresponds to the double object construction.

    (47) Lauri gave Jo.DAT a book.

  - This will require some imagination, since I haven't shown how word order, case, or binding work for the structure in (45b) – feel free to ask me about those issues in the question period!

- **A note on interpretation/UTAH:**

  - For those wondering about how these different structural configurations are interpreted, here is a brief overview of what I assume about thematic roles:
    * DPs get their theta roles from the heads that introduce them
    * non-DPs don't necessarily get theta roles from V or v, either because they don't need theta roles (e.g. clausal arguments) or because they come with their own theta roles (e.g. prepositional phrases; *to Sue ≈ Sue = goal/recipient*, etc.)
    * The interpretation of a DP is rigidly linked to its position in the clause; the interpretation of a PP might not be, if it comes with its own theta marking, and can thus receive the same interpretation in multiple positions

5   Passives and wh-movement

- **Proposal**: two kinds of movement proceed through the edge of vP

  1. wh-movement (Chomsky, 1986)
  2. A-movement (Legate, 2003; Sauerland, 2003; Longenbaugh, 2019)

- That A-movement proceeds through the edge of vP is a direct consequence of the present system:

  – A $[\cdot D\cdot]$ feature on v that is not checked by an externally merged DP may instead be checked by an internally merged DP.

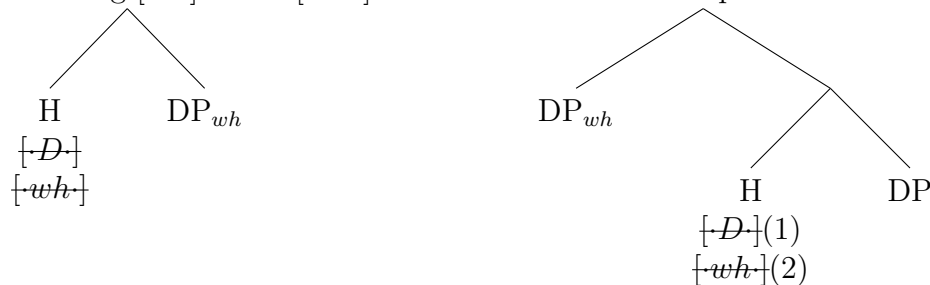 (48) The same $[\cdot D\cdot]$ feature on v licensing transitive vs. intransitive clauses
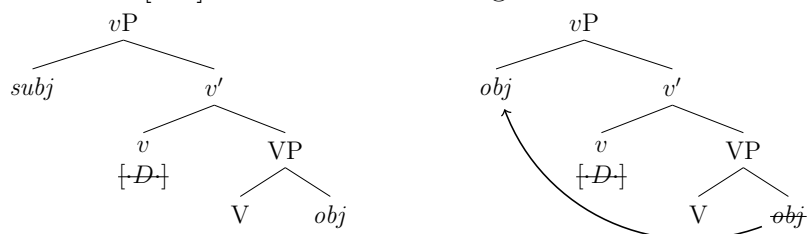
- To accommodate wh-movement, we need to add $[\cdot wh\cdot]$ to v's list of features.

  (49) Features on v: $[\cdot D\cdot]$, $[\cdot X\cdot]$, $[\cdot V\cdot]$, and $[\cdot wh\cdot]$

- All of these features interact in interesting ways, especially in passives of ditransitives.

  (50) Checking $[\cdot D\cdot]$ and a $[\cdot wh\cdot]$ in different numbers of operations

5.1   Passives of ditransitives

- Passives differ from active clauses in two respects:

  1. The external argument is represented as a PP instead of a DP (i.e. the *by*-phrase in (51b).
  2. The notional subject position of the clause is occupied by some other DP, usually an internal argument, or a DP inside one of the internal arguments.

     (51) Transitives vs. Passives

a. <u>Jo</u> wrote <u>a novel</u>. (2 DPs)
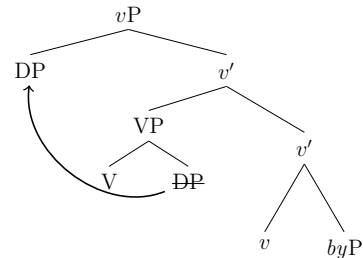
b. <u>A novel</u> was written <u>by Jo</u>. (1DP, 1XP)

- On the present theory, the second property follows from the first: PPs cannot check $[\cdot D\cdot]$, so some other DP must raise to check that feature on v.

    - A PP can be merged in response to $[\cdot X\cdot]$ on V or v, leading to two imaginable derivations for a passive.

    (52)   Two ways to build a passive of a monotransitive

    a. *by*-phrase is low
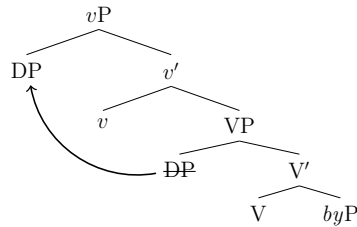
    b. *by*-phrase is high

- Whatever occupies Spec vP is the highest accessible argument for subject agreement/A-movement to subject position → demoting the agent promotes an internal argument to subject position.

- Which DP raises when there is more than one option?

    - Ditransitive clauses have two internal arguments: a DP and a non-DP, which contains a DP.

    - When one argument c-commands the other, the higher one moves according to Relativized Minimality (Rizzi, 1990).

    (53)   Passive of a prepositional dative construction: only the theme can raise due to locality.
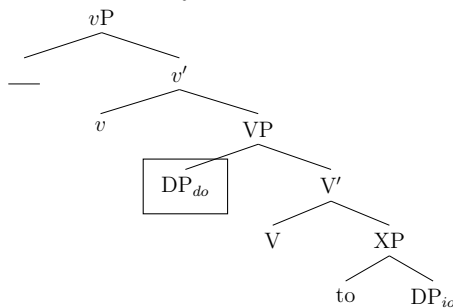
    (54)   a. A book was given to Jo.

    b. *Jo was given a book to.

    - When neither argument c-commands the other, either one can raise.

(55) Passive of a double object construction: either the theme or the recipient can raise.
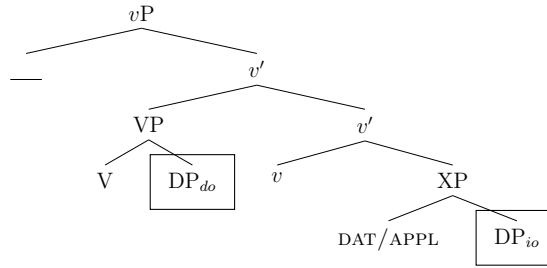
```
                        vP
              ┌──────────┴──────────┐
             ___                    v′
                         ┌──────────┴──────────┐
                        VP                      v′
                   ┌────┴────┐            ┌─────┴─────┐
                   V      [DP_do]         v           XP
                                                ┌──────┴──────┐
                                            DAT/APPL      [DP_io]
```

– We may not see consistent evidence of this in English...

(56)   a. % A book was given Jo.

        b. Jo was given a book.

– ... but so-called "symmetric" passives are prevalent cross-linguistically.

    ∗ In a recent (non-comprehensive) survey, Holmberg et al. (2019) describe the following languages as having symmetric passives: Norwegian, North-West British English, Zulu, Lubukusu, Xhosa (Visser, 1986), Swati (Woolford, 1995), Haya (Duranti & Byarushengo, 1977), Fuliiru (Van Otterloo, 2011), Sotho (Morolong & Hyman, 1977), and Tswana (Creissels, 2002).

(57)   *Norwegian ditransitives* (Anderssen et al., 2014, ex.2)

    a. Jon ga   Marit en bok.
       Jon gave Marit a   book

       'Jon gave Marit a book.' (double object construction)

    b. Jon ga   en bok til Marit.
       Jon gave a   book to Marit

       'Jon gave a book to Marit.' (prepositional dative construction)

(58)   *Norwegian asymmetric passives of PDCs* (Johannes Norheim, p.c.)

    a. En bok ble git   _ til Marit.
       a   book was given   to Marit

       'A book was given to Marit.'

    b. *Marit ble gitt   en bok til _.
       Marit   was given a book to
       intended: 'Marit was given a book.'

(19)   *Norwegian symmetric passives of DOCs* (Haddican & Holmberg, 2015, ex. 145)

    a. Boka   ble gitt   Jon _.
       the.book was given Jon

       'The book was given to Jon.'

    b. Jon ble gitt   _ boka.
       Jon was given   the.book

       'Jon was given the book.'

- Taking this as a baseline analysis of symmetric passives, what happens when we add wh-movement?

5.2 Adding wh-movement

- Holmberg et al. (2019) observe a puzzling asymmetry in all of the languages with symmetric passives.

  - Passivization becomes asymmetric whenever the indirect object wh-moves.
    * Normally, either internal argument can be the subject of a passive.
    * Whenever the indirect object wh-moves, only the indirect object can be the subject of a passive.
    * But when the direct object wh-moves, either argument can be the subject of a passive.

(20) **"Double object movement asymmetry"** (DOMA): the direct object cannot be the subject of a passive in which the indirect object has wh-moved (subjects in bold) (Holmberg et al., 2019, p.680)

    a. *Hvem ble **boka** gitt _ _?
       who was the.book given

       intended: 'To whom was the book given?'   *DO=subject; IO=wh-phrase*

    b. **Hvem** ble gitt _ boka?
       who was given the.book

       'Who was given the book?'   *IO=subject; IO=wh-phrase*

(59) When the direct object wh-moves (Holmberg et al., 2019, p.680)

    a. Hvilken bok ble **Jon** gitt _ _?
       which book was Jon given

       'Which book was John given?'   *IO=subject; DO=wh-phrase*

    b. **Hvilken bok** ble gitt Jon _?
       which book was given Jon

       'Which book was given to Jon?'   *DO=subject; DO=wh-phrase*

- **Proposal**: this is where the Weak Economy and Tucking In become relevant

(24) Weak Economy (revised from Pesetsky & Torrego 2001; van Urk & Richards 2015)
    At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing A bleeds B. In the latter case, the grammar optionally allows A or B.

(25) **Generalized tucking in** (Paillé 2021, generalizing from Richards 1997):
    Specifiers merge as close to the head licensing them as they can, so that each successive specifier tucks in under previously merged specifiers.

- Putting it all together...

– Let's begin by constructing a step by step derivation of a passive, ditransitive clause, where the direct object wh-moves.
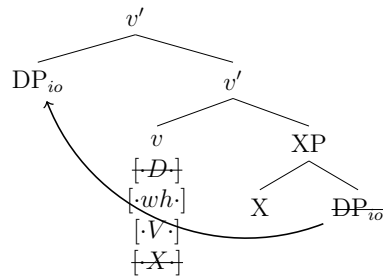
(60)   Step 1: Merge(v,XP)

v'
v [·D·] [·wh·] [·V·] [·X·]
XP
X   DP$_{io}$
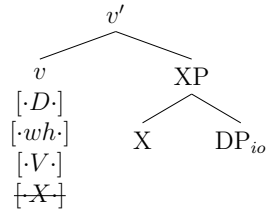
– Two options forward

1. Check [·D·] by raising DP$_{io}$ (no external argument is merged because this is a passive clause)
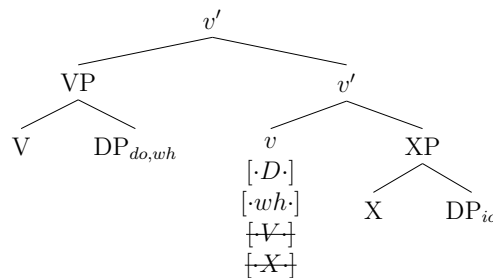2. Check [·V·] by merging VP, which contains the direct object wh-phrase

– Neither of these options checks more features than the other, so Weak Economy does not apply.

(61)   Step 2: check either [·D·] or [·V·] first
a. check [·D·] first

v'
DP$_{io}$ v'
v [·D·] [·wh·] [·V·] [·X·]
XP
X   DP$_{io}$

b. check [·V·] first

v'
VP v'
V   DP$_{do,wh}$
v [·D·] [·wh·] [·V·] [·X·]
XP
X   DP$_{io}$
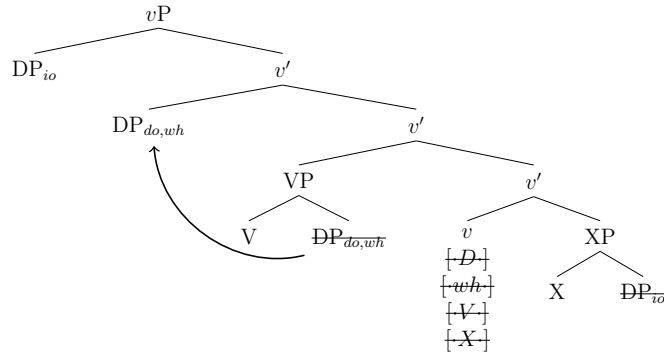
– Next step is to check remaining features, which looks different for each choice in (61).

  ∗ Tucking in ensures that the first DP specifier of vP is the highest, and therefore becomes the surface subject of the clause.
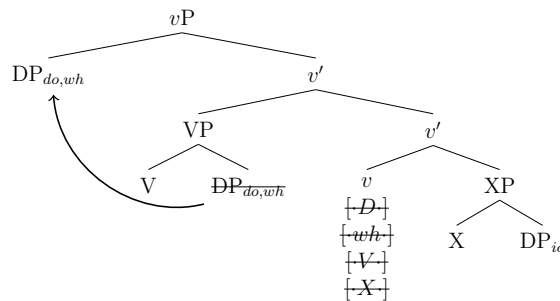
(62)   Continuation of (61a): Merge VP (tucks in) then move DP$_{do,wh}$ (tucks in)

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∗ If VP was merged first, as in (61b), there are again two options:

1. Check $[\cdot D\cdot]$ and $[\cdot wh\cdot]$ simultaneously by moving $DP_{do,wh}$
2. Check $[\cdot D\cdot]$ by moving DP_{io} and $[\cdot wh\cdot]$ by moving $DP_{do,wh}$

∗ (At least) one of these options makes the direct object the highest accessible argument.

(63) Continuation of (61b): Move $DP_{do,wh}$

– Summary: when the direct object wh-moves in a passive, either direct or indirect object might be the subject of the clause, depending on the order of feature checking.

(64) Checking $[\cdot D\cdot]$ before $[\cdot V\cdot]$ → indirect object passive
    a. Hvilken bok ble Jon gitt?
       which book was Jon given

       'Which book was John given?'   *DO wh-movement from IO passive*
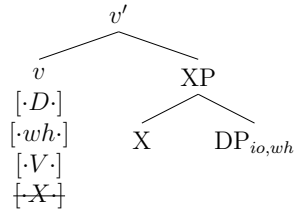
(65) Checking $[\cdot V\cdot]$ before $[\cdot D\cdot]$ → direct object passive
    a. Hvilken bok ble gitt Jon?
       which book was given Jon

       'Which book was given to John?' *DO wh-movement from DO passive*

• Let's now redo the derivation with an indirect object wh-phrase:

(66) Step 1: Merge(v,XP)

Tree diagram:

v'
- v: $[\cdot D\cdot]$, $[\cdot wh\cdot]$, $[\cdot V\cdot]$, $[\cdot X\cdot]$ (struck through)
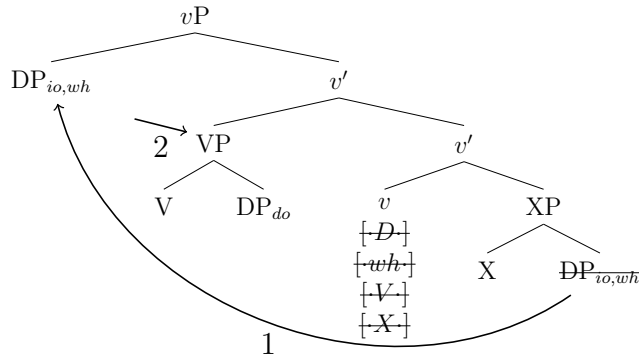- XP
  - X
  - DP$_{io,wh}$

– This time, Weak Economy becomes active.

   ∗ The derivation in principle has two options:

     1. Check $[\cdot D\cdot]$ and $[\cdot wh\cdot]$ by moving DP$_{io,wh}$

     2. Check $[\cdot V\cdot]$ by merging VP

    ∗ However, option 1 checks more features than option 2, and no bleeding is at stake → **option 1 is enforced**

(67) Early IO raising makes it the outermost specifier of vP because every subsequent specifier tucks in

vP
- DP$_{io,wh}$
- v'
  - 2 → VP
    - V
    - DP$_{do}$
  - v'
    - v: $[\cdot D\cdot]$, $[\cdot wh\cdot]$, $[\cdot V\cdot]$, $[\cdot X\cdot]$ (all struck through)
    - XP
      - X
      - DP$_{io,wh}$ (struck through)

1 (arrow from DP$_{io,wh}$ to outermost spec)

– Summary: Weak Economy enforces early movement of the indirect object when it is a wh-phrase, which bleeds a direct object passive

(68) Checking $[\cdot D\cdot]$ and $[\cdot wh\cdot]$ before $[\cdot V\cdot]$ → indirect object passive

    a. Hvem ble gitt   boka?
      who   was given the.book
      'Who was given the book?'   *IO wh-movement from IO passive*

(69) Checking $[\cdot V\cdot]$ before $[\cdot D\cdot]$ not an option → no direct object passive

    a. *Hvem ble boka   gitt?
      who   was the.book given
      intended: 'To whom was the book given?'   *IO wh-movement from DO passive*
      (Norwegian; Holmberg et al. (2019), p.680)

• Support for this proposal comes from the distribution of the DOMA cross-linguistically, as shown in §5.3.

5.3 Languages with no indirect object passives

- The core insight of the present analysis is that the DOMA is a bleeding phenomenon.

  – When the indirect object is a wh-phrase, it has to move at a particular time, which checks the feature that would license promotion of the direct object.

  – The indirect object is therefore the highest accessible argument to subject agreement/A-movement, in addition to being subject to Ā-movement.

- Not every language permits an indirect object to be a passive subject, however.

  – Greek double object constructions, based on binding and clitic doubling behaviors, are often argued to have high indirect objects just like Norwegian, and yet they cannot be the subject of a passive.

    (70) *Greek*
    a. To vivlio   tis   charistike   (tis Maria-**s**).
       the book.NOM cl.GEN award.NACT the Maria-GEN

       'The book was awarded to Mary.' (Anagnostopoulou, 2003, ex. 33)
    b. *I Maria   stalthike   to grama.
       the Maria.NOM sent.nonact.3s the letter.ACC

       intended: 'Mary was sent the letter.' (Anagnostopoulou, 2003, ex. 10a)

  – Plausible explanation: Greek indirect objects have overt inherent case, and therefore cannot control subject agreement.

    * Regardless of when the indirect object moves, it will not block a direct object from acting as the morphosyntactic subject of the clause.

    (71) Tinos   dhothike   to vivlio?
       who.GEN gave.NACT.3SG the book.NOM

       'Who was the book given to?' (Anagnostopoulou, 2003, ex.308) *Greek*

  – Other languages that pattern like Greek: German, Spanish, Tamil, Turkish

  – All of these languages have overt inherent case on their indirect objects, and none of them have indirect object passives or the DOMA.

6   Conclusion

- Today I have outlined a syntactic world view with the following characteristics:

  1. The inventory of structure-building features is very small, and is distributed across syntactic categories, not individual lexical items.

  2. Structure-building features license any kind of structure-building, including not just external Merge, but A-movement and wh-movement as well.

3. The inventory of functional categories in the verbal domain is limited to V and v, with all other possible argument introducing heads (e.g. Appl) merging in response to [·X·].

4. Structure-building features represent the capacity of a head to host a certain number of arguments, not a requirement for all of these features to be checked.

- This world view produced two general results:

  1. A limited space of possible verb phrase structures
     - These structures could host anywhere from 0 to 4 arguments.
     - DPs and non-DPs selected by the same head merged in a particular order: non-DP > DP, accounting for word order DP-non-DP
     - Predicted the dative alternation

  2. A way of discussing A- and Ā-processes with fewer stipulated distinctions (following van Urk 2015)
     - Since both A-movement and wh-movement occur in response to structure-building features, which might occur on the same head, interactions are expected.
     - Wh-movement/Voice interactions are unsurprising: the order of feature checking within vP affects which argument is accessible to subject agreement, and the distribution of wh-phrases affects the order of feature checking.
     - Stipulated distinctions between A- and Ā-movement on other theories follow from the feature checking logic, which independently constrains the order of operations.

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