Little $v$ as domain/phase delimiter
Using phonological evidence for syntactic domain

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Introduction

Outline

- Look at evidence for phases
  - Syntax
  - Phonology
  - Semantics
- Look at Spell-out of little v
- Look at articulation of v
- Look at extension of little v phase: root suppletion
- Conclusion
Phases and Syntax

Evidence for adjunction to VP (ie. vP)
- Can conclude that vP is a phase

- pronoun$_1$ must be below QP$_1$ for bound pronoun interpretation
- r-expression$_2$ must be above pronoun$_2$ to avoid Principle C violation

\[(1) \quad [\text{which. . .} \text{pronoun}_1 \ldots \text{r-expression}_2 \ ]\]

a. . . .QP$_1$ . . . [ok] . . . .pronoun$_2$ . . . [*]. . .
b. . . .pronoun$_2$ . . . [*] . . . .QP$_1$ . . . [*]. . .
Phases and Syntax

(2) \[\text{[which. . .}_{\text{pronom}1} . . .}_{\text{r-expression}2} \]
   a. \[. . .}_{\text{QP}1} . . [\text{ok}] . . .}_{\text{pronom}2} . . .}_{*}\]
   b. \[. . .}_{\text{pronom}2} . . .}_{*}\] . . .}_{\text{QP}1} . . .}_{*}\]

(3) [Which (of the) paper(s) that \text{he}1 gave \text{Ms. Brown}2 ] did every student1 [ ok ] ask her2 to read [ * ] carefully?

(4) *[Which (of the) paper(s) that \text{he}1 gave \text{Ms. Brown}2 ] did she2 [*] ask every student1 to revise [*] ?

\textbf{Punchline:} The [ok] position is the edge of the vP, therefore there must be an escape hatch here for movement, therefore this is a phase.

(See Legate for similar arguments for unaccusative and passive vPs being phases but cf Den Dikken 2006.)
Little v as domain/phase delimiter

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Introduction
Phases and Syntax

Phases and Syntax

Nissenbaum 2000

Phases and Syntax/Semantics

- Movement targets vP edge
- This configuration allows for predicate modification
- This in turn creates a parasitic gap constructions
Nissenbaum 2000

(5) Simple Wh-movement targets vP edge

```
CP
   /   
  DP    IP
     /   
Which article DP vP
       /   
       DP vP
          /   
          John vP
             /   
              vP (Wh-extraction)
                 /   
                 ... file t_{whicharticle}
```

... file t_{whicharticle}
Nissenbaum 2000

(6) Predicate created at vP allows for predicate modification

```
CP
  /\      /
   vP  t
/\    /\  /
DP IP DP
  /\  /\ /
 Which article John vP (Predicate modification)...
  /\  /\ /
  /\  /\ /
 t\whicharticle vP vP
   \  \  \
    \  \  \
     \  \  \
      \  \  \
       \  \  \
         \  \
          \ 
           
... file t\whicharticle Opj without reading tj
```
Plural clitics in Dinka show that there is movement to edge of vP

(7) Plural clitic *ke* at every vP edge

a. Yeŋà ye tàak, [cìi Bôl tìŋ] who IMPF.2SG think PRF.NS Bol.GEN see
   Who do you think Bol saw?

b. Yeyiŋà ye ke tàak, [cìi Bôl ke tìŋ] who PL IMPF.2SG PL think PRF.NS Bol.GEN PL see
   Who all do you think Bol saw?
Interim summary:
  Syntactic evidence for movement to edge of predicate (vP)?
    Correlates with Chomsky’s subarrays of lexical items
    Subarrays containing C or v: loosely related to propositions
CASE 1 (tried and true):

**Marantz (2007) and Michaels (2009)**

**Lexical vs. productive causatives (w.r.t phonology)**

(8) Lexical vs. productive causatives in Malayalam

a. bootṭə muṇŋ-i  
   boat sink-PAST  
   ‘The boat sank.’

b. kuṭṭi bootṭə mu-kk-i.  
   child boat sink-CAUSE-PAST  
   ‘The child sank the boat.’ /muṇŋ-kk-i/

c. kuṭṭi bootṭə muṇŋ-icc-u.  
   child boat sink-CAUSE-PAST  
   ‘The child caused the boat to sink.’ /muṇŋ-kk-i/
(9) Direct (lexical) causative

\[ \begin{array}{c}
TP \\
| \\
| \\
\nuP \\
| \\
\nuP \\
| \\
\nuP \\
| \\
V \\
| \\
\nu \\
| \\
\nu \\
| \\
\nu \\
| \\
V \\
| \\
t_i \\
\muŋŋ \\
- kk
\end{array} \]

Attached within a phase: /μŋŋ-kk-i/ → mu-kk-i
(10) Indirect (productive) causative

Attached outside a phase: /μηη- kk-i/ → μηη-icc-u
CASE 2 (something new from Ojicree):

(11) Quantifier associated with object:  (Slavin 2012)

a. Aasha kii-caaki-ataawaake shiwiyahii-n
   already PAST-all-sell candy-PL
   ‘S/he has already sold all the candies.’

b. Aasha ni-kii-caaki-oshihcike kinooshe-k
   already 1-PAST-all-clean.fish fish-PL
   ‘I have already cleaned all the fish.’

c. Aasha ni-kii-caaki-aapacihtoon ohowe moohkoman
   already 1-PAST-all-use.TR this knife
   ‘I’ve worn out this knife already.’
Spell-out of phasal little \( v \)

(12) Quantifier associated with subject (Slavin 2012)

a. Mekwaac caaki-atawaake-wak pankii shiiwyahii-n right.now all-sell.VAI-PL some candy-PL
   ‘They are all selling (some) candy right now.’

b. Mekwaac caaki-oshihcike-wak pankii kinooshe-k right.now all-clean.fish-3PL some fish-PL
   ‘They are all cleaning (some) fish right now.’

c. Aasha ni-kii-caaki-aapacihtoo-min ohowe moohkoman already 1-PAST-all-use.TR-1PL this knife
   ‘We’ve all used this knife already.’

- When the quantifier is in the same phase as the stem, the vowel hiatus must be resolved
- When the quantifier is in a separate phase, vowel hiatus is not resolved
- The object may be within the vP or move outside
- The subject must be outside of the first phase
Phases and Phonology

▶ Interim summary:
  - Spell-out creates ‘hard’ phonological edges and allows combinations that are illicit phase internally
  - vP is a phase
  - little v is part of what is spelled out (will come back to this)
Marantz (2007): Allosemy
Lexical vs. productive causatives (w.r.t semantics)
idiosyncratic semantics within lexical (but not productive) causatives
Examples:

(13) **English**

a. The clown reddened his cheeks.
b. The clown caused his cheeks to redden.

(14) **Tagalog**: Lexical causative *pag-

a. *sumabog* (um + sabog) ‘to explode’
b. *pagsabog* (pag + sabog) ‘to scatter’ (does not mean ‘cause to explode’)

Will come back to this w.r.t. phase extension....
**Spell-out of little v**

**Question**: What gets spelled out exactly??

- We have seen that little v is part of what is spelled out
- so it appears that the phasal head IS spelled out (not its complement)
- A bit of background
Spell-out of little $v$

**Chomsky** and spell-out: First pass (2000: 108)

A phase is a sub-array of the Lexical Array

- “LA$_i$ contains an occurrence of $v$ or of $C$”
- “Derivations proceed phase by phase”

**Nissenbaum** (2000:164 (9)) and Spell-out

Spellout applies to the internal domain on each cycle

“The spellout property of head $H$ is satisfied by applying rules of phonology to the sister of $H$. “
Spell-out of category-defining little $v$

Newell 2008:

- Category defining heads must be spelled out with the complement
- Can see this in stress shift but also in other phonological phenomena

(15) From Marvin (2002)

a. twinkling [twinkliŋ] – an event of twinkling
b. twinkling [twinkliŋ] – a short instance

(Marvin has the category defining head spelling out its complement (Marvin 2002: 33-34))
Spell-out of category-defining little v

Marvin’s representations
Newell’s Spell-out domains (similar to Marantz’s 2007 ‘inner morphology’)

(16) twinkling [twinkəlin] – an event of twinkling

(17) twinkling [twinklin] – a short instance
Spell-out of phasal little $v$

Have already seen this with Marantz/Michaels and lexical causatives

(18) Direct (lexical) causative

```
TP
   vP
      V
         V  v
            t_i  mŋŋ -kk
```

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Spell-out of phasal little \( v \)

- Mini-summary
  - Syntax: there is a domain edge between subject and object
  - Semantics: there is a domain edge between the productive causative morpheme and the root (but not between the lexical causative morpheme and the root)
  - Phonology: there is a domain edge between the productive causative morpheme and the root (but not between the lexical causative morpheme and the root)

**Question**: Where is exactly is the domain edge?
Articulation of little \( v \)

- Little \( v \) has undergone fine-tuning (articulation)
- At this workshop: ... too many to mention...

Travis (2000): Malagasy phonology, must extend phase to one more projection – Event

**Lexical Causative** \((an)\): \(an + f = am\)

\[\implies\] Nasal substitution/fusion/coalescence

\((19)\) Lexical causative: \(\sqrt{fatra}\): measure

<table>
<thead>
<tr>
<th>INTRANSITIVE</th>
<th>m+i+fatra</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘x is measured’</td>
<td>mifatra</td>
</tr>
<tr>
<td>LEXICAL CAUSATIVE</td>
<td>m+an+fatra</td>
</tr>
<tr>
<td>‘y measures x’</td>
<td>n+f (\rightarrow) m</td>
</tr>
<tr>
<td></td>
<td>mamatra</td>
</tr>
</tbody>
</table>
Articulation of little $\nu$

**Productive Causative**: $an_{PC} - f - an_{LC}$: (where $f$- is in $E$(vent))

$(an)$: $an + f = a^m p$

$\Rightarrow$ Prenasalization

(20) Productive causative (PC): $\sqrt{fatra}$: measure

| PC of intransitive | $m + an + f + i + fatra$
|------------------|---------------------------|
| ‘$z$ makes $x$ be measured’ | $n + f \rightarrow^m p$
|                  | $mampifatra$ |
| PC of lexical causative | $m + an + f + an + fatra$
| ‘$z$ makes $y$ measure $x$’ | $n + f \rightarrow^m p$; $n + f \rightarrow m$
|                  | $mampamatra$ |
Articulation of little $v$

(21) Malagasy Productive Causative
Articulation of little \( v \)

- This additional category, however, asymmetrically c-commands the External Argument
- \( E \) triggers movement of the \( V \) to above (i.e. left of) the Agent in Spec, \( vP \)

- **Malagasy Circumstantial Topic construction**
- Something other than the Agent or Theme is the subject (here the Instrument)
- Order: [ \( V \) Agent Theme ] Subject\(_{Instr} \)

\( (22) \)

\begin{align*}
{\text{Anasan’ ny }} & \quad \textit{lehilahy} \quad \text{lamba ny savony} \\
\text{PRES.CT.} & \quad \text{wash’DET man clothes DET soap} \\
\text{‘The man is washing the clothes with the soap.’}
\end{align*}
Articulation of little v

Articulation of little v as domain/phase delimiter

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Articulation of little v

An extra gift from Malagasy:
there is head movement after phasal spell-out (vs. Nissenbaum)

Circumstantial Topic of Productive Causative

(23) Ampamaran-dRakoto mpivarotra ny menaka.
AN-F-AN-fatra-ANA-Rakoto seller/s DET oil
‘Rakoto makes sellers measure the oil.’

► Can see that there has been Spell-out by the prenasalization
► Can see that there has been head movement by the position of
the verb to the left of the Agent
► Therefore there has been post-spellout head movement
Extension of first phase

**Question:** Can this first phase be extended?

Embick (2010: 16): Root suppletion: \( \text{go} + \text{PAST} = \text{went} \)

```
  T
 /\  \   \n v   T_{past}
 /\  \   \n\text{ROOT} v
```

“outer non-cyclic heads can see across an inner cyclic node”
(and \( T \) must be phonologically adjacent to \( \text{ROOT} \))

Therefore non-cyclic \( T \) can see \( \text{ROOT} \) across the cyclic node \( v \)

\( \implies \) so \( v \) isn’t the edge of a spell-out domain?
Extension of first phase

Syntax

- Fox’s analysis requires that the escape hatch be below the subject
- Presumably, if T licenses the subject in its Specifier position, T cannot represent the phase edge
- Some possible work arounds
  - The wh-moved element tucks in under the subject?
  - The wh-moved element adjoins to T’ (or lower TP – à la tucking in)?

Not conclusive...
Extension of first phase

Semantics

Marantz (2010): why doesn’t the semantics also extend to the T?

“The additional constraint on contextual allomorphy of phonological adjacency follows if contextual allomorphy is sensitive to a phonological notion of “combines with” – adjacent items combine with each other (directly) phonologically. If we apply this idea to the semantic domain, we predict that contextual allomorphy should be restricted to semantic adjacency, i.e., to elements that combine (directly) semantically.”

- There is no semantic adjacency (since little v has semantics, T will never be adjacent to the root semantically)
- Therefore, do not expect allomorphy with T

Not conclusive...
Phonology

(24) Ojibwe

a. Hiatus resolution by vowel deletion in inalienable DP
   no:komis 'my grandmother'
   ni-o:komis '1-GRANDMOTHER'

b. Hiatus resolution by C-epenthesis in alienable DP
   ni-de:mikwa:n 'my spoon'
   ni-e:mikwa:n '1-SPoon'

Conclusion: inalienable within same spell-out domain and alienable outside the spell-out domain of root (but that’s another story/paper).

N.B. There is C insertion here because the prefix is monomoraic (see Piggott forthcoming for details).
Extension of first phase

Ojibwe tense: Hiatus resolution by C-epenthesis

(25) nigàdá:gamòsè:
    ni-ga-[a:gam-ose:ᵻP]
    ‘1-FUTURE-SNOWSHOE-WALK’
    ‘I will (probably) walk in snowshoes’

Phonological reason why it cannot be the case that T is always part of first phase

- But note that this is not root suppletion
- Nevertheless, vP must be spelled out separately from T
Remaining questions/issues

Many things to work out

- What IS the domain of root suppletion (if not a phase)?
  - See Bobaljik and Harley for Hiaki root suppletion triggered by number of the internal argument

- What types of phonology happen within vs. across phase boundaries?
  - Within a phrase it is more destructive than across a phase but are there principled differences
Conclusions

- Local conclusions
  - Some projection above vP shows up as a phase in phonology
  - (have no evidence from phonology that there are phases below this??)
  - This phase is not automatically extended to T (à la Embick)

- Larger conclusions
  - When syntax doesn’t give enough information, phonology is a nice thing to try
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