Inverse in Passamaquoddy as the spell-out of Feature Gluttony

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Question: What mechanism is responsible for *hierarchy effects*?

- Example of a hierarchy effect from German copula construction:

  (1) Du bist Martin. \( \checkmark \ 2 > 3 \)
      you.nom be.2sg Martin.nom
      ‘You are Martin.’

  (2) *? Martin ist du. * 3 > 2
      Martin.nom be.3sg you.nom

  (Coon & Keine 2020: ex. (51), p. 31)

- Coon & Keine 2020: Feature Gluttony — a configuration with *too much Agree*— is the mechanism which creates hierarchy effects.

- E.g., in (2), unlike in (1), the probe agrees with both DPs, creating FG. This leads to a morphological problem.
Coon & Keine (2020): a general mechanism for creating hierarchy effects that covers Person Case Constraint (PCC) effects, dative-nominative constructions, and copula constructions.

This poster: hierarchy effects of direct/inverse agreement in Passamaquoddy (Algonquian) can be viewed as a result of FG as well.

Main take-away points:

★ Inverse marker -oku in Passamaquoddy is the spell-out of a feature glutony created by the Voice head.

★ When a probe is sandwiched between two DPs, as Voice is, we get object agreement in the absence of FG.

★ Passamaquoddy’s Voice probe is searching for a 3rd person obviative DP (maybe: prototypical object?).
**Passamaquoddy:** an Algonquian language which has preserved the Proto-Algonquian patterns (Oxford 2014).

**Verbal template** of Passamaquoddy (simplified):

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Verb Stem</th>
<th>Theme sign</th>
<th>Neg</th>
<th>Central</th>
<th>Mode/Tense</th>
<th>Peripheral</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>tokom</td>
<td>a</td>
<td>w</td>
<td>inu</td>
<td>pon</td>
<td>ik</td>
</tr>
<tr>
<td>1</td>
<td>hit.TA</td>
<td>3</td>
<td>NEG</td>
<td>1PL</td>
<td>PST</td>
<td>3PL</td>
</tr>
<tr>
<td>?</td>
<td>V</td>
<td>Voice</td>
<td>Neg</td>
<td>T</td>
<td>T</td>
<td>C</td>
</tr>
<tr>
<td>π</td>
<td></td>
<td>π</td>
<td># (+π)</td>
<td></td>
<td># (+π)</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: 1Pl.EX Subject, 3PL Object: ‘We (excl.) hit them.’

**Direct/Inverse agreement** = theme sign agreement: shows only π-agreement and can be viewed descriptively as object agreement (Oxford 2019) + a default form (“inverse”), the choice between which is determined by a hierarchy.
There are two main clause types in Passamaquoddy (“orders”) — Independent and Conjunct, and the hierarchy depends on it:

(3) **Person hierarchy in Independent**
SAP (speech act participants: 1,2) >3 (animate proximate) >4 (animate obviative)

(4) **Person hierarchy in Conjunct**
SAP (speech act participants: 1,2) and 3 (animate proximate) >4 (animate obviative)

- If the subject outranks the object on the relevant hierarchy, we see agreement with the object in person in the Theme sign slot.
- If the object outranks the subject, the default “inverse” marker *oku/oq* is inserted.
Illustration:

(5) ’-tokom-a-l
    3-hit.TA.Ind-3-obv
    ‘(S)he (prox) hits him/her (obv).’

(6) ’-tokom-oku-l
    3-hit.TA.Ind-inv-obv
    ‘(S)he (obv) hits him/her (prox).’

- In (5) the subject is 3rd person proximate and the object is 3rd person obviative, so the subject “outranks” the object on the hierarchy ⇒ object agreement.
- In (6) the subject is 3rd person obviative and the object is 3rd person proximate, so the object “outranks” the subject on the hierarchy ⇒ inverse marker.
Person and number features are arranged in feature geometries (Harley & Ritter 2002, Béjar 2003, a.o.)

Probes consist of hierarchically organized segments reflecting their requirements:
- The non-lowest segments of the probe = the features that the probe will *interact* with.
- The lowest segment of the probe = the feature that the probe is *satisfied* by.

**Illustration:** German T probe from the copula construction

\[
T \left[ \left[ \begin{array}{c}
\text{uPERS} \\
\text{uPART}
\end{array} \right]_{\pi} \rightarrow \left[ \begin{array}{c}
\text{uNUM} \\
\text{uPL}
\end{array} \right]_{\#} \right]
\]

E.g., the person probe will interact & agree with all DPs that have a *pers* feature, but will be satisfied only by participant DPs.
Feature gluttony (FG) is a situation when a single probe $P$ has entered Agree with more than one DP and thus copied more than one feature set from them.

- The probe will agree with the closest DP which matches *some* of its segments (i.e., overlap between the unchecked segments on the probe and the segments of the goal is sufficient).

- The feature copying step is *coarse* in the sense that the entire feature geometry of a DP is copied, even if only a segment of it undergoes Agree.

- If there are remaining segments that are not matched, the probe is not satisfied (Deal 2015), and *the remaining segments* of the probe continue probing.
Illustration:

(8) Du bist Martin. \( \checkmark 2 > 3 \)

‘You are Martin.’

- The first DP that the probe interacts with (2SG) satisfies it

\[ \Rightarrow \text{no feature gluttony} \]

\[ \pi \text{-Agree} \]

\[
\begin{align*}
[T & \left[ \begin{array}{c}
\text{uPERS} \\
\text{uPART}
\end{array} \right] \rightarrow [1] \right]_\pi \\
& \triangleleft \left[ \begin{array}{c}
\text{uNUM} \\
\text{uPL}
\end{array} \right] #
\end{align*}
\]

\[ \text{Nongluttonous } \pi \text{-probe} \]

\[ \pi = \left\{ \left[ \begin{array}{c}
\text{PERS} \\
\text{PART} \\
\text{ADDR}
\end{array} \right] [1] \right\} \rightarrow \text{VI: bist (2SG)} \]
(9) *? Martin ist du. * 3 > 2
Martin.nom be.3sg you.nom

This structure gives rise to double agreement:

- upers agrees with the higher 3 SG DP, but the probe is not satisfied yet, and upart agrees with the lower 2SG DP

⇒ feature gluttony
The feature bundles of the two DPs are copied over onto $\pi$, leading to a problem of morphological realization:

A gluttonous $\pi$-probe:

$\pi = \left\{ \begin{array}{c}
[PERS]_1, \\
\begin{array}{c}
\text{PART} \\
\text{ADDR}
\end{array}_2
\end{array} \right\} \implies \text{CONFLICT}$

- Two person bundles have conflicting VI demands, and only a single VI may be inserted into T.
  - Vocabulary insertion is unable to pick a VI for this probe, leading to *ineffability*. 

What is the same:

- There is a probe (Voice) that can agree with several DPs at the same time, creating a gluttonous configuration.

What is different:

- There is a special morpheme (inverse marker) that can spell-out Feature Gluttony in Passamaquoddy.  
  ⇒ *no ungrammaticality arises*

- Position of the probe: the probe is not above the two DPs, but is *sandwiched between the two DPs*. Voice first looks down to interact with the object, and then (if still unsatisfied) — up to interact with the subject.  
  ⇒ *object agreement in the absence of FG*

- What the probe is searching for: Voice probe in Passamaquoddy is searching for *an obviative non-participant DP*. 

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Analyzing Passamaquoddy’s direct/inverse agreement

Assumptions about feature geometry:

\[
\phi = \frac{\pi}{p.pc/a.pc/r.pc/\ldots}/s.pc/p.pc/k.pc/r.pc/a.pc/d.pc/d.pc/r.pc/n.pc/o.pc/n.pc-/p.pc/a.pc/r.pc/t.pc/o.pc/b.pc/v.pc/n.pc/o.pc/n.pc-/o.pc/b.pc/v.pc/s.pc/g.pc/p.pc/l.pc/p.pc\]

(10) Inverse marker

\[
oku / oq \Rightarrow \{ \{\pi\}, \{\pi\}\}
\]

an underspecified portmanteau that occurs when the probe has agreed with two DPs and created a feature gluttony

Assumptions about the Voice probe:

(11) Independent Probe

\[
\pi \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \ quad
**Direct in Independent:** $\text{PART} + \text{PART}$, $\{\text{PART}, 3\}$, and $\{3,4\}$ combinations. Among the features the Probe is searching for, the features of the subject are a subset of the features of the object.

(13) **Direct in $\{\text{PART} + \text{PART}\}$**

\[
\begin{array}{c}
\text{VoiceP} \\
\text{DP}_1 \\
\pi \\
\text{PART} \\
\text{SPKR/ADDR} \\
\text{Voice':} \\
\text{Voice:} \{\phi_2\} \\
\text{VP} \\
\sqrt{\pi} \\
\text{V} \\
\text{DP}_2 \\
\hat{\pi} \\
\text{PART} \\
\text{SPKR/ADDR} \\
\text{NON-PART} \\
\text{OBV}
\end{array}
\]
(14) **Direct in \{\textsc{part}, 3\}**

\[
\begin{align*}
\text{VoiceP} \\
\text{DP}_1 & \quad \text{Voice'} \\
\pi & \quad \text{Voice: } \{\phi_2\} \\
\text{PART} & \quad \text{VP} \\
\text{SPKR/ADDR} & \quad \text{V} \quad \text{DP}_2 \\
\text{π} & \quad \text{NON-PART} \quad \text{OBV} \\
\text{π} & \quad \text{NON-PART} \quad \text{PROX}
\end{align*}
\]
In all of these cases the Voice probe only enters into Agree with the object. Hence \textit{direct} = \textit{object agreement}.
Inverse in Independent \{3, \text{PART}\} combinations and \{4,3\}. Among the features the Probe is searching for, the features of the object are a subset of the features of the subject.

(16) Inverse in \{3, \text{PART}\}, Step 1

```
VoiceP

  DP1
    \pi
    NON-PART
    PROX

  Voice': Voice: \{\phi_2\}
    \pi
    NON-PART
    OBV

  VP
    \sqrt{\pi}
    V
    DP2

    \pi
    PART
    SPKR/ADDR
```
(17) **Inverse in \{3, \textsc{part}\}, Step 2**

VoiceP

- \(\text{DP}_1\)
  - \(\pi\)
  - NON-PART
  - PROX

- Voice: \(\{\phi_2, \phi_1\}\)

Voice’

- VP
  - V
  - \(\text{DP}_2\)

- \(\pi\)
- NON-PART
- OBV

- PART
- SPKR/ADDR
(18) Inverse in \{4, 3\}, Step 1

\[
\begin{array}{c}
\text{VoiceP} \\
\quad \begin{array}{c}
\text{DP}_1 \\
\quad \begin{array}{c}
\pi \\
\text{NON-PART} \\
\text{OBV}
\end{array}
\end{array}
\end{array}
\quad \begin{array}{c}
\text{Voice':} \\
\quad \begin{array}{c}
\text{Voice:} \{\phi_2\} \\
\quad \begin{array}{c}
\checkmark \pi \\
\text{NON-PART} \\
\text{OBV}
\end{array}
\end{array}
\end{array}
\quad \begin{array}{c}
\text{VP} \\
\quad \begin{array}{c}
\checkmark \pi \\
\text{NON-PART} \\
\text{OBV}
\end{array}
\end{array}
\quad \begin{array}{c}
\text{VP} \\
\quad \begin{array}{c}
\checkmark \pi \\
\text{NON-PART} \\
\text{OBV}
\end{array}
\end{array}
\quad \begin{array}{c}
\text{DP}_2 \\
\quad \begin{array}{c}
\text{π} \\
\text{NON-PART} \\
\text{PROX}
\end{array}
\end{array}
\end{array}
\]
Inverse in \{4, 3\}, Step 2

\[
\begin{align*}
\text{VoiceP} & \\
\text{DP}_1 & \quad \text{Voice'} \\
\pi & \\
\text{NON-PART} & \\
\text{OBV} & \\
\text{Voice: } \{ \phi_2, \phi_1 \} & \text{VP} \\
\checkmark \pi & \\
\checkmark \text{NON-PART} & \\
\checkmark \text{OBV} & \text{V} \ 	ext{DP}_2 \\
\pi & \text{NON-PART} \\
\text{PROX} &
\end{align*}
\]
The Conjunct is different from Independent only in that proximate 3rd person DPs and part DPs become equally ranked.

(20) **Direct in \{part, 3\}**

```
VoiceP
   \[\pi\]
   PART
   SPKR/ADDR

DP1

Voice'
   Voice: \{\phi_2\}
   VP
   V
   \[\sqrt{\pi}\]
   V
   OBV

\[\pi\]
   \[\pi\]
   \[\pi\]
   NON-PART
   PROX
```
(21) **Direct in \{3, \textsc{Part}\}**

Removing the \textsc{non-part} segment from the probe results in equality of participant and proximate non-participant DPs: both kinds of DPs can satisfy π segment, neither can satisfy obv.
An independently motivated mechanism of creating hierarchy effects—Feature Gluttony (Coon & Keine 2020)—can account for direct/inverse agreement in Passamaquoddy.

⇒ there is no need for hierarchies as independent objects
⇒ there is no need for an Algonquian-specific impoverishment rule (Oxford 2019)

The departures we’ve made are independently expected parameters of variation:

- the placement of the probe (*Voice vs T*);
- the features the probe searches for (*non-participant obviatives vs participants*)
Some open questions:

- How should variation across Algonquian languages in direct/inverse marking be derived?
- How can we derive the complementary distribution of inverse markers and portmanteaus in the Conjunct order?
- Passamaquoddy has another hierarchy effect that has to do with disruptability of portmanteaus in Conjunct. Can this be accounted for by FG as well?
- What are the limits of the FG-approach to hierarchy effects? What hierarchy effects can it *not* derive?
Thank you for your attention!
### Appendix: Agreement patterns (Independent)

<table>
<thead>
<tr>
<th><strong>PART + PART</strong></th>
<th><strong>Form</strong></th>
<th><strong>Translation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><code>{1, 2}</code></td>
<td>k-tokom-\textit{ol}</td>
<td>I hit you (Sg).</td>
</tr>
<tr>
<td><code>{11, 2}</code></td>
<td>k-tokom-\textit{ol}-pon</td>
<td>We (excl.) hit you (Sg).</td>
</tr>
<tr>
<td><code>{1, 22}</code></td>
<td>k-tokom-\textit{ol}-pa</td>
<td>I hit you (Pl).</td>
</tr>
<tr>
<td><code>{11, 22}</code></td>
<td>k-tokom-\textit{ol}-pon</td>
<td>We (excl.) hit you (Pl).</td>
</tr>
<tr>
<td><code>{2, 1}</code></td>
<td>k-tokom-\textit{i}</td>
<td>You (Sg) hit me.</td>
</tr>
<tr>
<td><code>{2, 11}</code></td>
<td>k-tokom-\textit{i}-pon</td>
<td>You (Sg) hit us (excl).</td>
</tr>
<tr>
<td><code>{22, 1}</code></td>
<td>k-tokom-\textit{i}-pa</td>
<td>You (Pl) hit me.</td>
</tr>
<tr>
<td><code>{22, 11}</code></td>
<td>k-tokom-\textit{i}-pon</td>
<td>You (Pl) hit us (excl).</td>
</tr>
</tbody>
</table>

**Table:** Direct in Independent \texttt{PART} & \texttt{PART} configurations
Appendix: Agreement patterns (Independent)

<table>
<thead>
<tr>
<th>{\textsc{Part}, 3}</th>
<th>Form</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>{1, 3}</td>
<td>n-tokom-a</td>
<td>I hit her / him.</td>
</tr>
<tr>
<td>{11, 3}</td>
<td>n-tokom-a-n</td>
<td>We (excl.) hit her / him.</td>
</tr>
<tr>
<td>{1, 33}</td>
<td>n-tokom-a-k</td>
<td>I hit them.</td>
</tr>
<tr>
<td>{11, 33}</td>
<td>n-tokom-a-nnu-k</td>
<td>We (excl.) hit them.</td>
</tr>
<tr>
<td>{12, 3}</td>
<td>k-tokom-a-n</td>
<td>We (excl.) hit her / him.</td>
</tr>
<tr>
<td>{12, 33}</td>
<td>k-tokom-a-nnu-k</td>
<td>We (incl.) hit them.</td>
</tr>
<tr>
<td>{2, 3}</td>
<td>k-tokom-a</td>
<td>You (Sg) hit her / him.</td>
</tr>
<tr>
<td>{22, 3}</td>
<td>k-tokom-a-wa</td>
<td>You (Pl) hit her / him.</td>
</tr>
<tr>
<td>{2, 33}</td>
<td>k-tokom-a-k</td>
<td>You (Sg) hit them.</td>
</tr>
<tr>
<td>{22, 33}</td>
<td>k-tokom-a-wa-k</td>
<td>You (Pl) hit them.</td>
</tr>
</tbody>
</table>

\textbf{Table:} Direct in Independent \{\textsc{Part}, 3\} configurations

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### Appendix: Agreement patterns (Independent)

<table>
<thead>
<tr>
<th>{3, 4}</th>
<th>Form</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>{3, 4}</td>
<td>’-tokom-a-l</td>
<td>(S)he (prox.) hits her / him (obv.).</td>
</tr>
<tr>
<td>{33, 4}</td>
<td>’-tokom-a-wa-l</td>
<td>They (prox.) hit her / him.</td>
</tr>
<tr>
<td>{3, 44}</td>
<td>’-tokom-a</td>
<td>(S)he (prox.) hits them (obv.).</td>
</tr>
<tr>
<td>{33, 44}</td>
<td>’-tokom-a-wa</td>
<td>They (prox.) hit them (obv.).</td>
</tr>
</tbody>
</table>

**Table: Direct in Independent {3, 4} Configurations**

<table>
<thead>
<tr>
<th>{4, 3}</th>
<th>Form</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>{4, 3}</td>
<td>’-tokom-oku-l</td>
<td>(S)he (obv.) hits her / him (prox.).</td>
</tr>
<tr>
<td>{4, 33}</td>
<td>’-tokom-oku-wa-l</td>
<td>(S)he (obv.) hits them (prox.).</td>
</tr>
<tr>
<td>{44, 3}</td>
<td>’-tokom-oku</td>
<td>They (obv.) hit her / him (prox.).</td>
</tr>
<tr>
<td>{44, 33}</td>
<td>’-tokom-oku-wa</td>
<td>They (obv.) hit them (prox.).</td>
</tr>
</tbody>
</table>

**Table: Inverse in Independent {4, 3} Configurations**
### Appendix: Agreement patterns (Independent)

<table>
<thead>
<tr>
<th>{3, part}</th>
<th>Form</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>{3, 1}</td>
<td>n-tokom-oq</td>
<td>(S)he hits me.</td>
</tr>
<tr>
<td>{3, 11}</td>
<td>n-tokom-oku-n</td>
<td>(S)he hits us (excl.)</td>
</tr>
<tr>
<td>{33, 1}</td>
<td>n-tokom-oku-k</td>
<td>They hit me.</td>
</tr>
<tr>
<td>{33, 11}</td>
<td>n-tokom-oku-nnu-k</td>
<td>They hit us (excl.)</td>
</tr>
<tr>
<td>{3, 12}</td>
<td>k-tokom-oku-n</td>
<td>(S)he hits us (incl.).</td>
</tr>
<tr>
<td>{33, 12}</td>
<td>k-tokom-oku-nnu-k</td>
<td>They hit us (incl.).</td>
</tr>
<tr>
<td>{3, 2}</td>
<td>k-tokom-oq</td>
<td>(S)he hits you (Sg.).</td>
</tr>
<tr>
<td>{3, 22}</td>
<td>k-tokom-oku-wa</td>
<td>(S)he hits you (Pl.).</td>
</tr>
<tr>
<td>{33, 2}</td>
<td>k-tokom-oku-k</td>
<td>They hit you (Sg.).</td>
</tr>
<tr>
<td>{33, 22}</td>
<td>k-tokom-oku-wa-k</td>
<td>They hit you (Pl.).</td>
</tr>
</tbody>
</table>

**Table:** Inverse in Independent {3, part} Configurations