Roots, Categories and Mapping to the Interfaces

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ROOTS IV
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What’s a terminal?

(1)  
   a.  \{a, b, c, \ldots\} are syntactic objects (base clause)
   b.  If X and Y are syntactic objects then
        \text{Merge}(X, Y) = \{X, Y\} is a syntactic object
        (recursive clause)

Proposal: Discreteness is an obligatory property of a syntactic object

(2)  \textbf{Interface Discreteness}
   a.  X is discrete if it is semantically atomic.
   b.  X is discrete if it has a morphophonological signature.
   c.  X is not discrete otherwise.

Extras

What’s a terminal?

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   b.  X is discrete if it has a morphophonological signature.
   c.  X is not discrete otherwise.
UG constrains the mapping between simplex concepts and atoms of meaning (subset). An atom of meaning (simplex concept) is sufficient to identify something as a discrete element that can be a syntactic object.
Architecture

MorphSem

<table>
<thead>
<tr>
<th>Form</th>
<th>PsychSem Structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>/bag/</td>
<td>UNIT</td>
</tr>
<tr>
<td>⌀</td>
<td>END</td>
</tr>
<tr>
<td>/kiss/</td>
<td>kiss</td>
</tr>
<tr>
<td>KTB</td>
<td>write</td>
</tr>
<tr>
<td>-ceive</td>
<td></td>
</tr>
</tbody>
</table>

(4) Association of a morphophonological signature with a PsychSem structure is sufficient to identify it as a discrete syntactic object.

(5) Morphophonological rules/allomorphic conditioning are computed over syntactic structures as usual, but we’ll see that these eventually amount to strings.
1. terminals consisting of a m$\phi$ unit and complex semantics (river, kiss, tesseract)

2. terminals consisting of a m$\phi$ unit with no inherent semantics (cran-, -ceive) or loss of any inherent semantics (Diyari auxiliaries). Label provides semantics.

3. terminals consisting of a simplex semantics: can have a m$\phi$ presence (abstract to concrete) (Vietnamese classifiers; Gaelic passives; ‘semi-lexical’)

4. terminals consisting of a semantic atom with no associated m$\phi$ unit (null roots in Germanic, Koasati, and relational $\mathfrak{p}$, perhaps pro)

5. *terminals consisting of a complex semantics with no associated m$\phi$ unit (counterexample: Nimboran? Menomini?)
2. terminals consisting of a morphophonological unit and a simplex semantic unit Diyari Auxiliaries

(6) Ngathu nhinha nhayi-rna wanthi-yi
I-erg him-acc see-prt search-pres
‘I saw him long long ago’

wanthi-yi search distant past
wapa-ya go intermediate past
parrha-ya lie recent past
wirrhi-yi enter yesterday past
warra-yi throw today past

Note that even arg structure is not preserved in these (cf. Gaelic). pc Peter Austin.
3. terminals consisting of a morphophonological unit and a simplex semantic unit

Vietnamese Classifiers (objectual and mensural)

(7) môt ông vua
    one grandfather king
    ‘one king’

(8) ông nội đi về nhà
    grandfather paternal go return home
    ‘Grandfather went home’

(9) hai cái bao
    two thing bag
    ‘Two bags’

(10) hai bao cam
    two bag oranges
    ‘Two bags of oranges’
Gaelic Eventive Passives/Causatives

(11) Chaidh Daibhidh a phòg-adh
    go.PAST David A kiss-VN
    ‘David got kissed.’

(12) Chaidh Daibhidh a Ghlaschu
    go.PAST David to Glasgow
    ‘David went to Glasgow.’

(13) Thug e orm Lilly a bhiadhadh
    give.PAST he on.1SG Lilly A feed-VN
    ‘He made me feed Lilly’

(14) Thug e Lilly dhomh
    give.PAST he Lilly to.1SG
    ‘He gave Lilly to me’

(15) Thug e Lilly asam
    give.PAST he Lilly from.1SG
    ‘He took Lilly from me’
4. terminals consisting of a semantic atom with no associated morphophonological unit

Koasati null TRANSFER (from Svenonius 2014)

(16) ín-ka-l; ín-k; í-híl-k
    3IO-0-v-1sgS; 3IO-0-v; 3IO-0-1plS-v
    ‘I give x to y’; ‘x give(s) y to z’; ‘we give x to y’

My analysis of relational nouns

(17) a side of the table = [ [side] [ [the table] √PART ] ]

Van Riemsdijk’s zero motion verbs

(18) Moeten wij nog de stad in
    Must we still the town into
    ‘Do we still need <to go> to town?’
5. *terminals consisting of a complex semantics with no associated morphophonological atom

Nimboran (Inkelas): be, become, bring, go, say but also dream, extend, hear, kiss, laugh, sleep and ... make cats cradles!

(19) 0-rár-nhát-t-u
      laugh.sg-Part-Iter-Pres-1
      ‘I laugh repeatedly here’

But hear, laugh and bring alternate with a plural /i/ allomorph.
All of the Nimboran cases involve a further particle (here rár), distinct for each verb (except bring and dream which are distinguished by a further marking indicating directionality).
Two Lexica

(20) a.  $R_{\text{Lex}} = \{\sqrt{1}, ..., \sqrt{n}\}$, the set of possible terminals (roots)
b.  $C_{\text{Lex}} = \{l_1, ..., l_n\}$, the set of category labels $(N, V, D, C, T, ...)$

(21) $E_{\text{XP}}$: an ordering on $C_{\text{Lex}}$, giving nominal and verbal extended projections

(22) $\{\langle N, Cl \rangle, \langle Cl, Num \rangle, \langle Num, D \rangle, ...\}$

(23) $R_{\text{Lex}}$ provides the base of the recursive definition of syntactic objects; $C_{\text{Lex}}$ labels these. No functional lexical items in the usual sense.
Unary Merge

Self-Merge is Internal Merge

(24)  
  a. Select x from the workspace/lexicon  
  b. x is a term, hence part of x  
  c. so Merge \{x, x\} is well-formed as an instance of Internal Merge.
Unary Merge
A Metaphor

Think of fragments of ExPs being like spears that you thrust into the guts of an element of RLex.

So what is in RLex? Elements identified as either semantically or morphophonologically discrete.
Unary Structures

\[
\begin{array}{cccc}
D & D & C & C \\
\text{Num} & \text{Num} & T & T \\
\text{Cl} & \text{Cl} & \text{v} & \text{Pass} \\
N & \sqrt{\text{bag}} & V & \sqrt{\text{go}} \\
\sqrt{\text{bag}} & & \sqrt{\text{go}} & \\
\end{array}
\]

Partitioning function of lowest label (selection)
Binary Structures

Labels, rather than structural distinctions (complement vs specifier) drive the compositional semantic interpretation.

Graphs showing the syntactic structures for the sentences:
- “Lilly jumps” with labels D, V* (V), V
- “Anson falls” with labels D, V* (V), V
- “Lilly bites Anson” with labels D, V* (V), V
Breaking Symmetry

The system developed so far is symmetrical. We need to impose asymmetries on it for the purposes of the interfaces (compositional meaning and linear order):

(25) (functional) complementation is defined via the mother and one of the daughters being in the same EP (cf. Bury 2003), with the mother higher or equal in the EP and the daughter interpretable as a functional complement. Specifiers are licensed by an uninterpretable feature that agrees with the mother.

\[
X_4
\]

\[
\text{u}X_{10} \quad X_3
\]
Ruling out Roll-up

Ungenerable. To roll-up, you need to take part of a functional complement line and make it a specifier. But for something to be a functional complement, it must have an interpretable category feature, while to be a spec, it must have an uninterpretable one. Crash.

\[
\begin{array}{c}
X_5 \\
\downarrow \\
X_3 \quad X_4 \\
\downarrow \\
\langle X_3 \rangle \\
\downarrow \\
\ldots
\end{array}
\]

Cf. Abney’s observation about impossibility of extraction of complements of functional categories.
Ruling out Head Movement

No heads, so no head movement creating structural changes. Use Brody-style direct linearisation diacritics for height of spellout.

Because linearization is direct, there is no ‘raising’ or ‘lowering’ in syntax. Improvement on standard story.

σ diacritic specifies the parametric point of spellout just as ‘strong’ T or whatever does.
Head movement unstatatable anyway

Just as well:
Taking the classical binary definition of Merge it’s not even clear how to do head movement.

(26)  
  a. select X  
  b. select x, the head of X  
  c. select y, a term of X  
  d. Merge(y, x)

Here the selection of the arguments of Merge has to go beyond what the actual arguments of Merge are. Similar to Chomsky’s worries about Parallel Merge which go beyond binarity.
Back to Vietnamese Classifiers

\[ \text{Num@=} \text{cai} \]
\[
\begin{array}{c}
\text{hai} \\
\text{Cl} \\
\text{uCl} \\
\sqrt{\text{N}} \\
\sqrt{\text{bao}}
\end{array}
\]

\[ \text{Num@=} \text{bao} \]
\[
\begin{array}{c}
\text{hai} \\
\text{Cl} \\
\text{uCl} \\
\sqrt{\text{N}} \\
\sqrt{\text{MEASURE/bao/}}
\end{array}
\]

(27) two thing bag vs two bag orange
Back to Gaelic Event Passives

(28) Chaidh Anson a phògadh

(29) suppletive: chaidh (past), thèid (future), rach- (conditional), dol (non-finite)
Back to Koasati Null Roots

```
T[1sg]
    /
   /\v
 pro Appl@=0-ka-l
    /
   /\ín V
      /
      \√TRANSFER

(30) ín-ka-l
    3IO-0-v-1sgS
    'I give x to y'
```
aSoS analysis of relational nouns

```
  P
 /  \
YP   P
|    |
...edge...   K:P=of
|       |
D     √PART
|     |
N     √table
```
Back to Diyari Auxiliaries

(31) Ngathu nhinha nhayi-rna wanthi-yi
    I-erg him-acc see-prt search-pres
    ‘I saw him long long ago’

\[
\begin{align*}
\text{Evid} \\
\text{T} \\
\text{Asp} \\
\text{vP} \\
\text{ngathu nhinha nhayi-rna} \\
\text{Asp@=wanthi-yi} \\
\sqrt{wanthi}
\end{align*}
\]
Back to Nimboran Null Roots

(32) 0-rár-nhát-t-u
   laugh.sg-Part-Iter-Pres-1
   ‘I laugh repeatedly here’

Take rár here to be the non-semantically contentful root, with semantics associated at a higher level of structure (like semantic suppletion). A bit hand wavey!
Basic proposal: need either semantic or morphophonological discreteness to be an atomic syntactic object → rooted EP structures.

Adger 2010/2013 suggested that these rooted EP structures provide loci for routinization and for both morphological and semantic irregularity.

Morphosyntactic variability (of the Labovian sort) can also be stated over this

Suffixal morphological structure is then fundamentally finite state (Karttunen, Svenonius etc.)

Lexical access for generation searches from top of EP, running through irregulars, and applying rule if need be (cf Yang).
Buckie Variable agreement increases in relative clauses.

(33) The quines ken/kens him
(34) The quines that ken/kens → more -s in relatives
(35) a. \([V \, v@ \, T[\text{pres}] \, C[\text{rel}]]) \leftrightarrow -s
     b. \([V \, v@ \, T[\text{pres}]]) \leftrightarrow -s
     c. \([V \, v@ \, T[\text{pres}]]) \leftrightarrow -0

Prediction that internal conditioning factors should be EP internal.

(36) Irregulars faster accessed than regulars (19ms, Lignos 2011).
(37) Napps 1989 results that suppletive priming behaves like semantic rather than morphemic priming expected on this model.
Interpretability and specifier licensing

Alternative:

(38) in a labelled structure \([\gamma \ldots \beta \ldots]\), \(\beta\) can bear a syntactic relation to \(\gamma\) iff \(\gamma\) and \(\beta\) are in a Universal Extended Projection \(\Sigma\) and \(\text{label}(\gamma) \geq \text{label}(\beta)\) in \(\Sigma\)

(39) a. in a labelled structure \([\gamma \alpha \beta]\), \(\beta\) is assigned the syntactic relation of being an i-complement of \(\gamma\) iff the categorial feature of \(\beta\) is interpretable.

b. in a labelled structure \([\gamma \alpha \beta]\), \(\alpha\) is assigned the syntactic relation of being an i-specifier of \(\gamma\) iff \(\beta\) is assigned the syntactic relation of being an i-complement of \(\gamma\).
Proposal

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The Overarching Issue

Empirical expectations

The Syntax of Substance System Analyses

Back to Broader Issues

Extras

\[ \text{Foc} \]

\[ \text{uMod}_\text{σ}=\text{eat} \]

\[ \text{v} \]

\[ \langle \text{Lilly} \rangle \quad \text{O} \]

\[ \text{KP} \]

\[ \text{the mouse} \]

\[ \sqrt{\text{eat}} \]

\[ \text{C} \]

\[ \text{Lilly} \quad \text{Mod} \]

\[ \langle \text{uModP} \rangle \quad \text{Mod} \]

\[ \sqrt{\text{will}} \]
Uniform analysis of auxiliaries

\[ T_\sigma = \text{might} \]

\[ \text{Lilly} \]

\[ \text{Mod} \]

\[ \text{uMod}_\sigma = \text{have} \]

\[ \text{Perf} \]

\[ \text{uPerf}_\sigma = \text{eaten} \]

\[ \text{v} \]

\[ \langle \text{Lilly} \rangle \]

\[ \text{O} \]

\[ \text{KP} \]

\[ \text{V} \]

\[ \text{the mouse} \]

\[ \sqrt{\text{eat}} \]

\[ \sqrt{\text{have}} \]

\[ \sqrt{\text{might}} \]
The Pesetsky-Torrego gambit generalized to argument licensing

(40)

\[
\begin{array}{c}
\text{v} \\
<\text{uK, uV}> & \text{V} \\
\text{D} & \sqrt{\text{jump}} \\
\hline
\text{Lilly}
\end{array}
\]

- \text{V} is the i-complement of \text{v}, as usual
- \text{D} is the i-complement of \text{<uK, uV>}, since \text{D} is interpretable, \text{K} and \text{D} are \in \text{UEP}_N
- \text{<uK, uV> can be assigned a syntactic relation, since \text{v} and \text{V} are } \in \text{UEP}_V
- \text{so } \text{<uK, uV> is the i-specifier of v.}
The Pesetsky-Torrego gambit generalized to argument licensing

(41)

\[
\begin{array}{c}
T \\
\langle uK, uV \rangle \\
D \\
\langle Lilly \rangle \\
V \\
\sqrt{\text{jump}} \\
\text{Lilly}
\end{array}
\]

- \(v\) is the i-complement of \(T\), as usual
- \(D\) is the i-complement of \(\langle uK, uV \rangle\), since \(D\) is interpretable, \(K\) and \(D\) are \(\in EP_N\)
- \(\langle uK, uV \rangle\) can be assigned a syntactic relation, since \(T\) and \(V\) are \(\in EP_V\)
- so \(\langle uK, uV \rangle\) is the i-specifier of \(T\).
Open questions

Questions open up about similarity of argument licensing inside EP$_N$ and EP$_V$:

- $\langle uK, uV \rangle$ = argument licensing in EP$_V$ (nominative, absolutive, dative, accusative, etc)?
- $\langle uK, uN \rangle$ = argument licensing in EP$_N$ (genitive, various ‘prepositional’ cases)?
- Are Ps $\langle uN, uV \rangle$, thus allowing them to appear as arguments in the EPs of N and V?

$$\langle uN, uV \rangle \sigma = \text{at}$$

```
< N, V >
```

```
< uK, uN/uV >       < N, V >
```

```
Lilly
```

```
√LOC
```