Pronominal cliticization, multiple *wh*-movement, and Probe Generosity

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October 5, 2018 – NELS 49

In a theory of attraction (Chomsky 2000, 2001), an element (the goal) moves to satisfy the needs of a functional head (the probe).

In some cases, multiple goals move, even though the probe can be satisfied by the displacement of just one — e.g., clitic pronoun movement in Greek (Anagnostopoulou 2003) or *wh*-movement in Bulgarian (Rudin 1988).

(1) Greek
   a. *To1 katharisa t1.
      3SG.N.ACC cleaned.1SG
      ‘I cleaned it.’ (Mavrogiorgos 2010:ix)
   b. Tha mu1 to2 stilune t1 t2.
      FUT 1SG.DAT 3SG.N.ACC send.3PL
      ‘They will send it to me.’ (Anagnostopoulou 2003:202)

This ability, for a probe to interact with more goals than it needs to, we might call *Probe Generosity*. But, if elements move only to satisfy the needs of a probe, why are such apparently extraneous movements permitted?

For clitic pronouns, the answer has turned largely to certain configurations in which multiple movements are unexpectedly ruled out by Person–Case Constraints (PCCs; Perlmutter 1971, Bonet 1991).

Take Greek’s “Strong PCC”, which rules out clitic clusters containing a local-person (first- or second-person) direct object pronoun and any indirect object pronoun.

(2) a. *O Kostas mu1 se2 sistise t1 t2.
      the Kostas 1SG.DAT 2SG.ACC introduced
      Intended: ‘Kostas introduced you to me.’
   b. *O Kostas su1 me2 sistise t1 t2.
      the Kostas 2SG.DAT 1SG.ACC introduced
      Intended: ‘Kostas introduced me to you.’ (Bonet 1991:178)

While many languages with clitic pronouns exhibit some restriction on their movement, not all have the same one as Greek. There are also “Weak” (some Spanish varieties; Pancheva and Zubizarreta 2017), “Ultrastrong” (Classical Arabic; Fassi Fehri 1993), and “Me-First” (Romanian; Farkas and Kazazis 1980) PCCs.
We extend the typology of such constraints with data from the Zapotec family (Oto-Manguean, Oaxaca). In the varieties we examine, pronoun movement is restricted by a (three-way) person and a (four-way) gender distinction.

(3) **Person–Case Constraint (Sierra Zapotec)**
   a. * Ba bzxig=a₁=a₂ t₁ t₂.
      already push.COMP=1SG=2SG
      Intended: ‘I already pushed you.’
   b. * Ba bzxig=u₁=u₂ t₁ t₂.
      already push.COMP=2SG=1SG
      Intended: ‘You already pushed me.’

(4) **“Gender–Case Constraint” (Sierra Zapotec)**
   a. Blen=e₁=b₂ t₁ t₂.
      hug.COMP=3EL=3AN
      ‘S/he hugged it.’
   b. * Udi’inn=eb₁=ne₂ t₁ t₂.
      bite.COMP=3AN=3EL
      Intended: ‘It bit her/him.’

The Sierra Zapotec facts lead us to conclude that the source for Probe Generosity is rooted in the same economy considerations that underlie the Principle of Minimal Compliance (PMC; [Richards 1998]).

(5) **Economy-Driven Probe Generosity**
   A probe \( P \) can move any goal \( G \) that it c-commands for free iff, for all features \( F \) on \( G \) that \( P \) is looking for, \( F \subseteq \text{VALUE}(P) \).

Even if the first goal encountered by a probe suffices to satisfy its needs, it can move another goal in its domain just in case it would not have done a better job of satisfying them.

(6) a. [Diagram]
   b. [Diagram]

This Economy-Driven conceptualization of Probe Generosity is empirically superior to a theory that derives it purely from a probe’s needs (e.g., [Béjar and Rezac 2003]).

**Roadmap**
- Introduce Zapotec pronouns and pronoun movement
- Draw a parallel to multiple wh-movement and the PMC, motivating Economy-Driven Probe Generosity
- Compare that to Need-Driven Probe Generosity
- Conclude with thoughts on the broader typology of cliticization constraints
1 Constraints on pronoun movement in Sierra Zapotec

We look at several closely related Zapotec languages spoken in Oaxaca’s Sierra Norte region (together, “Sierra Zapotec”).

- Santiago Laxopa (original field work, Toosarvandani 2017)
- San Bartolomé Zoogocho (Long and Cruz 2000, Sonnenschein 2004)

They share a four-way strictly semantic distinction in gender based on animacy, humanness, and formality:

<table>
<thead>
<tr>
<th>E Lder humans vs. non-elder</th>
<th>H Umans vs. A Nimals vs. I Nanimates</th>
</tr>
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</table>

These gender distinctions are primarily realized in the languages’ third-person pronouns.

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<tr>
<th>STRONG</th>
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<td>=dzu</td>
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<td>=tu’</td>
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<tr>
<td>2PL</td>
<td>le’e</td>
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Table 1: Strong and clitic pronouns in Santiago Laxopa Zapotec (Toosarvandani 2017:129)

The two series of pronouns are used in a range of syntactic environments, including as arguments of the verb (subject, direct object, and indirect objects), possessors, and complements of some prepositions.

1.1 Pronouns and pronoun movement

At least for subject position, the distribution of pronouns in Sierra Zapotec is one familiar from Cardinaletti and Starke’s (1999) typology (other Zapotec varieties behave slightly differently; cf. Marlett 2010, Kalivoda 2015).

- Subject pronouns, both local- and third-person, must cliticize in neutral contexts.

(7) a. Dzaw{=a’, *nedá’) yet.
    eat.CONT=1SG 1SG tortilla
    ‘I am eating a tortilla.’
    (Laxopa: RM, GZY048, 05:08)

b. Tsini’a{=ba’, *lleba’) behle’ jed.
    cook.CONT=3AN 3AN meat chicken
    ‘S/he is cooking chicken.’
    (Laxopa: RDR, SLZ1029, 22:26)

The strong forms appear when the pronoun bears narrow focus in a postverbal position, or when a pronoun appears as a fragment answer, undergoes focus movement, or is in a coordination structure. Local-person strong pronoun subjects are clitic-doubled.

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1 We include here speakers from Santiago Laxopa itself, as well as the smaller neighboring town of San Sebastián Guixoxi. While there are very minor differences between the varieties, we are aware of no variation between them in the phenomena that we consider.
Up to three pronouns can move. A subject of any person or gender can appear as a clitic pronoun. When multiple pronouns cliticize, they do so in a rigid order: subject–indirect object–direct object.

(8) a. Shlag=e’ beku’. kick.CONT=3EL dog
   ‘S/he is kicking the dog.’ (Laxopa: FSR, SLZ067-s, 5)

   b. Blen=ba’=b.
      hug.COMP=3HU=3AN
      ‘S/he hugged it.’ (Laxopa: FSR, SLZ1012, 16:53)

   c. Tsgaw=a’=ba’=n.
      feed.COMP=1SG=3HU=3IN
      ‘I feed it to her/him.’ (Laxopa: FSR, SLZ1017, 36:30)

An object pronoun can move only if the subject is also a pronoun and moves (9a). When the subject is an R-expression, the object can only be a strong pronoun (9b–c).

(9) a. Betw=ba’1=b 2 t1 t2.
   hit.COMP=3HU=3AN
   ‘S/he hit it.’ (Laxopa: RDR, SLZ1029-s, 3)

   b. Betw Maria1 lleb2.
      hit.COMP Maria 3AN
      ‘Maria hit it.’ (Laxopa: RDR, SLZ1029, 28:07)

   c. * Betw=b 2 Maria1 t2.
      hit.COMP=3AN Maria
      Intended: ‘Maria hit it.’ (Laxopa: RDR, SLZ1029, 29:34)

This last fact suggests that at least the highest pronoun moves to satisfy the needs of a functional head, subject to standard locality conditions (e.g., Attract Closest; Chomsky 2000:122).

An object pronoun cannot move across an R-expression subject because it functions as an intervener, though it cannot itself undergo movement (Sichel and Toosarvandani 2018).

1.2 Constraints on pronoun movement

In Sierra Zapotec, all subject pronouns must move in neutral contexts. But in monotransitive clauses, movement of the lower pronoun (the object) is subject to three constraints based on person and gender.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>OBJECT</th>
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<tbody>
<tr>
<td>1SG</td>
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<td>V=o’..nada’</td>
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<td>3EL</td>
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<td>3HU</td>
<td>V=be’..nada’</td>
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<td>3AN</td>
<td>V=ba’..nada’</td>
</tr>
<tr>
<td>3IN</td>
<td>V=en’..nada’</td>
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</tbody>
</table>

Table 2: Pronoun combinations in Yalálag (López and Newberg 2005:8)

When the lower pronoun cannot cliticize — for any of three reasons — it is realized as a strong pronoun.
We condense the above representation into a more manageable paradigm.

<table>
<thead>
<tr>
<th></th>
<th>1SG</th>
<th>2SG</th>
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<tbody>
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<td>1SG</td>
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**Strong Person–Case Constraint (PCC)** In none of these Sierra varieties can a local person object pronoun cliticize, regardless of the person of the subject (this seems to hold across all of Zapotec; Marlett 2010).

(11) **Strong PCC (all Sierra Zapotec varieties)**
An object clitic pronoun cannot be local person.

(12) a. \(I \geq 2\)
   * Bi llre’=la’=o’.
   NEG see.HAB=1SG=2SG
   Intended: ‘I don’t see you.’
   b. \(2 \geq I\)
   * Bi llre’=lo’=a’.
   NEG see.HAB=2SG=1SG
   Intended: ‘You don’t see me.’
   c. \(3 \geq I\)
   * Bnaw=ba’=a’.
   follow.COMP=3AN=1SG
   Intended: ‘It followed me.’
   d. \(3 \geq 2\)
   * Bet=te=ba’=o’.
   kill.COMP=ASS=3AN=2SG
   Intended: ‘[It] killed you.’
   (Yalálag: Avelino Becerra 2004:32–33)

**X–X Constraint** A third-person object pronoun cannot cliticize if it has the same form as the subject clitic. This rules out the third-person combinations along the \(X \geq X\) diagonal.

Foley et al. (to appear-a) argue that this is a morphological, and not a syntactic, constraint (cf. Nevins 2007 for third-person combinations in Spanish), which prohibits adjacent clitic pronouns from being exponed identically.

(13) **X–X Constraint (cf. Foley et al., to appear-a)**
Adjacent clitic pronouns cannot have the same morphological exponent.

We take all the combinations on the \(X \geq X\) diagonal to be syntactically grammatical, though some of them may be filtered morphologically — hence “(✓)”.

2In Laxopa and Zoogocho (see Sonnenschein 2004:54), where the elder clitic pronoun has two allomorphs conditioned entirely by morphological environment.

(1) a. Ba gut=e’.
   already die.COMP=3EL
   ‘S/he already died.’
   b. Ba betw=u’=ne’.
   already hit.COMP=2SG=3EL
   ‘You already hit her/him.’
   (Laxopa: RDR, SLZ1029-s, 13–12)

The crucial point here is that, in Laxopa and Zoogocho, a combination of two elder clitic pronouns is well-formed, since they have different morphological forms.

(2) Bdell=e’=ne’.
   hug.COMP=3EL=3EL
   ‘S/he (an elder) hugged her/him (an elder).’
   (Laxopa: RM, GZY030, 34:15)
Gender–Case Constraints (GCCs) Finally, there are further restrictions on combinations of third-person pronouns based on gender, and specifically a hierarchy of gender categories:

(14) \( EL > HU > AN > IN \)

Exactly how this hierarchy is used depends on the variety (Sonnenschein 2004:51–54, Foley et al., to appear-b).

1.3 Variation across Gender–Case Constraints

- **Yalálag** enforces the gender hierarchy strictly: no object clitic pronoun can ever outrank a subject clitic pronoun (Avelino Becerra 2004:33–34, López and Newberg 2005:8).

(15) a. **Gender–Case Constraint (Yalálag)**
   An object clitic pronoun cannot exceed a subject clitic on the gender hierarchy.

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- **Laxopa** generally obeys the same gender hierarchy, prohibiting most of the same combinations of clitic pronouns, except one: an elder object is possible with a non-elder subject (Toosarvandani 2017:131).

(16) a. **Gender–Case Constraint (Laxopa)**
   If a subject clitic pronoun is non-human, an object clitic cannot exceed it on the gender hierarchy.

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- **Zoogocho** is the most lenient variety. The only combinations it disallows are ones with inanimate subject clitic pronouns (Sonnenschein 2004:54).

(17) a. **Gender–Case Constraint (Zoogocho)**
   If a subject clitic pronoun is inanimate, an object clitic cannot exceed it on the gender hierarchy.

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1.4 Clitic movement in ditransitives

The generalizations above largely extend to ditransitives, with two important exceptions. First, whereas object pronouns may not cliticize around R-expression subjects (9c), a direct object pronoun may cliticize around an R-expression indirect object.

(18) Bnexjw=a’1=b2 t1 Bedu’u t2.
give.COMP=1SG=3AN Beto
‘I gave it to Beto.’ (Laxopa: RDR, SLZ1029-s, 15)

This is especially striking as IOS asymmetrically c-commands DOS. Movement of the DO clitic in [18] then, apparently violates Attract Closest and/or the principle that makes R-expressions interveners for cliticization.

The second exception has to do with the GCC. As expected, GCCs may not be violated when you compare the first and second clitic in a ditransitive cluster.

(19) * Ba blo’ed=b1=ba’2=n3 t1 t2 t3.
    already show.COMP=3AN=3HU=3IN
    Intended: ‘It already showed him/her it.’ (Laxopa: RM, GZYZ180806)

However, GCCs may be violated when you compare the second and third clitics. In two-clitic clusters, 3AN≫3EL is ruled out (20) — but in three-clitic clusters, X≫3AN≫3EL is just fine (21).

(20) a. Blen=e’1=b2 t1 t2.
    hug.COMP=3EL=3AN
    ‘S/he hugged it.’ (Laxopa: FSR, SLZ1012, 15:16)

   b. * Udi’inn=eb1=ne’2 t1 t2.
      bite.COMP=3AN=3EL
      Intended: ‘It bit her/him.’
      [FSR: “Udi’innebne’?? No!”]

(21) a. Ba blo’ed=a’1=ne’2=b3 t1 t2 t3.
    already show.COMP=1SG=3EL=3AN
    ‘I already showed it to her/him.’ (Laxopa: RM, GZYZ015, 49:45)

   b. Ba blo’ed=a’1=b2=ne’3 t1 t2 t3.
      already show.COMP=1SG=3AN=3EL
      ‘I already showed him/her to it.’ (Laxopa: RM, GZYZ015, 48:35)

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3This can be shown by the “backwards binding” construction, where an pronominal argument can be null if it is coreferential with the possessor of an argument that it c-commands (Black 1996, Avelino et al. 2018).

(i) Bi=a’(=ba’1).
    zxikw=ba’1.
    give.COMP=1SG=3HU dog=3HU
    ‘I gave her/his dog to her/him.’ (Laxopa: RM, GZYZ055, 21:18)

(ii) Ni gwa=a’*(=ba’1).
     here give.POT=1SG=3HU mother=3HU
     ‘I will give him/her to his/her mother.’ (Laxopa: RM, GZYZ055, 49:45)
2 Economy-based Probe Generosity

2.1 The Principle of Minimal Compliance in multiple wh-movement

The fact that both locality constraints and GCCs can be violated in ditransitives recalls wh-movement facts in Bulgarian. In this language, more than one wh-phrase can/must move to a clause-initial position (Rudin 1988).

(22) a. Koj1 kavko2 na kogo3 dade t1 t2 t3?
   who what to whom gave
   ‘Who gave what to whom?’

b. ?? Koj1 na kogo3 dade t1 kavko2 t3?
   who to whom gave what

c. ?? Koj1 kavko2 dade t1 t2 na kogo3?
   who what gave to whom

d. ** Koj1 dade t1 kavko2 na kogo3?
   who gave what to whom

(Pesetsky 2000:19–20)

While the highest wh-phrase in the clause must be first, subsequent wh-phrases can occur in any order (Bošković 1997:238–239).

(23) a. Koj1 kogo2 kak3 e tselunal t1 t2 t3?
   who whom how is kissed
   ‘Who kissed whom how?’

b. Koj1 kak3 kogo2 e tselunal t1 t2 t3?
   who how whom is kissed

(Bošković 1997:239)

Richards (1997:225–339, 1998) proposes that this freedom arises from the Principle of Minimal Compliance:

(24) Principle of Minimal Compliance (PMC)
For any dependency D that obeys constraint C, any elements that are relevant for determining whether D obeys C can be ignored for the rest of the derivation for purposes of determining whether any other dependency D’ obeys C.

An element X is relevant to determining whether a dependency D with head A and tail B obeys constraint C if:

(i) X is along the path of D (that is, X = A, X = B, or A c-commands X and X c-commands B), and
(ii) X is a member of the class of elements to which C makes reference.

(Richards 1998:601)

Setting aside the details, once one instance of movement to a given position has obeyed a constraint, such as Attract Closest, this constraint is lifted for subsequent instances of movement to that position.
We can analogize this to Sierra Zapotec ditransitive data. After obeying Attract Closest once, F₀ may probe around an intervener, or probe the farther of two eligible goals (27b).

2.2 The proposal

One perspective on the PMC is that it is grounded in economy.

- Examining a structure to ensure that an instance of movement satisfies a given constraint, such as a locality condition, comes with a certain cost.

- At a given point in the derivation, incurring this cost again can be avoided once the constraint has been successfully checked a single time.

If movement takes place to satisfy a probe’s needs, we can encode this dependence by decomposing it into two steps: the probe Agrees with goal, then the goal (internally) Merges with the probe (Chomsky 2000:135–137).

But this condition can be lifted, we suggest, after it has applied once.

Economy-Driven Probe Generosity

A probe P can move any goal G that it c-commands iff, for all features F on G that P is looking for, \( F \subseteq \text{VALUE}(P) \).
Once a goal is Merged in the specifier of the probe, preceded by the requisite Agree relation, subsequent goals can “piggy-back” on the first, Merging in the same position.

Importantly, not all possible goals can benefit from the probe’s generosity — only other wh-phrases, for example, can move to the specifier of $C^0_{\{WH\}}$.

But our conception of Probe Generosity only requires partial identity. What comes for free, then, is movement of a syntactic object containing the same amount or less information than what is encoded on the probe. It is not possible to get more information for nothing.

### 2.3 Gender-based constraints on pronoun movement

PG’s partial identity requirement is not evident in wh-questions, as the relevant feature geometry is too simple. Turning to more complex featural domains, such as person and number, justifies this formulation.

The four-way gender distinction in Sierra Zapotec is an especially good place to look. We assume the following gender features, which are totally ordered by entailment (29a) — making them analogous to a familiar feature geometry for person (29b; Harley and Ritter 2002).

\[(29)\]

\[
\begin{array}{cccccc}
\text{EL} & \text{HU} & \text{AN} & \text{IN} \\
\gamma & \gamma & \gamma & \gamma \\
\text{AN} & \text{AN} & \text{AN} & \text{AN} \\
\text{HU} & \text{HU} & \text{HU} & \text{HU} \\
\text{EL} & \text{EL} & \text{EL} & \text{EL} \\
\end{array}
\]

\[
\begin{array}{cccc}
1 & 2 & 3 \\
\pi & \pi & \pi \\
\text{PA} & \text{PA} & \text{PA} \\
\end{array}
\]

With this feature geometry, Probe Generosity will always rule in a combination of third-person pronouns along or above the $X\gg X$ diagonal. Which combinations below the diagonal are ruled out depends on the probe’s relativization.

Relativizing the probe to look for all four gender features generates Yalálag’s GCC.

\[(30)\] **Yalálag clitic cluster paradigm**

<table>
<thead>
<tr>
<th></th>
<th>1SG</th>
<th>2SG</th>
<th>3EL</th>
<th>3HU</th>
<th>3AN</th>
<th>3IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1SG</td>
<td>−</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2SG</td>
<td>*</td>
<td>−</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3EL</td>
<td>*</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3HU</td>
<td>*</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3AN</td>
<td>*</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3IN</td>
<td>*</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

\[\]
Compare a combination below the diagonal. Now the lower clitic has more features in the probe’s relativization than the higher one does, so the probe’s generosity cannot be extended to it (32).

(32) Yalálag: *3HU≫3EL

(33) Laxopa: $\land 3HU≫3EL$

But changing the relativization changes what feature combinations lead to this state of affairs. For example, removing $[EL]$ from the probe results in the Laxopa pattern (33), where 3HU≫3EL clusters are permitted.
As for Zoogocho, its GCC arises when you remove [HU] from the relativization.

(34) a. Zoogocho: $\sqrt{3AN}\gg 3HU$  
b. Zoogocho: $^*3IN\gg 3AN$

The logic here is fully general and extends to all other third-person combinations, thus giving rise to the GCC for subjects and objects.

Between object pronouns, though, movement is correctly predicted to be free, as long as neither object has more of the relevant features than the subject does.

(35) $3EL\gg 3AN\gg 3HU$ cluster in Laxopa

a. Blo’ed=e’$_1$=b$_2$=ba’$_3$  
   t$_1$  t$_2$  t$_3$.  
   show.COMP=3EL=3AN=3HU
   ‘S/he showed him/her to it.’

b.  

12
3 Against a need-based approach

An alternate source for Probe Generosity: When a probe moves more than one goal, its needs have not actually been satisfied after it encounters the first goal, so it will continue probing.

(36) a. FP
\[
\begin{array}{c}
F^0 \\
[ [ ] \alpha ] \\
[ [ ] \beta ]
\end{array}
\rightarrow pro_1 \rightarrow pro_2
\]

b. FP
\[
\begin{array}{c}
F^0 \\
[ \alpha ] \\
[ \beta ]
\end{array}
\rightarrow pro_1 \rightarrow t_1 \rightarrow pro_2
\]

In this theory, the probe’s needs, represented as sets of unvalued features that must be valued through Agree, are sequenced. A probe with two subprobes can look for another goal after valuing its first subprobe.

This underlies a familiar theory of the Strong PCC (Béjar and Rezac 2003, Anagnostopoulou 2003, a.o.).

(37) Strong PCC
\[
\begin{array}{ccc}
1 & 2 & 3 \\
\ast & \ast & \checkmark \\
\ast & \ast & \checkmark \\
\ast & \ast & (\checkmark)
\end{array}
\]

○ The probe is sequenced to look first for person features (\(\pi\)), and then number features (\(#\)). Any pronoun will be able to value the first subprobe.

(38) a. \(2 \gg 3\)
\[
\begin{array}{c}
F^0 \\
[ [ ] \pi ] \\
[ [ ] \# ]
\end{array}
\rightarrow pro_1 \rightarrow pro_2
\]

b. \(*3 \gg 2\)
\[
\begin{array}{c}
F^0 \\
[ [ ] \pi ] \\
[ [ ] \# ]
\end{array}
\rightarrow pro_1 \rightarrow pro_2
\]

○ The probe Agrees again for number features. Something must go awry for local-person pronouns, which are prohibited in this position.

\footnote{Alternatively, the unvalued features can articulated, but not intrinsically ordered (Béjar 2003, Béjar and Rezac 2009, Walkow 2012), or they be distributed among distinct functional projections (Bianchi 2008, Preminger 2014:31–39).}
For Béjar and Rezac, the problem stems from the confluence of two factors: the ordering of a probe's needs, and a constraint that some pronouns themselves impose (see also Preminger 2011:925–934).

(40) **Person Licensing Condition (cf. Béjar and Rezac 2003:53)**

A first- or second-person clitic pronoun must enter into an Agree relation for person.

A local-person pronoun thus can never move from the lower position, since by that point in the derivation the probe's person feature will have already been valued.

This particular account cannot be extended to the Zapotec GCCs, as there is no single class of pronouns that we could say must Agree with a certain category. (This is true of the Weak and Ultrastrong PCCs as well; Nevins 2007, 2011, Anagnostopoulou 2005.)

In Laxopa, for example, 3HU clitics are only bad in object position if the subject is 3AN or 3IN.

(41) a. Bzxig=e’1=ba’2 t1 t2.  
push.COMP=3EL=3HU  
‘S/he pushed him/her.’

b. *Bzxige=b1=ba’2 t1 t2.  
push.COMP=3AN=3HU  
(‘It pushed him/her.’)

However, the underlying logic of need-based probe generosity and how it gives rise to the Strong PCC does not really depend on a licensing condition.

To derive the Strong PCC, what’s necessary is that the probe has two subprobes: one which can Agree with any pronoun, and another which can only with third-person pronouns.

(42) \[
\begin{bmatrix}
[1, 2, 3] \\
\{1, 2, 3\} \\
[3]
\end{bmatrix}
\]

While in a standard geometry (\(SP \subset PA \subset \pi\)), these subprobes cannot be identified with distinct features, Anagnostopoulou (2003) offers a way to derive the same effect with a matching constraint on probing.
For the GCC in Yalálag, then, a very fine-grained probe is needed, one that agrees with goals occupying individual rungs in the gender hierarchy in descending order (cf. Bianchi 2006, Walkow 2012).

(43)

So, there is a way to extend the basic logic of Need-Based Probe Generosity to GCCs. However, the obviation of GCCs in ditransitives remain a sticking point.

If probes are only generous in order to satisfy their own needs, there is no way of permitting both ditransitive combinations while also deriving the contrast between the parallel subject–object combinations.

(44) a. B’a already blo’ed=a’₁=ne’₂=b₃ t₁ t₂ t₃.
   already show.COMP=1SG=3EL=3AN
   ‘I already showed it to her/him.’
   (Laxopa: RM, GZY015, 49:45)

b. B’a blo’ed=a’₁=b₂=ne’₃ t₁ t₂ t₃.
   already show.COMP=1SG=3AN=3EL
   ‘I already showed her/him to it.’
   (Laxopa: RM, GZY015, 48:35)

(45) a. B’en=e’₁=b₂ t₁ t₂.
   hug.COMP=3EL=3AN
   ‘S/he hugged it.’
   (Laxopa: FSR, SLZ1012, 15:16)

b. * Udi’inn=eb₁=ne’₂ t₁ t₂.
   bite.COMP=3AN=3EL
   Intended: ‘It bit her/him.’
   (Laxopa: FSR, SLZ1012, 19:25)

Simply adding more subprobes to the probe in 43 in order to allow for an elder pronoun to move after an animal pronoun in ditransitives would, undesirably, rule in ungrammatical monotransitive cases as well.

While the highest pronoun plausibly moves to satisfy the needs of the probe, there is no way of understanding how these could also motivate movement of the other pronouns in a ditransitive.

4 Conclusions and future prospects

We proposed that probes can be generous for reasons of economy related to the Principle of Minimal Compliance. For clitic pronouns, this accounts for constraints on their movement, as well as their obviation, in Sierra Zapotec.

Some questions that arise from this line of inquiry:

1. It doesn’t seem to be a coincidence that GCCs arise in languages with entailment-based gender systems, but apparently not in ones with sex-based genders or semantically arbitrary noun classes. How does this semantic ingredient fit in?
2. Are gender and person distinct $\varphi$-domains? Or, do they stand in an entailment relation to one another?

$$1 > 2 > 3\text{EL} > 3\text{HU} > 3\text{AN} > 3\text{IN}$$

We have assumed that they do not, largely because they give rise to different constraints on clitic combinations.

3. Are there $\#\text{CCs}$? [Nevins (2011)] claims that they do not exist. But it may be simply that no languages with hierarchically organized number features have been examined in this connection yet.

References


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Appendix A: Probing for subtrees

A promising avenue for expanding our empirical coverage to include other PCCs is parameterizing the feature-copying mechanism of Agree.

When a probe finds a feature it’s relativized to, it either copies (i) just that feature, or (ii) that feature and all those it dominates in the geometry (Béjar 2003:53–54, Preminger 2014:47).

(46) Subtree Probing
For a probe $P$ looking for a treelet whose root node is $F$, when $P$ Agrees with a goal $G$, it copies $F$ and any nodes dominated by $F$.

The Strong PCC arises, then, when a probe is looking for a subtree rooted in $[PA]$: no local-person pronoun will be able to move after a local-person pronoun has valued the probe.

(47) a. $*1 >> 2$

b. $*2 >> 1$

For probes that look for treelets, there are only three logically possible probe specifications for person, deriving the entirety of Moving Wall, given the feature geometry of person.

(48) $[ ] \{SP\}$ Me-First PCC $[ ] \{\pi\}$ No non-identical clitic combinations

$[ ] \{PA\}$ Strong PCC

Appendix B: Against a parallel alternative

Building on Anagnostopoulou (2005), Nevins (2007, 2011) proposes an influential theory of crosslinguistic variation in PCCs. It appeals to a conception of probe generosity in which a probe interacts with all goals in parallel.

The probe Multiple Agrees (Hiraiwa 2001) with all pronouns in its domain. This is subject to a constraint that prohibits a higher pronoun from lacking a feature the probe is looking for when a lower pronoun has it.
Contiguous Agree (cf. Nevins 2007:291)

For a probe \( P \) relativized to a feature \( F \) with a goal \( G \) that bears \( F \), there can be no \( G' \) such that:

(i) \( P \) c-commands \( G' \) and \( G' \) c-commands \( G \), and

(ii) \( G' \) does not bear \( F \).

While this resembles Relativized Minimality (Rizzi 1990), it is actually the opposite: it is violated when a goal intervenes that does not have the feature a probe wants. But, it does the job for relative constraints.

Inverse Contiguous Agree

For a probe \( P \) relativized to a feature \( F \) with a goal \( G \) that bears \( F \), there can be no \( G' \) such that:

(i) \( P \) c-commands \( G' \) and \( G' \) c-commands \( G \), and

(ii) \( G' \) does not bear \( F \).

This would generate constraints like the following.

This account extends straightforwardly to give rise to the full range of GCCs in Sierra Zapotec.

However, there is nothing that rules out an inverse version of Contiguous Agree that prevents a superior pronoun from having some feature when the inferior pronoun lacks it.

Inverse Contiguous Agree

For a probe \( P \) relativized to a feature \( F \) with a goal \( G \) that bears \( F \), there can be no \( G' \) such that:

(i) \( P \) c-commands \( G \) and \( G \) c-commands \( G' \), and

(ii) \( G' \) does not bear \( F \).

This would generate constraints like the following.
Secondly, Nevins imposes another constraint on Multiple Agree. If a probe is relativized to a “contrastive” feature, Matched Values requires that all goals contrastive for the feature have the same value.

\(54\) \textbf{Matched Values (cf. Nevins 2007:291)}

For a probe \(P\) relativized to a \textit{contrastive} feature \(F\), either all goals \(G\) that are contrastive for \(F\) must have \(F\) or they do not have \(F\).

Matched Values is able to derive certain attested PCCs, but again it overgenerates. A probe with a contrastive relativization can rule out any two adjacent columns in a paradigm.

\(55\)

\begin{align*}
\text{a. Strong PCC} &= \text{Contrastive [AU]} \\
1 &\quad \star \quad \star \quad \checkmark \\
2 &\quad \star \quad \star \quad \checkmark \\
3 &\quad \star \quad \star \quad (\checkmark)
\end{align*}

\begin{align*}
\text{b. Contrastive [PA] (unattested)} \\
1 &\quad (\checkmark) \quad \star \quad \star \\
2 &\quad \checkmark \quad \star \quad \star \\
3 &\quad \checkmark \quad \star \quad \star
\end{align*}

But, as Nevins (2007:300) notes, this predicts a “Me-Last” pattern that is unattested, and somewhat “strange.” For GCCs, Matched Values predicts an even more extravagant range of unattested patterns.

\(56\)

\begin{align*}
\text{a. Contrastive [HU] (unattested)} \\
3\text{EL} &\quad (\checkmark) \quad \star \quad \star \quad \checkmark \\
3\text{HU} &\quad \checkmark \quad \star \quad \star \quad \checkmark \\
3\text{AN} &\quad \checkmark \quad \star \quad \star \quad \checkmark \\
3\text{IN} &\quad \checkmark \quad \star \quad \star \quad (\checkmark)
\end{align*}

\begin{align*}
\text{b. Contrastive [AN] (unattested)} \\
3\text{EL} &\quad (\checkmark) \quad \checkmark \quad \star \quad \star \\
3\text{HU} &\quad \checkmark \quad (\checkmark) \quad \star \quad \star \\
3\text{AN} &\quad \checkmark \quad \checkmark \quad \star \quad \star \\
3\text{IN} &\quad \checkmark \quad \checkmark \quad \star \quad \star
\end{align*}

The crosslinguistic typology of these constraints on pronoun movement is rooted in the bottom left corner, an asymmetry that is derived by the probe operating cyclically, as enabled by economy-driven probe generosity.

\footnote{A pronoun \(G\) is \textit{contrastive} for \(F\) if there is another pronoun \(G'\) that is featurally identical to \(G\), except that: (i) if \(G\) has \(F\), \(G'\) does not have \(F\), and (ii) if \(G\) does not have \(F\), \(G'\) has \(F\) (cf. Nevins 2007:289).}