Roots don’t select:
A novel argument from category-dependent l-selection

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1 How selection works

(1) Merge(α, β)
For any syntactic objects α, β, where α bears a nonempty selectional list ℓ = ⟨F₁, ..., Fₙ⟩ of selectional features, and β bears a categorial feature F¹ that matches F₁, call α the head and

a. let α = { γ, { α− ℓ, β} } call γ the projection of α, and
b. if n > 1, let ℓ = ⟨F₂, ..., Fₙ⟩, else let ℓ = ∅, and
c. let γ = [CAT [cat(α)]] [SEL [ℓ]]

(2) Set F of selectional features = { N, V, P, A, C, on, in, +wh, -Q, +pl, √RELI, ... }
This permits c(ategory)- and l(exical)-selection (Pesetsky 1991)

• A prima facie insane claim: all arguments are severed from the root

2 Category-invariant l(exical)-selection

(3) a. They rely on oil.
   b. Their reliance on oil is well-known.
   c. They are reliant on oil.
(4) a. The compound reacted to light.
   b. The compound’s reaction to light was expected.
   c. The compound was reactive to light.
(5) a. in de liefde geloven
   "in the love believe 'believe in love'
   b. het geloof in de liefde
   "the belief in the love 'the belief in love'
(6) a. Anna glaubt an die Logik.
   German
   Anna believes on the logic 'Anna believes in logic.'
   b. Annas Glaube an die Logik ist unerschütterlich.
   "Anna’s belief on the logic is unshakable.
   'Anna’s belief in logic is unshakable.'

(7) V-N-A tuples with selected Ps (a selection from a database of 1109 so far¹)

<table>
<thead>
<tr>
<th>V</th>
<th>N</th>
<th>A</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>appeal</td>
<td>appeal</td>
<td>appealing</td>
<td>to</td>
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<tr>
<td>comply</td>
<td>compliance</td>
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<td>dedication</td>
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<td>of</td>
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<td>cope, dispense, toy</td>
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<td>visibility</td>
<td>to</td>
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<tr>
<td>dispose</td>
<td>right</td>
<td>tantamount</td>
<td>to</td>
</tr>
</tbody>
</table>

(8) N as categorizer (often written n)

(9) a. √RELI:: [SEL::(on)]
   b. N:: [SEL::{{√RELI, ...}}]

(10) N ↔ ance / √RELI ___

• “The facts are arbitrary. “ (Pesetsky 1991:10)

(11) a. a time-sensitive (*to) matter; the matter’s time-sensitivity (*to)
   b. a drug-dependent (*on) recovery; his drug-dependence (*on)

(12) [of/in/on/at/... if] = λx. [x₁] (meaningless prepositions denote identity functions)

¹Thanks to Elizabeth Wood for help in assembling these.
(13) a. She envies his accomplishments.
b. Her envy of his accomplishments is understandable.
c. She is envious of his accomplishments.

(14) a. We appreciate his help.
b. Our appreciation of his help is great.
c. We are appreciative of his help.

(15) a. Abby fears dark spaces.
b. Abby’s fear of dark spaces is well known.
c. Abby is fearful of dark spaces.

(16) V-N-A tuples with verbal direct objects and N/A of-objects

<table>
<thead>
<tr>
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<th>A</th>
<th>P</th>
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</thead>
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<td>of</td>
</tr>
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<td>of</td>
</tr>
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<td>indication</td>
<td>indicative</td>
<td>of</td>
</tr>
<tr>
<td>study</td>
<td>student</td>
<td></td>
<td>of</td>
</tr>
</tbody>
</table>

(17) a. I oppose (*to) lower capital gains taxes.
b. My opposition to lower capital gains taxes is well known.
c. I am very opposed to lower capital gains taxes.

(18) a. I desire (*for) chocolate.
b. My desire for chocolate knows no bounds.
c. I am desirous of chocolate.

(19) a. Buckley attacked (*on) liberalism.
b. Buckley’s attack on liberalism was scathing.

(20) a. Sam needs to account for his behavior.
b. Sam’s account of his behavior was penitent.

(21) a. Her country abounds in mineral wealth.
b. Her country enjoys an abundance of mineral wealth.
c. Her country is abundant in?with mineral wealth.

(22) a. She prides herself on her thoroughness.

(23) a. I rarely concern myself about/*for/*with his progress.
b. My rare concern about/*for/*with his progress is understandable.
c. I am quite unconcerned about/*for/*with his progress.

(24) a. i. She attempted the hardest problem.
    ii. She attempted to climb the Sears Tower.
    iii. She attempted taking seven courses in one quarter.

(25) a. i. Her attempt of the hardest problem was inspiring.
    ii. Her attempt to climb the Sears Tower was illegal.
    iii. Her attempt *(at) taking seven courses was insane.
    iv. *Her attempt of taking seven courses was insane.

(26) a. Ralph answered (*to) the question.
b. Ralph’s answer to the question was the best one.

(27) a. The music disrupted her concentration.
b. The music’s disruption of her concentration was complete.
c. The music is disruptive to her concentration.

(28) a. Bernie supports (*for) tax increases on the wealthy.
b. Bernie’s support of/*for tax increases on the wealthy is unwavering.
c. Bernie is supportive of/*for tax increases on the wealthy.

(29) a. Abby is the equivalent of three teachers.
b. Abby is equivalent to three teachers.

(30) a. Sara helped me.
b. Sara’s help to me was invaluable. Sara was a great help to me.
c. Sara was very helpful to me.

(31) a. Martin witnessed great crimes.
b. Martin was a witness to great crimes.

(32) a. Louise resembles her grandmother.
b. Louise’s resemblance to her grandmother is remarkable.

(33) a. The gang menaced the neighborhood.
b. The gang’s menace to/*of the neighborhood was clear.
c. The gang was (very/un-) menacing to/*of the neighborhood.

(34) a. She sympathizes with the refugees/*your proposal.
b. She has great sympathy with/*to the refugees/*your proposal.
c. She is very sympathetic to/*with the refugees/*your proposal.
V-N-A tuples with differing selected Ps or direct objects (134 in database)

<table>
<thead>
<tr>
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<td>abundant in/?with x</td>
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<tr>
<td>answer x</td>
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<td>appalling to x</td>
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<td>assault x</td>
<td>assault on x</td>
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<td>astonish x</td>
<td>astonishing to x</td>
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</tr>
<tr>
<td>attack x</td>
<td>attack on x</td>
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<tr>
<td>attempt x</td>
<td>attempt at/of x</td>
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<td>benefit x</td>
<td>benefit to x</td>
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</tr>
<tr>
<td>witness x</td>
<td>witness to x</td>
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</tbody>
</table>

The usual geometry cannot be right:

This geometry cannot be saved by analyzing the on, in, of alternation as one of contextually triggered allomorphy (idea: roots like √PRD c-select for an underspecified P; and DM rules spell P out as on, in, of):

The second selectional feature on the list licenses the Merger of the PP:

After merger of additional functional heads in the extended projection of N and head movement (additional operations such as Local Dislocation not represented):

Problem 1: Many roots are like √OPPOS where a verbal direct object alternates with a PP complement to an N or A: the following set of selectional features fails to account for the category-sensitivity:

\[ \text{CAT} \begin{bmatrix} \text{SEL} & \{\{D, P]\}\end{bmatrix} \]

Problem 2: Allomorphic rules are too late: these alternations feed wh-movement

The legislature passed the proposal to which we were opposed.

3.1 Solution: Categorizing heads may have two selectional features

Categorizing heads select for some roots and not others: these idiosyncrasies are listed as the set of selectional features that a particular category head takes.

\[ N_{in} \begin{bmatrix} \text{CAT} \[N]\text{SEL} & \{\{\sqrt{PRD}, \sqrt{TRUST}, \sqrt{FAITH}, \ldots\}, in]\end{bmatrix} \]

\[ V_{on} \begin{bmatrix} \text{CAT} \[V]\text{SEL} & \{\{\sqrt{PRD}, \sqrt{RELI}, \ldots\}, on]\end{bmatrix} \]

\[ A_{of} \begin{bmatrix} \text{CAT} \[A]\text{SEL} & \{\{\sqrt{PRD}, \sqrt{DESI}, \ldots\}, of]\end{bmatrix} \]

- Merge in (1) applies iteratively: the first selectional feature on the list licenses the construction of the N/V/A + root:

\[ \text{Merge}( N_{in} , \sqrt{PRD} ) = N_{in} \]

- The second selectional feature on the list licenses the Merger of the PP:

\[ \text{Merge}( N_{in} , \text{in} ) = N_{in} \]

N node realization is not sensitive to selectional features, only to the list of roots (cf. Alexiadou et al. 2007, Adger 2013):

\[ \sqrt{PRD} \leftrightarrow \text{pride} / \_N \]

\[ \sqrt{PRD} \leftrightarrow \text{proud} / \_A \]

\[ \sqrt{RELI} \leftrightarrow \text{abundance in, resemblance to: } N_{in}, N_{on}, N_{to} \]

\[ N \leftrightarrow \text{ance} / \{\sqrt{RELI}, \sqrt{ABOUND}, \sqrt{RESEMBL}, \ldots\} \]
3.2 The history of lust

(49) a. They lust for/after chocolate.
b. Their lust for/*after chocolate was insatiable.

(50) Relative frequency of verbal lust for vs lust after:

(51) Relative frequency of nominal lust for vs lust after:

Conclusion: selectional features are stochastic

One implementation of a probabilistic CFG \( G = (N, T, S, R, p) \) with subcategorization: \( p \) is a parameter for each rule \( A \rightarrow \beta \in R \), such that for each \( A \in N \):

\[
\sum_{A \rightarrow \beta \in R(A)} p(A \rightarrow \beta) = 1
\]

(52) \( V_{for} \) CAT \( \left[ \text{V} \right] \) SEL \( \left[ \{\sqrt{\text{LUST}^{0.4r} \ldots \text{for}}\} \right] \)

(53) \( V_{after} \) CAT \( \left[ \text{V} \right] \) SEL \( \left[ \{\sqrt{\text{LUST}^{0.6r} \ldots \text{after}}\} \right] \)

3.3 Inner vs. outer selection

Inner categorizing heads:

(54) ∅, -al, -ance, -ant/ent, -ed, -ful, -ible, -ing, -ive, -(t)ion, -(u)ous

(55) Prediction: categorizing heads that take already categorized XPs cannot alter the selectional properties.

(56) a. She exhibits great faith \textit{in} God.
b. She is very faithful \textit{to} God.
c. She exhibits great faithfulness \textit{to/*in} God.

(57) a. She exhibits great faith \textit{in} God.
b. She is very faithful \textit{to} God.
c. She exhibits great faithfulness \textit{to/*in} God.

(58) oppose (*to), opposition to, oppositional to, oppositionality to

(59) \( \sqrt{\text{OPPOS}} \) toP \( A_{to} \) toP \( A_{to} \) toP \( N_{to} \) toP \( A_{to} \) toP \( N_{to} \) toP \( A_{to} \) toP \( N_{to} \) toP \( A_{to} \) toP \( N_{to} \)

- \textit{-er} attaches to V; therefore, the verbal selectional feature persists:

(60) a. Sam was the first responder \textit{to/*of} the accident.
b. Abigail is a firm believer \textit{in/*of} the power of yoga to improve one’s life.
c. Conscientious objectors \textit{to/*of} the war were put in prison.

(61) a. Buckley was the attacker \textit{of/*on} more than a dozen of the victims.
b. Abby is a supporter \textit{of/*for} equal rights.

dis- in distrust is root-attaching (cf. disgust):

(62) a. They trust me. Their trust \textit{of/*in} me is not misplaced.
b. They distrust me. Their distrust \textit{of/*in} me is utterly unfounded.

(63) \( \sqrt{\text{TRUST}} \) V \( \sqrt{\text{TRUST}} \) N_{to} \( \sqrt{\text{OPPOS}} \) toP \( A_{to} \) toP \( A_{to} \) toP \( N_{to} \) toP \( A_{to} \) toP \( N_{to} \)
3.4 Neeleman’s Generalizations (Neeleman 1997)

3.4.1 There can be at most one idiosyncratic PP per root

This follows if such PPs can only be selected by the categorizing head; additional PPs (e.g., aboutP) and DP arguments are introduced by v (or Appl, or vappl) heads.

(64) a. Abby talked to Ben about the weather.
   b. Abby reported to Ben on the weather.
   c. The story/book/article/talk/speech/report was about/on the weather. (Grimshaw and Rosen 1990, Adger 2013:82)
   d. The report was to Ben, not to you.

(65) a. What blocks *faithful in God to his commands?
   b. Semantic failure: \[ \sqrt{\text{FAITH}} = \lambda x \lambda s[\text{faith}(s)(x)] : \langle e, vt \rangle \]
      \[ \lambda x \lambda s[\text{faith}(s)(x)] (\text{in God}) \rightsquigarrow \lambda s[\text{faith}(s)(\text{god})] : \langle vt \rangle \]
      No way to compose with an additional type e argument: \[ [\text{to his commands}] = \text{his.commands} : \langle e \rangle \]
      \[ \lambda s[\text{faith}(s)(\text{god})] \circ \text{his.commands} \rightsquigarrow \bot \]

3.4.2 There are no idiosyncratic PP subjects

(66) a. *In jazz will interest everyone here.
   b. *It would be surprising if on this land abounded (with) high-quality grains.
   c. *It would be surprising for on this land to abound (with) high-quality grains.

An embarrassment of riches (possible reasons): 1. Cf. Ramchand’s Generalization (Ramchand 2008)? 2. Agree is blocked by PP? (But both *If it was worked on many alternatives and *There were worked on many alternatives are bad...) 3. only category heads can l-select; v, etc. (the neo-Davidsonian menagerie of argument-introducing heads) cannot select PP without imposing a \( \theta \)-requirement on them (e.g., \( \nu_m \) in They embroidered stars on the jacket is \( [\nu_m] = \lambda r : r \in \text{LocativeRelations} \in [\text{on}][r] \)

3.5 Psych predicates (32 in database)

In case you thought psych predicates (experiencer object verbs) weren’t already a big enough problem for the U(T)AH:

(67) a. I anger him. (*He angers at me.)
   b. His anger at me is baffling.
   c. I’m very exasperated with > at her attitude.

(69) a. Her attitude exasperates me. (*I exasperate with/at her attitude.)
   b. My exasperation with > at her attitude is unappealing.
   c. I’m very exasperated with > at her attitude.

(70) a. That frightens me.
   b. My fright at/?over/*in/about his absence was real.
   c. I am (very/un-) frightened at/?over/*in/about his absence.

(71) a. (*His absence remorses me.)(*I remorse (myself) at his absence.)
   b. My remorse at/?over/*in/about his absence was real.
   c. I’m quite remorseful at/?over/*in/about his absence.

(72) a. The movie upset me.
   b. (*My upset at the movie was fleeting.) (Cf. The team’s upset of/*at their opponents was amazing.) c. I am very upset at the movie.

3.6 Constant selection

(73) • rely on, reliance on, reliant on
   - Possibilities:

1. Some selectional features go on the ‘root’ after all? (Some nouns come categorized?)

(74) \[ \text{N} \text{toP} \quad \text{N} \text{opposition sel : } \langle \nu \to \rangle \]

Worst of all possible worlds? Loses the parallel of object:ion::opposi:tion.

2. There is ‘joint selection’, with selectional features activated on roots by higher category nodes (cf. V-movement feature on T activated by matrix C in Scandinavian; Case feature on p/P activated by Voice[act] in pseudopassivizing languages)

3. These cases all involve layered categorizers: additional affixes on low (presumably verbal) categorized stems (so reliance and resemblance have differing amounts of structure; cf. Bruening 2014 on adjectival passives):
4. The generalizations (and predictive power) are over larger chunks of structure: spanning (Merchant 2015), fragment grammars (O’Donnell 2015).

5. In a traditional lexicalist theory, “Regularities involving only selectional features might in principle be stated as redundancy rules of the lexicon” (Chomsky 1970:213)

References