Syntactically underspecified Voice: Evidence from the causative alternation in Choctaw

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1 Introduction

Some fragments of syntax we often see:

(1) a. $X^0$ with specifier

```
   ... XP Y^0 Spec ...
   ... X^0 ...
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b. $X^0$ without specifier

```
   ... XP Y^0 ...
   ... X^0 ...
```

Some common expressions in syntax:

(2) a. “$X^0$ can take a specifier”

b. “$X^0$ must have a specifier”

c. “nothing can merge as the specifier of $X^0$”

A topic of much theorizing: What are the properties or features of $X^0$ which regulate whether Spec-XP can serve as a landing site for movement (internal merge)?

→ e.g. edge features (Chomsky 2000)

We can ask the same question about external merge: what properties or features of $X^0$ regulate whether $X^0$ is a potential base-generation site of arguments?

Today:

- Support for the proposal that there are three Voice heads (Kastner 2016, 2020; Nie 2020)
  - Voice$_{[N]}$: requires a NP specifier.
  - Voice$_{[-N]}$: bans an (NP) specifier.
  - Voice$_{[]}$: Voice places no syntactic restrictions on the presence/absence of a (NP) specifier.

- Evidence from argument structure in Choctaw

Roadmap:

§2 Choctaw basics

§3 The puzzle: morphology in the causative alternation

§4 The basic proposal: syntactically-underspecified Voice$_{[]}$

§5 Aside: underspecified Voice$_{[]}$ in a cross-linguistic perspective

§6 Two ways for a root to constrain Voice

§7 Doing things with underspecified Voice$_{[]}$: non-valency-increasing causatives

§8 More on $\sqrt{\text{ROOT}}\leftrightarrow\text{Voice}$ selection: the pluractional alternation

§9 Conclusion

2 Choctaw basics

2.1 The language

- Western Muskogean language, spoken in Mississippi (all ages) and Oklahoma (mainly elderly people).

- Data comes largely from fieldwork conducted in Pearl River, MS and Bogue Chitto, MS, 2017-2019. See my dissertation: Tyler (2020).

- Previous work on Choctaw:
  - Work by missionaries (Byington 1870, 1915)

1. See Adger (2003), Müller (2010) for some previous discussion of this issue.

2. Similar questions exist for internal arguments, which various frameworks take to be externally-merged as sister to $v$ or the root. I do not tackle this question here, purely because Choctaw gives us more empirical purchase on external arguments and the features of Voice.

3. I assume Choctaw noun phrases are headed by $n/N$, but I do not engage with this issue here.
2.2 Choctaw syntax

Fairly rigid SOV; NOM/OBL(ique) case-marking:

(3) Alikchi-\(\text{yat}\) alla-\(m\)-\(\text{a}\) masaali-ch-aachi-h.
    doctor-\(\text{NOM}\) child-DEM-\(\text{OBL}\) heal-CAUS-FUT-TNS
    'The doctor will heal that kid.'

Pervasive argument drop:

(4) pro pro pro Im-aa-tok.
    DAT-give-PST
    'She gave it to him.'

1st and 2nd-person arguments are indexed by verbal agreement—they show an active/agentive/semantic/split-S alignment:

(5) a. \(\text{Ii}-\text{taloow-aachi-h.}\)
    1PL.ERG-sing-FUT-TNS
    'We will sing.'

b. \(\text{Pi}-\text{ll-aachi-h.}\)
    1PL.ABS-die-FUT-TNS
    'We will die.'

c. Ohooyo-yat pi-pjisa-tok.
    woman-\(\text{NOM}\) 1PL.ABS-sec.NG-PST
    'The woman saw us.'

Simplified analysis of agreement: it diagnoses internal vs. external argument position:

(6) a. Unergative
    \(\text{VoiceP} \rightarrow \text{ABS} \rightarrow \text{vP} \rightarrow \sqrt{\text{v}}\)

b. Unaccusative
    \(\text{VoiceP} \rightarrow \text{NP} \rightarrow \text{vP} \rightarrow \sqrt{\text{v}}\)

(7) Transitive
    \(\text{VoiceP} \rightarrow \text{ERG} \rightarrow \text{NP} \rightarrow \text{vP} \rightarrow \sqrt{\text{v}}\)

2.3 The verb complex

Suffixes realize 1SG ergative agreement(!), mood, tense, clause-type, evidentiality, switch-reference a.o.:

(8) anopoli -l -aachi -ho -km -\(\text{a}\)
    speak -1SG.ERG -FUT -TNS -if -DS
    'if I'm going to speak...'

Some aspectual information is realized by morphophonological templates, which apply to the verb stem.

→ These are called 'grades' in the Muskogean literature (see Nicklas 1974; Ulrich 1986; Broadwell 2006 for in-depth discussion):

---

4. SOV is rigid for nominal arguments. Clausal arguments can be preposed or extraposed much more freely.

(9) alhkama-h
    it closed
alhkáma-h
    it is closed (result state)
alkáhma-h
    it suddenly closed
alkáàma-h
    it finally closed
alkkaháma-h
    it kept on closing

Simplified verb template:


Today: we will mostly look inside the stem, which corresponds to VoiceP.

3 The puzzle: morphology in the causative alternation

Morphologically-unmarked causative alternation in English:

(11) a. Suzie smashed the cup.
    b. The cup smashed.

Morphologically-marked causative alternation in Choctaw:

(12) a. fakooh-a
    it peeled off
    [non-active]
    fam-a
    he was whipped
    [active]
    b. fam-li
    she peeled it off
    she whipped him

Plausible analysis:

(13) a. fam-a-h ‘he was whipped’
    b. fam-mi-h ‘she whipped him’

→ This follows the common base approach to the causative alternation (Pylkkänen 2002, 2008; Alexiadou et al. 2006, 2015; Schäfer 2009).

• Support comes from agreement properties of active/non-active alternants:

(14) a. Sa– faam-a-tok.
    1SG.ABS–√WHIP–NACT–PST
    ‘I was whipped.’
    2SG.ERG–1SG.ABS–√WHIP–ACT–PST
    ‘You whipped me.’

• Are these two Voice heads—Voice[ACTIVE] and Voice[NON-ACTIVE]—sufficient?

→ Doesn’t seem so.

Observation #1: there’s a lot of allomorphy in the active/non-active forms

(15) a. i. bash-a ‘it got cut’
    ii. bash-li ‘she cut it’
    [−a/-li]
    b. i. apissa-Ø ‘it is straight’
    ii. apissa-li ‘she straightened it’
    [−Ø/-li]
    c. i. haloppa-Ø ‘it is sharp’
    ii. haloppa-chi ‘she sharpened it’
    [−Ø/-chi]
    d. i. takaa-Ø ‘it hung (sg.)’
    ii. takaa-chi ‘she hung it (sg.)’
    [−li/-chi]
    e. i. a<h>-chifa ‘it got washed’
    ii. achiifa-Ø ‘she washed it’
    [←l⟩/−Ø]
    f. i. a-l<wash>-a ‘it (got) fried’
    ii. awash-li ‘she fried it’
    [←l+⟩/−a/-li]
    g. i. lhipii-ya ‘it overturned’
    ii. lhipii-chi ‘she overturned it’
    [−a/-chi]

Observation #2: the suffix -li gets re-used to form both non-actives and actives—cf. (15a) vs. (15d).

7. The range of interpretations of Choctaw non-actives is much larger than that of English alternating intransitives like (11b). Choctaw non-actives may be interpreted as passives (e.g. (12b)) or reflexives (not shown). See Alexiadou and Doron (2012) for analysis of a similar range of interpretations for non-actives in Greek and Hebrew.
Three patterns (collapsing -a/-l> and excluding Øs):

(16) | non-active | active | example root |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-a/&lt;/l</td>
<td>-li</td>
<td>/BASH 'cut' (cf. 15a)</td>
</tr>
<tr>
<td>-li</td>
<td>-chi</td>
<td>/TAKA 'hang' (cf. 15d)</td>
</tr>
<tr>
<td>-a/&lt;/l</td>
<td>-chi</td>
<td>/LEHIPI 'overturn' (cf. 15g)</td>
</tr>
</tbody>
</table>

Generalizations:

(17) a. -a/</l> only forms non-actives
b. -chi only forms actives
c. -li forms actives that alternate with -a, and non-actives that alternate with -chi

Organized another way:

(18) -a/</l> (non-active) -li (non-active/active) -chi (active)

<table>
<thead>
<tr>
<th><img src="image1.png" alt="Diagram" /></th>
<th><img src="image2.png" alt="Diagram" /></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3.png" alt="Diagram" /></td>
<td><img src="image4.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

- Possible analysis: accidental homophony.
  - VoiceACTIVE and VoiceNON-ACTIVE both have an allomorph -li.
  - Let’s take this as the hypothesis to beat.8

4 The basic proposal: syntactically-underspecified Voice[1]

(19) -li = Voice[1]

8. There’s another alternative hypothesis, which is that -li/-chi-alternating roots are not true non-active/active pairs, but are instead unergative/causative-of-unergative pairs. See my dissertation (Tyler 2020) for evidence that -chi can form true lexical (rather than syntactic) causatives, and that alternating intransitive -li verbs truly have internal-argument subjects.

The remainder of this section:

§4.1 Alternating triplets
§4.2 Evidence from morphosyntax that [non-active -li = active -li].
§4.3 Voice[1] (-li) outside the causative alternation.
4.1 Alternating triplets

If there are three Voice heads, at least some roots should be able to take all three, right?

(22)  

<table>
<thead>
<tr>
<th>Voice</th>
<th>-a/-(non-active)</th>
<th>-li (non-active/active)</th>
<th>-chi (active)</th>
</tr>
</thead>
<tbody>
<tr>
<td>√APATOCO</td>
<td>apakfoow-a ‘was wrapped’</td>
<td>apakfoh-li ‘wrapped’ (tr.)</td>
<td>apakfoo-chi ‘wrapped tightly’ (tr.)</td>
</tr>
<tr>
<td>√APISSA</td>
<td>apissa-Ø ‘is straight’</td>
<td>apissa-li ‘straightened’ (tr.)</td>
<td>apissa-chi ‘focused on’ (tr.)</td>
</tr>
<tr>
<td>√CHITO</td>
<td>chito-Ø ‘is big’</td>
<td>chitoo-li ‘loudened’ (tr.)</td>
<td>chitoo-chi ‘enlarged’ (tr.)</td>
</tr>
</tbody>
</table>

- N.B. Slight complication: there aren’t many clear -a/-li/-chi triplets.

→ See Hebrew and Tagalog for better examples (§5).

4.2 The common syntactic behavior of -li

Various authors (Nicklas 1974:258, Ulrich 1986:270-276, Broadwell 2006:130,219-220) note that -li is ‘optionally deleted’ before participial -t:

- Active (transitive) -li is deletable before -t:

(23) a. **kooli ‘smash.ACT’**
    aapisa **koo-t**  ammohmi-h
    window √SMASH-PTCP do.excessively-TNS
    ‘He really smashed the window.’

b. **pashpoli ‘sweep.ACT’**
    shinok **pashpo-t**  tahli-hm-at ittahoobi-t ashaachi-tok
    sand √SWEEP-PTCP finish.ACT-when-ss gather-PTCP put-PST
    ‘When he finished sweeping the sand he piled it together.’

c. **shaali ‘carry’**
    shaal-Ø  iya-tok
    √CARRY-PTCP go-PST
    ‘I carried it out.’

- Non-active (intransitive) -li is also deletable before -t:

(24) a. **binili ‘sit’**
    issoba  q-binii-t  iya  sa-nna-h,
    horse SUP √SIT-PTCP go 1SG.ABS-want-TNS
    ak-iiyo-kish-a-haatok-q
    1SG.IRR-go.NEG-yet-TNS-because-DS
    ‘I want to ride a horse because I haven’t done that before.’

b. **masaali ‘heal (intr.)’**
    masaal-Ø  iyaa-li-tok
    √HEAL-PTCP go-1SG.ERG-PST
    ‘I was getting better.’

Upshot:

- -li-deletion before -t can target active and non-active -li (but not -a or -chi).9
  - This would be hard to account for under an ‘accidental homophony’ account.

4.3 Voice (-li) outside the causative alteration

Voice(-li) co-occurs with some non-alternating roots too.

- Three kinds of non-alternating verb formed with Voice(-li):

§4.3.1 Non-alternating actives/transitives

§4.3.2 Non-alternating non-actives/unaccusatives

§4.3.3 Unergatives

4.3.1 Non-alternating transitives with -li

(25) a. *hab-a-h
    hab-li-h  iya-tok
    she kicked/stepped on it

b. *halaal-a-h
    halal-li-h
    she pulled it

c. *polh-a-h
    polh-lhi-h
    she folded it

9. There is another kind of ‘-li-deletion’, before the causative suffix -chi. In Tyler (2020) I proposed that this is a separate phenomenon whereby Voice(-li) (-chi) is merged in the syntax in place of Voice(-li) (-a).
These roots only occur with Voice$_{[\_]}$, and not Voice$_{[-N]}$ or Voice$_{[+N]}$.

(26)
\[
\text{VoiceP} \\
\text{NP} \\
\text{vP} \\
\text{Voice$_{[\_] -li}$} \\
\text{NP} \\
\text{v} \\
\text{\sqrt{WALHAL}} \\
\text{\sqrt{CHAPO}} \\
\text{...}
\]

4.3.2 Non-alternating unaccusatives with -li

(27) a. walhal-li-h it boiled (of water)  
   *walhaa-chi

b. itibal-li-h she made a mistake/missed  
   *itibaa-chi

c. chapo-li-h it is sweet/tasty  
   *chapo-chi

Again, these root only occurs with Voice$_{[\_]}$ (and not Voice$_{[-N]}$ or Voice$_{[+N]}$).

(28)
\[
\text{VoiceP} \\
\text{vP} \\
\text{Voice$_{[\_] -li}$} \\
\text{NP} \\
\text{v} \\
\text{\sqrt{WALHAL}} \\
\text{\sqrt{CHAPO}} \\
\text{...}
\]

4.3.3 Unergatives with -li

(29) a. toksa-li-h she worked

b. shoohmalaa-li-h it shone

c. takiholaa-li-h she yelled

(30)
\[
\text{VoiceP} \\
\text{NP} \\
\text{v(P)} \\
\text{\sqrt{TOKSA}} \\
\text{\sqrt{SHOHMALA}} \\
\text{v} \\
\text{\sqrt{WALHAL}} \\
\text{\sqrt{CHAPO}} \\
\text{...}
\]

And again, these root only occurs with Voice$_{[\_]}$ (and not Voice$_{[-N]}$ or Voice$_{[+N]}$).

- See the appendix for unaccusativity diagnostics in Choctaw.

Is -li just part of the root?

Where -li does not alternate with -a or -chi, we can’t rule out the possibility that -li is just part of the root.

- Some quick stats from the current iteration of Choctaw lexicon project (very W.I.P.):
  - 1328 verbs total
  - 233 verbs that end in the string <li>
    - Of these, I count 131 that do not alternate
  - Comparison with other phonotactically-licit -lV endings:
    - 29 verbs that end in <la>
    - 16 verbs that end in <lo>

Tentatively: -li is a very common final suffix, speakers will decompose it even where it doesn’t alternate.
4.4  Interim summary: the distribution of Voice heads

Adding together the logical possibilities (and filling out some that we haven’t seen yet)...

<table>
<thead>
<tr>
<th>-al/-i- (non-active)</th>
<th>-li (non-active/active)</th>
<th>-chi (active)</th>
</tr>
</thead>
<tbody>
<tr>
<td>√CHAPO</td>
<td>chapo-li ‘be tasty’ (intr.)</td>
<td>–</td>
</tr>
<tr>
<td>√HAB</td>
<td>hab-li ‘kicked’ (tr.)</td>
<td>–</td>
</tr>
<tr>
<td>√ATAPA</td>
<td>–</td>
<td>atapa-chi ‘stopped’ (tr.)</td>
</tr>
<tr>
<td>√CHAMAKA</td>
<td>–</td>
<td>chamaaka-chi ‘rang’ (intr.)</td>
</tr>
<tr>
<td>√FAM</td>
<td>fam-a ‘was whipped’</td>
<td>–</td>
</tr>
<tr>
<td>√TAKA</td>
<td>–</td>
<td>takaa-li ‘hung’ (intr.)</td>
</tr>
<tr>
<td>√LHIPRO</td>
<td>lhipi-a ‘overturned’ (intr.)</td>
<td>–</td>
</tr>
<tr>
<td>√APAKFOO</td>
<td>apakfoow-a ‘was wrapped’</td>
<td>apakfooh-li ‘wrapped’ (tr.)</td>
</tr>
</tbody>
</table>

5 Aside: underspecified Voice in a cross-linguistic perspective

Kastner (2016, 2020) on Hebrew:

(32)  niXYaZ (Voice[-D]) XaYaZ (Voice[ ]-D) heXYiZ (Voice[+D])

| √JBR | ni ‘bar’ ‘was broken’ | javar ‘broke’ (tr.) | – |
| √NFL | – | nafal ‘fell’ | hepl ‘dropped’ |
| √SLJ | nexlaf ‘grew weak’ | – | hexlaf ‘weakened’ (tr.) |
| √KTB | nixtav ‘was written’ | kavat ‘wrote’ | hextiv ‘dictated’ |

Nie (2020:37ff.) on Tagalog:

(33)  ma (Voice[ ]-D) <um> (Voice[ ]-D) mag (Voice[ ]-D)

| √BASAG | na-basag ‘shattered (intr.)’ | b-um-basag ‘shattered (tr.)’ | nag-basag ‘shattered’ (tr.) |
| √BAGSAK | – | b-um-agasak ‘flunked’ (intr.) | nag-basak ‘flunked’ (tr.) |

See also Oseki and Kastner (2017) on Japanese.

6  Two ways for a \(\sqrt{\text{ROOT}}\) to constrain Voice

- How does a given \(\sqrt{\text{ROOT}}\) ensure that Voice {does/doesn’t/can} take an external argument in its specifier?

  → Two methods, each of which is independently necessary:
  
  §6.1 \(\sqrt{\text{ROOT}}\) directly controls its argument structure by \(\sqrt{\text{ROOT}}\leftrightarrow\text{Voice ‘selection’}\)

  §6.2 \(\sqrt{\text{ROOT}}\) indirectly controls its argument structure via contextual allosemy

6.1 Constraining the E.A.-taking properties of Voice by \(\sqrt{\text{ROOT}}\leftrightarrow\text{Voice ‘selection’}\)

We know that roots can be choosy about their argument structure.

- The root has a say in what heads constitute its local functional sequence up to Voice.

(34) a. VoiceP

NP vP Voice

b. VoiceP

NP ApplP Voice

\(\sqrt{\text{ROOT}}\) v

SELECTION?

\(\sqrt{\text{ROOT}}\) v

SELECTION???

→ ‘Selection’ may be the wrong term but I will continue to use it for now.\footnote{See Arad (2003, 2005); Marantz (2007, 2013) and Harley (2008), among others, for discussion of the kinds of demands that roots can put on their immediate surrounding syntactic structure, which goes beyond ‘simple’ head-to-head selection. It is an open question what role there is for arbitrary syntactic selection here at all, if the semantic properties of certain roots demand syntactic manifestation: for instance, agentive roots like \(\sqrt{\text{MUKU}}\) are illicit without sufficient functional structure to bring in agentive semantics.}
A root may ‘select’ Voice heads with a specified E.A.-taking property:

- If a root selects $\text{Voice}_{[-N]}$, then that root can appear with an external argument.
- If a root selects $\text{Voice}_{[+N]}$, then that root can appear without an external argument.
- But syntactic selection doesn’t constrain $\text{Voice}_{[-]}$.

→ For that, we need something else...

6.2 Constraining the E.A.-taking properties of Voice via contextual allomorphy

A recent line of work proposes that roots condition the interpretation of nearby functional heads.

- I.e. the LF equivalent of contextual allomorphy.

→ contextual allomorphy

§6.2.1 What is contextual allomorphy?

§6.2.2 How does contextual allomorphy help constrain the specifier-taking properties of $\text{Voice}_{[-]}$?

6.2.1 What is contextual allomorphy?

An example from Choctaw:

(35) Structure of non-active verb

\[
\begin{array}{c}
\text{VoiceP} \\
\text{vP} \quad \text{Voice}_{[-N]} \\
\text{NP} \quad \sqrt{\text{v}} \\
\sqrt{\text{ROOT}} \quad \sqrt{\text{v}}
\end{array}
\]

- Tyler (2020): Choctaw non-actives with -a can be shown to be:
  - inchoatives/statives — no implicit agent
  - lexical passives — implicit agent

(36)

<table>
<thead>
<tr>
<th>Implicit agent?</th>
<th>Example</th>
<th>Active alternant</th>
</tr>
</thead>
<tbody>
<tr>
<td>lexical passive</td>
<td>+</td>
<td>$\text{fam-a}$ ‘he was whipped’</td>
</tr>
<tr>
<td>inchoative</td>
<td>-</td>
<td>$\text{koo-w-a}$ ‘it smashed’</td>
</tr>
<tr>
<td>mediopassive</td>
<td>+/-</td>
<td>$\text{awash-a}$ ‘(was) fried’</td>
</tr>
</tbody>
</table>

- Analysis: $\text{Voice}_{[-N]}$ has at least two different allomorphs:¹³

(37) a. No implicit agent: $\text{Voice}_{[-N]} \leftrightarrow \lambda \tau. \tau$ (i.e. $\text{Voice}_{[-N]}$ is an identity function)

b. Implicit agent: $\text{Voice}_{[-N]} \leftrightarrow \lambda e. \exists x.AGENT(e, x)$ (i.e. $\text{Voice}_{[-N]}$ introduces an existentially-bound agent role)

- Roots may condition which allomorph of $\text{Voice}_{[-N]}$ is inserted:

(38) a. $\text{Voice}_{[-N]} \leftrightarrow \lambda \tau. \tau / \{\sqrt{\text{KOO}}, \sqrt{\text{KINAF}, \ldots}\}_-$

b. $\text{Voice}_{[-N]} \leftrightarrow \lambda e. \exists x.AGENT(x, e) / \{\sqrt{\text{FAM}}, \sqrt{\text{KINAF}, \ldots}\}_-$

Upshot:

→ Contextual allomorphy is real.

12. Some Choctaw non-actives also have a reflexive interpretation, but I set these aside here.
13. I assume Kratzer’s (1996) model of Neo-Davidsonian event semantics, wherein thematic roles are two-place functions that relate individuals and events. For other authors’ implementation of allomorphy in a range of contexts, see Marantz (2013); Wood (2015); Myler (2016); Wood and Marantz (2017); Kastner (2020).
6.2.2 Using contextual allosemy to constrain the specifier-taking properties of Voice

Let’s take two -li verbs:

(39) a. bash-\textit{li} ‘cut’

\[ \text{VoiceP} \]
\[ \text{NP}_1 \]
\[ \text{vP} \]
\[ \text{Voice}_{\text{\[\]}} \]
\[ \text{NP}_2 \]
\[ \sqrt{\text{BASH}} \] v

b. takaa-\textit{li} ‘hang (intr.)’

\[ \text{VoiceP} \]
\[ \text{vP} \]
\[ \text{Voic}_{\text{\[\]}} \]
\[ \text{NP} \]
\[ \sqrt{\text{TAKA}} \] v

Intuition:

- Voice\_{\text{\[\]}} in (39a) introduces an unsaturated thematic role.
  
  \[ \rightarrow \text{ NP}_1 \text{ saturates this role. Without this role, NP}_1 \text{ would not compose successfully with Voice’.} \]

- Voice\_{\text{\[\]}} in (39b) does not introduce an unsaturated thematic role.
  
  \[ \rightarrow \text{ If an NP was merged in Spec-VoiceP, it would not compose successfully.} \]

Two allosemes of underspecified Voice\_{\text{\[\]}}

(40) a. \[ \text{Voice}\_{\text{\[\]}} \leftrightarrow \lambda x.\lambda e. \text{AGENT}(x, e) / \sqrt{\text{BASH},...} \]

b. \[ \text{Voice}\_{\text{\[\]}} \leftrightarrow \lambda \tau.\tau / \sqrt{\text{TAKA},...} \]

Successful composition tree for (39a):

(41)
\[ \text{VoiceP} \]
\[ \lambda e.\text{cut(NP}_2,e) \land \text{AGENT(NP}_1,e) \leftrightarrow \text{Functional Application} \]
\[ \text{NP}_1 \]
\[ \lambda x.\lambda e. \text{cut(NP}_2,e) \land \text{AGENT}(x, e) \leftrightarrow \text{Event Identification} \]
\[ \text{vP} \]
\[ \lambda e.\text{cut(NP}_2,e) \land \lambda x.\lambda e. \text{AGENT}(x, e) \leftrightarrow \text{root-conditioned alloseme inserted} \]
\[ \text{NP}_2 \]
\[ \sqrt{\text{TAKA}} \] \text{v}

Successful composition tree for (39b):

(42)
\[ \text{VoiceP} \]
\[ \lambda e.\text{hang(NP},e) \leftrightarrow \text{identity function does its thing} \]
\[ \text{NP} \]
\[ \lambda e.\text{hang(NP},e) \leftrightarrow \text{root-conditioned alloseme inserted} \]
\[ \text{√HANG-v} \]

Upshot:

- The \sqrt{\text{ROOT}} conditions which alloseme is inserted at Voice\_{\text{\[\]}}.
  
- The choice of Voice\_{\text{\[\]}} alloseme determines whether Voice\_{\text{\[\]}} can successfully compose with or without a specifier.
  
  \[ \rightarrow \text{ Thus the \sqrt{\text{ROOT} indirectly determines whether Voice}_{\text{\[\]}} takes a specifier.} \]

Section summary:

- The \sqrt{\text{ROOT}} can control the specifier-taking properties of Voice by:
  
  - direct selection of Voice\_{\text{\[N\]}} or Voice\_{\text{\[N\]}}.
  
  - selection of Voice\_{\text{\[\]}} + conditioning alloseme insertion at Voice\_{\text{\[\]}}.
7 Doing things with underspecified Voice[ ]: non-valency-increasing causatives

Regular causativization: the suffix -chi (i.e. Voice[+N]) can productively causativize virtually all verbs:

(43) a. Akaka ish-awash-l-aachi-h-q?
   chicken 2SG.ERG-√FRY-ACT-FUT-TNS-Q
   'Are you going to fry the chicken?'

   chicken 2SG.ABS-√FRY-ACT-CAUS-1SG.ERG-FUT-TNS
   'I’m going to make you fry the chicken.'


(44) a. awash-li ‘he fried it’
   b. awash-li-chi ‘she made him fry it’

- There are various questions relating to this structure (mono- vs. bi-eventiveness, agreement, the thematic role of the causee...), which I set aside here.

A curious phenomenon: non-valency-increasing causativization:

   John-NOM √TWIST-ACT-PST
   'John twisted it.'

   John-NOM √TWIST-ACT-CAUS-PST
   'John twisted it hard.'
   'John twisted it with difficulty.'
   'John twisted it and it broke.' (Broadwell 2006:130-131)

(46) a. Kocha aapisa-m-agh tiw-wi-h.
   outside window-DEM-obl √OPEN-ACT-TNS
   'She opened the window.'

b. A-bahta 1sg.dat-bag √OPEN-ACT-CAUS-PST
   'She opened up my bag (and made a mess of it).'</n
   gun √FIRE-ACT-1SG.ERG-PST
   'I fired the gun.'

   struggle-TNS-DS √FIRE-ACT-CAUS-1SG.ERG-PST
   'I had a hard time making it fire.'

- Observation #1: non-valency-increasing causatives always involve extra effort or a lack of full control on the part of the agent.

- Observation #2: non-valency-increasing causativization is possible only when the causativized predicate is a transitive -li verb.

\[ \rightarrow \text{...i.e. when the causativized VoiceP is headed by syntactically-underspecified Voice[ ]}. \]

Intuitive version of analysis:

- Syntactic structure of non-valency-increasing causative in (46b):

\[(48)\]

\[
\begin{array}{c}
\text{VoiceP} \\
\text{NP} \quad \text{Agent} \\
\text{VoiceP} \\
\text{vP} \quad \text{NP} \quad \text{Theme} \\
\sqrt{\text{i.sc/w.sc/v}} \\
\text{v} \\
\text{\{ [+N, -chi \}} \\
\end{array}
\]

- √\text{i.sc/w.sc/v} conditions Voice_{[N]} (-\text{li}) to introduce an unsaturated agent role, as usual.

→ It’s actually a causee role here but let’s set that aside for now.

- And while usually, this is enough to force an NP to merge in Spec-VoiceP (§6.2.2), here this does not happen.

- Instead, the \text{agent} and \text{causee} roles introduced by the Voice heads both get passed to the NP in Spec-VoiceP:

→ \text{agent} vs. \text{causee} correspond to the sentient/intentional vs. physical/implementational components of agency.\(^{15}\)

→ Splitting the agent role and then linking both roles to the same individual is what leads to the ‘out of control’ reading.

Mechanical implementation:\(^{16}\)

15. See Lundin (2003), Sigurðsson and Wood (2020) on the notion of ‘agent splitting’, by which the traditional agent role is decomposed into an \textit{initiator}, who sentiently and knowingly makes the event happen, and the \textit{doer}, who is physically responsible for making it happen. Lundin and Sigurðsson and Wood are concerned with constructions in which these two (sub-)roles are occupied by different referents, but I propose that the particular ‘out of control’ reading attested here is the result of them being occupied by the same referent (perhaps by pragmatic reasoning).

16. In (49), the lower Voice head introduces a \text{causee} role and the higher Voice head an \text{agent} role. An alternative analysis would hold that both Voice heads introduce agent roles, and each agent role is predicated of a different event—the lower Voice head introduce an agent for the \textit{caused} event, and the high Voice head introduces an agent for the \textit{causing} event. See Tyler (2020) for discussion of the choice of analysis.

\[(49)\]

\[
\text{VoiceP} \quad \lambda e. \text{AGENT}(\text{she}, e) \land \text{CAUSEE}(\text{she}, e) \land \text{open(my-bag}, e) \\
\text{NP} \quad \lambda x. \lambda e. \text{AGENT}(x, e) \land \text{CAUSEE}(x, e) \land \text{open(my-bag}, e) \quad \leftarrow \text{Predicate Conjunction!} \\
\text{she} \quad \lambda x. \lambda e. \text{AGENT}(x, e) \land \text{CAUSEE}(x, e) \land \text{open(my-bag}, e) \\
\text{VoiceP} \quad \lambda e. \text{CAUSEE}(x, e) \land \text{open(my-bag}, e) \quad \leftarrow \text{AGENT role introduced here} \\
\text{Voice_{[N]}} \quad \lambda x. \lambda e. \text{AGENT}(x, e) \land \text{CAUSEE}(x, e) \\
\text{vP} \quad \lambda e. \text{open(my-bag}, e) \\
\text{\{ [+N] \}} \quad \lambda x. \lambda e. \text{CAUSEE}(x, e) \\
\text{\sqrt{\text{i.sc/w.sc/v}}} \\
\text{v} \\
\text{\{ [+N, -chi \}} \\
\end{array}
\]

- Lower VoiceP merges with Voice_{[N]} and they semantically combine by \textbf{Predicate Conjunction} (Kratzer 2009; Wood 2015).\(^{17}\)

Section conclusion:

- Non-valency-increasing causatives exploit the syntactic flexibility of Voice_{[N]}.

8 More on \root{\sqrt{\text{r.sc/o.sc/o.sc/t.sc}}}\leftrightarrow\text{Voice selection: the pluractional alternation}

Many verbs in Choctaw show the following cross-cutting pluractional/causative quadruplet:

\[(50)\]

\[
\begin{array}{c}
\sqrt{\text{kala}} \text{ ‘scratch’} \\
\text{kala-h-li} \\
\text{‘it was scratched (once)’} \\
\end{array}
\]

\[
\begin{array}{c}
\sqrt{\text{kala}} \text{ ‘scratch’} \\
\text{kala-h-chi} \\
\text{‘it was scratched (lots)’} \\
\end{array}
\]

\[
\begin{array}{c}
\text{kala-h-li} \\
\text{‘she scratched it (once)’} \\
\end{array}
\]

\[
\begin{array}{c}
\text{kala-h-chi} \\
\text{‘she scratched it (lots)’} \\
\end{array}
\]

17. Predicate Conjunction is a generalized version of Heim and Kratzer’s (1998) Predicate Modification rule. It takes two functions of the same type and conjoints them.
Generalizations:
- Singulactionals (√root + -f) mark the causative alternation with -a vs. -li.
- Pluractionals (√root + -h) mark the causative alternation with -li vs. -chi.

Or to lay it out differently:

(52)  

<table>
<thead>
<tr>
<th></th>
<th>-a (Voice_{-N})</th>
<th>-li (Voice_{[]})</th>
<th>-chi (Voice_{+N})</th>
</tr>
</thead>
<tbody>
<tr>
<td>√KALA + -f (sg.)</td>
<td>kala-f-a</td>
<td>kala-f-fi (tr.)</td>
<td>kala-h-chi</td>
</tr>
<tr>
<td>√KALA + -h (pl.)</td>
<td>-</td>
<td>kala-h-li (intr.)</td>
<td>-</td>
</tr>
</tbody>
</table>

Analysis:

(53)  

a. kala-f-a-h ’it was scratched (once)’

b. kala-f-fi-h ’she scratched it (once)’

Importantly:
- The √root+v together determine:
  - which Voice head(s) can merge with vP.
  - the alloseme inserted at Voice_{[]}.

9 Conclusion
- It’s worth thinking about what features of a functional head F regulate External Merge into Spec-FP.
- I provided support for a trivalent system of E.M.-regulating features on Voice (following pioneering work by Kastner 2016, 2020):
  - Voice_{-N}, Voice_{[]}, Voice_{+N}
  - We expect that at least some languages should show this feature typology if syntactic features can be both privative and bivalent.18
  - √root s can choose (’select?’) for some number of these Voice heads.
  - The choice of Voice head may also be determined by [√root + v].
  - The √root regulates whether or not underspecified Voice_{[]} takes a specifier via contextual allosemy.

Further issues and open questions:
- The phasal limit on conditioning allomorphy/allosemy
  - Does it line up with the limit on √root selection?
  - For evidence that they do line up, see Tyler (2020)
- E.M.-regulating features on v? Appl? the root?

18. (Harbour 2011) makes a similar argument for trivalent features as a consequence of bivalence + privativity.
References

Appendix: unaccusativity in Choctaw

N.B. ‘Unaccusative’ here describes any verb whose subject is not an external argument.

Diagnostics:

- **Agreement** (cf. (6)): ERG agreement indexes external arguments; ABS/DAT agreement indexes internal arguments. So intransitive verbs with ABS/DAT-indexed subjects are unaccusative.

- **Pluractional allomorphy** (see §8): intransitive verbs that exhibit pluractional allomorphy are unaccusative.

- **Causative alternation**: intransitive verbs with transitive alternants (where the transitive morphology replaces rather than adds to the intransitive morphology) are unaccusative.

- **Auxiliary selection**: intransitive verbs that reject the perfective auxiliary *tahlì* are unaccusative:

\[
\begin{align*}
\text{(55) a. } & \text{Sa-faam-a-t} & \text{taha} & / & \text{*tahlì.} \\
& \text{1SG.ABS-} & \sqrt{\text{WHIP-PTCP}} & \text{finish.NACT} & / & \text{finish.ACT} \\
& \text{‘I have been whipped.’}
\end{align*}
\]

\[
\begin{align*}
\text{(55) b. } & \text{Is-sa-fam-mi-t} & & \text{*taha} & / & \text{tahlì.} \\
& \text{2SG.ERG-} & \text{1SG.ABS-} & \sqrt{\text{WHIP-ACT-PTCP}} & \text{finish.NACT} & / & \text{finish.ACT} \\
& \text{‘You have whipped me.’}
\end{align*}
\]

- **Compatibility with applied subjects**: verbs that accept applied DAT-indexed subjects are unaccusative (Davies 1981, 1986; Tyler 2020):

}\[
\begin{align*}
\text{(55) c. } & \text{Sa-faam-a-t} & \text{taha} & / & \text{*tahlì.} \\
& \text{1SG.ABS-} & \sqrt{\text{WHIP-PTCP}} & \text{finish.NACT} & / & \text{finish.ACT} \\
& \text{‘I have been whipped.’}
\end{align*}
\]

\[
\begin{align*}
\text{(55) d. } & \text{Is-sa-fam-mi-t} & & \text{taha} & / & \text{tahlì.} \\
& \text{2SG.ERG-} & \text{1SG.ABS-} & \sqrt{\text{WHIP-ACT-PTCP}} & \text{finish.NACT} & / & \text{finish.ACT} \\
& \text{‘You have whipped me.’}
\end{align*}
\]

\[
\begin{align*}
\text{(55) e. } & \text{Sa-faam-a-t} & \text{taha} & / & \text{*tahlì.} \\
& \text{1SG.ABS-} & \sqrt{\text{WHIP-PTCP}} & \text{finish.NACT} & / & \text{finish.ACT} \\
& \text{‘I have been whipped.’}
\end{align*}
\]

19. Choctaw has a special role to play in the development of the theory of unaccusativity. Its active agreement system has been analyzed by various authors to straightforwardly diagnose whether a given argument is an external or internal argument (Nicklas 1974; Heath 1977; Payne 1982; Davies 1981, 1986; Foley and Van Valin Jr. 1984; Broadwell 1988, 1990). Other authors have problematized this assumption (Munro and Gordon 1982; Broadwell 2006; Tyler 2019a, 2020, to appear).

20. See Durie (1987); Harley (2014); Bobaljik (2015); Bobaljik and Harley (2017) on the connection between internal arguments and root suppletion.
(56) a. Chi-holisso-at ittola-tok
    2SG.DAT-book-NOM fall-PST
    'Your book fell down.'

   b. pro1SG Chi-holisso am-ittola-tok
      2SG.DAT-book 1SG.DAT-fall-PST
      'I dropped your book.'

(57) a. Hoshi-t taloowa-tok.
    bird-NOM sing-PST
    The bird sang.'

   b. *pro1SG Hoshi a-taloowa-tok.
      bird 1SG.DAT-sing-PST
      ('My bird sang.')