

Gender–Case Constraints in Zapotec*

Steven Foley, Nick Kalivoda, and Maziar Toosarvandani
University of California, Santa Cruz

Abstract: Person–Case Constraints (PCCs) prohibit certain combinations of clitic arguments based on their person features. We show that PCCs are mirrored in the domain of gender, drawing on data from several Zapotec varieties. These *Gender–Constraint Constraints* (GCCs) operate over a four-way gender distinction rather than a three-way person distinction, providing a clearer picture of how these constraints can vary across languages. In particular, we identify three crosslinguistic generalizations over the attested PCCs and GCCs, which can only be accounted for by a theory of clitic licensing in which more than one clitic can enter into an Agree relation with the probe (e.g. Anagnostopoulou 2005; Nevins 2007, 2011).

Keywords: Person–Case Constraint, Agree, clitics, person, gender, Zapotec

1 Introduction

Many languages prohibit certain combinations of clitic arguments based on their person features. In Greek, a *Person–Case Constraint* (PCC) (Bonet 1991; Perlmutter 1971) bans a first- or second-person direct object clitic in the same cluster as an indirect object clitic.

(1) *Greek*

a. 2 >> 3

Tha **su** **to** stilune.
fut 2sg.gen 3sg.m.acc send.3pl
‘They will send him to you.’

b. 3 >> 2

* Tha **tu** **se** stilune.
fut 3sg.m.gen 2sg.acc send.3pl
Intended: ‘They will send you to him.’

c. 2 >> 1

* Tha **su** **me** sistisune.
fut 2sg.gen 1sg.acc introduce.3pl
Intended: ‘They will introduce me to you.’

(Anagnostopoulou 2005:202)

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Contact info: srfoley@ucsc.edu, nkalivod@ucsc.edu, mtoosarv@ucsc.edu

These ungrammatical combinations are generally taken to arise from the clitics' need to be licensed. In recent theorizing, the dependency between a clitic's surface position and the argument position it is associated with is created by the operation Agree: a head, the probe, looks to share the ϕ -features — person (π), number ($\#$), or gender (γ) — of one or more clitics, the goals (Anagnostopoulou 2003, 2005; Béjar and Rizac 2003; Nevins 2007, 2011; Preminger 2014:50–54, 2017).

While PCC effects are found in a wide variety of genetically and geographically diverse languages, the specific form that these constraints take is subject to significant crosslinguistic variation. In contrast to Greek, which exhibits a “Strong” PCC, some dialects of Catalan (as well as Spanish and other Romance languages) exhibit a “Weak” PCC: local-person direct objects are allowed as long as the indirect object is also local person (Bonet 1991:182).

We are interested here in two questions: What is the crosslinguistic typology of PCCs? And, how does this typology arise from the grammatical mechanism responsible for PCCs? While a variety of other patterns have been documented — including “Ultrastrong” and “Me-First” PCCs — some traction into answering these questions can come, we think, from looking outside the domain of person. There may be no parallel to PCCs in the domain of number (Nevins 2011:965), but we identify a set of constraints on clitic clusters based on gender in several Zapotec languages (Oto-Manguan: Oaxaca, Mexico).

These *Gender–Case Constraints* (GCCs) are significant in operating over (at least) a *four-way* gender system, rather than the three-way contrast of a typical person system. As they operate across a larger space of logically possible argument combinations, GCCs bring into focus key loci of variation within the attested restrictions on clitic clusters. We identify three major generalizations, which together predict a highly constrained typology of GCCs that is mirrored in the smaller combinatoric space of PCCs.

Assuming these constraints all have a common grammatical source, the larger typology of GCCs can help to choose between theories of clitic licensing that have been advanced to account for PCCs. In particular, no theory in which the operation Agree looks at just a single argument in the course of the derivation can be extended to GCCs (Béjar and Rizac 2003; Preminger 2014). Rather, a *relational* theory is needed, in which Agree is able to compare the ϕ -features of multiple clitics in a cluster (Anagnostopoulou 2005; Nevins 2007, 2011).

2 Clitics in several Zapotec varieties

We focus on four Northern Zapotec varieties from the Sierra Norte of Oaxaca: Santiago *Laxopa* (original field work; Foley et al., to appear; Toosarvandani 2017), Hidalgo *Yalálag* (Avelino Becerra 2004; López and Newberg 2005), San Baltazar *Yatzachi el Bajo* (Butler 1980), San Bartolomé *Zoogocho* (Sonnenschein 2004).

All four Sierra varieties have the same four-way gender system: ELder human vs. non-elder HUMAN vs. ANimal vs. INanimate. As shown in Table 1 for Laxopa, these gender distinctions are realized in the third person pronouns, which come in both strong and clitic versions. For comparison, the pronoun inventory for a

Table 1: Strong and clitic pronouns in Santiago Laxopa (original fieldwork; Toosarvandani 2017) and Teotitlán del Valle Zapotec (Gutiérrez Lorenzo 2014:44)

	Laxopa		Teotitlán	
	strong	clitic	strong	clitic
1 SG	<i>neda'</i>	<i>=a'</i>	<i>na</i>	<i>=a (=æ)</i>
1 PL.EXCL	<i>dziu</i>	<i>=dzu</i>	<i>dunun</i>	<i>=un</i>
1 PL.INCL	<i>netu'</i>	<i>=tu'</i>		
2 SG.EL	<i>lé'</i>	<i>=u' (=o')</i>	<i>yubyu</i>	—
2 SG.HU			<i>luy</i>	<i>=uy</i>
2 PL.EL	<i>le'e</i>	<i>=le</i>	<i>yubytu</i>	—
2 PL.HU			<i>luytu</i>	<i>=tu</i>
3 SG.EL	<i>llè'</i>	<i>=(n)e'</i>	<i>lan</i>	<i>=án</i>
3 PL.EL			<i>ladan</i>	<i>=dán</i>
3 SG.HU	<i>lleba'</i>	<i>=ba'</i>	<i>lăn</i>	<i>=an (=æn)</i>
3 PL.HU			<i>ladán</i>	<i>=dan</i>
3 SG.DE	—	—	<i>laín</i>	<i>=in</i>
3 PL.DE			<i>ladén</i>	<i>=dén</i>
3 SG.AN	<i>lleb</i>	<i>=(e)b</i>	<i>lam</i>	<i>=um</i>
3 PL.AN			<i>ladum</i>	<i>=dum</i>
3 SG.IN	<i>llen</i>	<i>=(e)n</i>	<i>lain</i>	<i>=(é)n</i>
3 PL.IN			<i>laden</i>	<i>=den</i>

Valley Zapotec variety is also provided, *Teotitlán del Valle* (fieldwork; Gutiérrez Lorenzo 2014), which will become important later on. Note that Teotitlán has an additional gender category (deity).¹

In the Sierra varieties, clitic pronouns are syntactically and prosodically dependent, while strong pronouns occur elsewhere (cf. Marlett 1993). In Laxopa, clitic pronouns can serve as verbal arguments, including subjects and objects (2a), possessors (2b), and prepositional complements (2c).

(2) *Laxopa*

- a. Bde_{ll}=e'=ba'.
hug.comp=3.el=3.hu
'S/he hugged her/him.' (FA, GZY012-s, 18)
- b. Be-se'e-yitj-len=ba' x-migw=ba'.
comp-pl-play-with=3.hu poss-friend=3.hu
'They played with their friend.' (FSR, SLZ039-s, 40)
- c. Bete' Jose='n kar tse=ba' Ana='n.
sell.comp Jose=def car of=3.hu Ana=def
'José sold his car to Ana.' (FSR, SLZ065-s, 25)

¹Other Zapotec languages have genders specific to adult males, adult females, children, babies, young unmarried males, and disparaged referents, among others (Marlett 2010).

In all cases, they encliticize to their host, forming a single prosodic word. At least in Laxopa, an object clitic may only cliticize if the subject has also (see Marlett 1993:97–98).

Even then, subject and object clitics must satisfy certain cooccurrence restrictions. The first restriction has to do with person. In all four Sierra varieties, the Strong PCC holds: local person direct objects can never cliticize (see Toosarvandani 2017:131 for Laxopa, López and Newberg 2005:8 for Yalálag, Butler 1980:175–176 for Yatzachi, and Sonnenschein 2004:54 for Zoogocho).

- (3) $3 \gg 1$ (Yalálag)
- a. * **Wdill=ba'=a'**.
sting.comp=3.an=1sg
Intended: 'It stung me.' (following López and Newberg 2005:8)
- b. **Wdill=ba' nada'**.
sting.comp=3.an 1sg
'It stung me.' (López and Newberg 2005:9)

The second cooccurrence restriction on clitic clusters — the empirical focus of this paper — deals with the gender features of third person clitics.

3 Gender–Case Constraints

All four Sierra varieties prohibit clusters of third-person clitics based on gender, though they vary in how they do so. In Yalálag, the four gender categories are totally ordered: $3.el > 3.hu > 3.an > 3.in$. An object can only cliticize if it is lower than the subject on this hierarchy; otherwise, it must be realized as a strong pronoun. This pattern is exemplified in (4a) and schematized in (4b).

- (4) *Yalálag*: ($1 \not\gg 2 >$) $3.el > 3.hu > 3.an > 3.in$
- a.
- | | | object | | | |
|---------|------|--------------|---------------|---------------|------------|
| | | 3.el | 3.hu | 3.an | 3.in |
| subject | 3.el | $V=e' le'e$ | $V=e'=be'$ | $V=e'=ba'$ | $V=e'=n$ |
| | 3.hu | $V=be' le'e$ | $V=be' lebe'$ | $V=be'=ba'$ | $V=be'=n$ |
| | 3.an | $V=ba' le'e$ | $V=ba' lebe'$ | $V=ba' leba'$ | $V=ba'=n$ |
| | 3.in | $V=en le'e$ | $V=en lebe'$ | $V=en leba'$ | $V=en len$ |
- b.
- | | 3.el | 3.hu | 3.an | 3.in |
|------|------|------|------|------|
| 3.el | — | ✓ | ✓ | ✓ |
| 3.hu | * | — | ✓ | ✓ |
| 3.an | * | * | — | ✓ |
| 3.in | * | * | * | — |

We distinguish between two kinds of illicit clitic clusters: those on the diagonal with arguments at the same position on the hierarchy (in light gray), and those in which the object outranks the subject (in dark gray). While the repair for both is the same — a strong object pronoun — they seem to have distinct sources.

In Foley et al. (to appear), we argue that clitic clusters on the diagonal are ruled out by a morphological constraint prohibiting identical exponents for adjacent clitics ($*X \gg X$). This constraint is satisfied when a clitic has more than one allomorph that can appear in a clitic cluster, such as the 3.el clitic in Yatzachi.

- (5) *Yatzachi*: 3.el \gg 3.el
 Chlo'=**e'**=**ne'**.
 teach.cont=3.el=3.el
 'S/he [an elder] teaches her/him [an elder].' (following Butler 1980:176)

Since this ban on identical clitic clusters can be obviated under certain purely morphological circumstances, we set it aside (see similar arguments for other such effects in other languages; Bonet 1991; Nevins 2007, 2011). And, in subsequent schematized paradigms, we notate these combinations with light-grey dashed cells (again, see Foley et al., to appear for a more complete discussion).

The combinations of arguments below the diagonal are subject to variation across the four Sierra varieties. Laxopa rules out every combination that Yalálag does except 3.hu \gg 3.el. In other words, 3.el and 3.hu are not ordered in this variety (Toosarvandani 2017:131); we use the symbol \nlessgtr to represent this.

- (6) *Laxopa*: (1 \nlessgtr 2 >) 3.el \nlessgtr 3.hu > 3.an > 3.in

	3.el	3.hu	3.an	3.in
3.el	—	✓	✓	✓
3.hu	✓	—	✓	✓
3.an	*	*	—	✓
3.in	*	*	*	—

Zoogocho is even more liberal: 3.el, 3.hu, and 3.AN are not ordered, though clitic clusters where the subject is 3.in are still ruled out.

- (7) *Zoogocho*: (1 \nlessgtr 2 >) 3.el \nlessgtr 3.hu \nlessgtr 3.an > 3.in

	3.el	3.hu	3.an	3.in
3.el	—	✓	✓	✓
3.hu	✓	—	✓	✓
3.an	✓	✓	—	✓
3.in	*	*	*	—

Finally, Yatzachi is identical to Laxopa except for prohibiting an additional combination above the diagonal: $*3.an \gg 3.in$. (The \nlessgtr symbol indicates that neither combination of these genders is possible in a cluster.) In effect, it allows only clitic clusters whose subject is 3.el or 3.hu.

- (8) *Yatzachi*: (1 \nlessgtr 2 >) 3.el \nlessgtr 3.hu > 3.an \nlessgtr 3.in

	3.el	3.hu	3.an	3.in
3.el	—	✓	✓	✓
3.hu	✓	—	✓	✓
3.an	*	*	—	*
3.in	*	*	*	—

We call these restrictions on third-person clitic clusters *Gender–Case Constraints (GCCs)*, as we take them to arise from the same mechanism that PCCs do. A key difference, though, is that they involve four genders, rather than just three persons. Consequently, variation in GCCs is manifested in finer detail than with PCCs, revealing several crosslinguistic generalizations in the attested patterns.

3.1 Growing Staircase

The first generalization involves what we call *relative patterns*: GCCs and PCCs that impose a relative ranking on the two arguments. These prohibit the lower argument in a clitic cluster from outranking the higher argument on a given hierarchy, as with the GCCs in Zoogocho, Laxopa, and Yalálag.

Looking across these three varieties, an implicational relationship emerges: if the subject at a given position on the gender hierarchy cannot be outranked by the object, then subjects lower on the hierarchy also cannot be outranked by the object. Visually, this corresponds to a “growing staircase” of stars, which stops at a different height in each language.

(9) *Growing Staircase*

For any clitic cluster, if the lower argument cannot outrank a higher argument with gender G , then the lower argument also cannot outrank a higher argument with gender G' , where $G > G'$ on the hierarchy.

Zoogocho				Laxopa				Yalálag			
–	✓	✓	✓	–	✓	✓	✓	–	✓	✓	✓
✓	–	✓	✓	✓	–	✓	✓	*	–	✓	✓
✓	✓	–	✓	*	*	–	✓	*	*	–	✓
*	*	*	–	*	*	*	–	*	*	*	–

This generalization would exclude a theoretical GCC in which a 3.HU subject cannot be outranked by an object, but can a 3.AN subject can be, i.e., *3.HU \gg 3.EL, but 3.AN \gg 3.HU.

The Growing Staircase generalization is also found in the PCCs, albeit in miniature form.

(10) <i>Weak PCC (Catalan)</i>					<i>Ultrastrong PCC (Classical Arabic)</i>				
		dir. obj.					dir. obj.		
		1	2	3			1	2	3
obj.	1	–	✓	✓	obj.	1	–	✓	✓
ind.	2	✓	–	✓	ind.	2	*	–	✓
	3	*	*	–		3	*	*	–

The Weak PCC, which is found in Catalan and other Romance varieties (Bonet 1991:182), instantiates the bottommost step of the staircase, ruling out a local person direct object clitic when the indirect object clitic is third person ($1 \geq 2 > 3$). The Ultrastrong PCC, found in Classical Arabic (Bonet 1991:184 fn. 8; Nevins 2007:298; Walkow 2012), adds a tier, since it enforces a total order across all three persons ($1 > 2 > 3$).

3.2 Rising Floor

The other two generalizations involve GCCs and PCCs that we characterize as *absolute patterns*: they impose an absolute thresholds on one of the two arguments in a clitic cluster.

Comparing the GCCs in Zoogocho and Yatzachi, they both impose an absolute ranking on the structurally higher clitic, requiring it to exceed some cutoff on the gender hierarchy. This corresponds to a “rising floor” of ungrammatical clusters: if an entire row is ungrammatical, so are all rows below it.

(11) *Rising Floor*

For any clitic cluster, if the higher argument cannot be gender G , then it also cannot be gender G' , where $G > G'$ on the hierarchy.

Zoogocho				Yatzachi				(Not yet attested)			
–	✓	✓	✓	–	✓	✓	✓	–	✓	✓	✓
✓	–	✓	✓	✓	–	✓	✓	*	–	*	*
✓	✓	–	✓	*	*	–	*	*	*	–	*
*	*	*	–	*	*	*	–	*	*	*	–

When there is an object clitic, the subject clitic must be at least 3.an in Zoogocho, and at least 3.hu in Yatzachi. Extending this generalization, we predict a third, currently unattested language in which the subject clitic must be at least 3.EL.

The Rising Floor generalization is not obviously found in the PCC typology. While the Weak PCC (10) can be viewed as instantiating the lowest “floor,” the next highest one — permitting only clusters whose higher clitic is first person — is currently unattested. The GCCs in Zapotec are crucial, then, for showing that a language can place an absolute restriction on the higher clitic in a cluster.

3.3 Moving Wall

The final generalization involves absolute patterns that restrict the lower clitic in a cluster. It can be seen most clearly in the PCC typology. The Me-First PCC, found in Romanian (Farkas and Kazazis 1980), bans any cluster whose lower member is first person ($1 > 2 \geq 3$). The Strong PCC, found in Greek (1), further prohibits subordinate clitics that are second person ($1 \not\geq 2 > 3$).

(12) *Me-First PCC (Romanian)* *Strong PCC (Greek)*

		dir. obj.					dir. obj.		
		1	2	3			1	2	3
ind. obj.	1	–	✓	✓	ind. obj.	1	–	*	✓
	2	*	–	✓		2	*	–	✓
	3	*	✓	–		3	*	*	–

Together, these form a “moving wall” of ungrammatical clusters: if an entire column is ungrammatical, so is every column to its left.

- (13) *Moving Wall*
For any clitic cluster, if the lower clitic cannot be gender G, then it also cannot be gender G', where G' > G on the hierarchy.

The Moving Wall generalization is arguably also found in the GCCs. As discussed in §2, the Sierra varieties all exhibit a Strong PCC, though no columns within third person are entirely ruled out. However, in Teotitlán, object cliticization is further restricted — only 3.in objects may cliticize (original fieldwork; Gutiérrez Lorenzo 2014:45).²

- (14) *Laxopa, Yalálag, Yatzachi, and Zoogocho*

	1	2	3.el	3.hu	3.an	3.in
3.el	*	*	—	✓	✓	✓
3.hu	*	*	✓/*	—	✓	✓
3.an	*	*	✓/*	✓/*	—	✓/*
3.in	*	*	*	*	*	—

Teotitlán del Valle

	1	2	3sg.el	3sg.hu	3sg.an	3sg.in
3.el	*	*	—	*	*	✓
3.hu	*	*	*	—	*	✓
3.an	*	*	*	*	—	✓
3.in	*	*	*	*	*	—

Comparing the Sierra varieties and Teotitlán, we extrapolate a moving wall working its way across the gender categories, just as we see one that moves across person. We have yet to find GCCs with walls intermediate between the Sierra varieties' and Teotitlán's, but such variation would be entirely expected.

4 Deriving GCCs (and PCCs)

Current theories of PCCs appeal to two basic grammatical ingredients, though they differ in how exactly they deploy them: (i) a condition on clitics, which, as deficient elements, need to be licensed, and (ii) a grammatical operation, Agree, which licenses clitics by establishing a relation between a head (the probe) and one or more clitics (the goals).

These theories fall into two basic types. In *nonrelational* theories, the probe will Agree with just a single clitic in a cluster at a time. By contrast, in *relational* theories, the probe Agrees with both arguments, comparing them in some way.

²The details are actually somewhat more complicated. Unlike the Sierra varieties, Teotitlán makes a number distinction in its third person clitics (see Table 1). In 3 >> 3 clusters, only *singular* 3.in object clitics are possible. With a local person subject, though, restrictions are apparently looser: 1/2 >> 3pl.in and 1 >> 3.an/hu clusters are also possible, though they have unusual morphophonological properties (Gutiérrez Lorenzo 2014:55–58). Further investigation is necessary to clarify what combination of syntactic and morphological principles are at play here.

Below, we formulate idealized versions of a nonrelational theory and a relational theory, assessing them in the larger typological space of GCCs. As we show, only a relational theory has any hope of accounting for the full range of both absolute and relative GCC patterns, though we leave for the future the precise shape this theory should take.

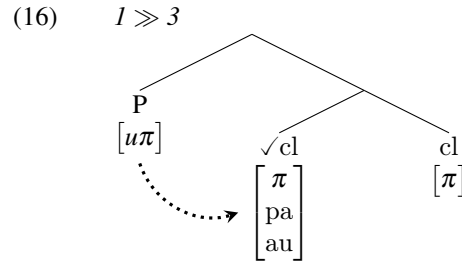
We assume a version of Harley and Ritter’s (2002) feature geometry, in which person features are privative. Pronouns have some combination of three features — $[\pi]$, [participant], and [author] — which stand in entailment relations (15a). By analogy to person, the gender categories in Zapotec might also be organized into a feature geometry, comprising four features (15b).

- (15) a. 1 2 3 b. 3.el 3.hu 3.an 3.in
- | | | | | | | |
|---|--|---------|---|--|---|------------|
| $\begin{bmatrix} \pi \\ \text{pa} \\ \text{au} \end{bmatrix}$ | $\begin{bmatrix} \pi \\ \text{pa} \end{bmatrix}$ | $[\pi]$ | $\begin{bmatrix} \gamma \\ \text{an} \\ \text{hu} \\ \text{el} \end{bmatrix}$ | $\begin{bmatrix} \gamma \\ \text{an} \\ \text{hu} \end{bmatrix}$ | $\begin{bmatrix} \gamma \\ \text{an} \end{bmatrix}$ | $[\gamma]$ |
|---|--|---------|---|--|---|------------|

Not everybody makes this assumption for all ϕ -categories — see, e.g., Nevins (2007, 2011) — but it is a useful simplification for our present purposes.

4.1 A nonrelational theory

Béjar and Rezac (2003) propose an influential, nonrelational theory of the Strong PCC (see also Preminger 2014:31–39). For Béjar and Rezac, clitics are licensed by a probe that is located above both arguments and is looking for a π feature. (As a shorthand, we write this using uninterpretable feature notation: $u\pi$.)



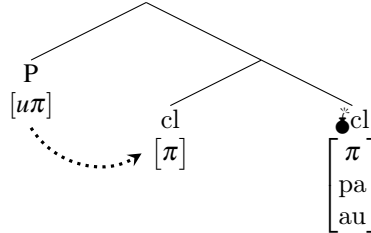
The probe Agrees with the highest clitic; its feature is valued, and it does not Agree again.

The lower clitic is always third person because of the clitic licensing condition that Béjar and Rezac assume, which only requires that *local* person clitics be licensed, cf. Person Licensing Condition (PLC; Béjar and Rezac 2003:53).

- (17) *Clitic Licensing Condition (nonrelational theory)*
 Local (first and second) person clitics must be licensed by Agree with an appropriate functional category.

When the lower argument is first or second person, the derivation incurs a fatal violation of this condition, regardless of the person of the higher argument.

(18) *3 \gg 1



In (18), for instance, the probe can only Agree with the higher third-person clitic, leaving the lower first-person clitic unlicensed. The ungrammatical *2 \gg 1 and *1 \gg 2 combinations are ruled out in the same way.

In this nonrelational theory, the probe only ever Agrees with a single argument, the highest clitic.³ This is made possible because the clitic licensing condition differentiates between local- and third-person clitics: only the former need to be licensed.

While such this system derives the Strong PCC, it is implausible as a theory of the Moving Wall generalization. To derive the Me-First PCC, it might be possible, in principle, to modify Béjar and Rezac’s account, parameterizing the clitic licensing condition so that it only requires *first*-person clitics to be licensed through Agree. But why would the clitic licensing condition vary across languages in this way? Perhaps the clitics themselves differ in their properties across languages.

We are doubtful this is the case. The Strong and Me-First PCCs are found in genetically unrelated languages, whose pronouns may indeed have distinct formal properties. But the different GCC “walls” are found in fairly closely related Zapotec varieties. Modulo their cliticization properties, we have found no evidence that third person pronouns vary fundamentally across these languages (see also Marlett 1993:83). Comparing Laxopa and Teotitlán in Table 1, the third-person strong pronouns are built from a clitic plus an additional formative, either *lle-* or *la-*. This uniformity suggests that it is not variation in the properties of the clitic, or the clitic licensing condition, that accounts for the Moving Wall generalization.

A graver problem for a nonrelational theory, one which others have more or less implicitly recognized, is that it cannot derive *relative* patterns conforming to the Growing Staircase generalization (Anagnostopoulou 2005; Nevins 2007, 2011). For these patterns, there is no single class of clitics that is ruled out as the lower argument: all are possible, depending on what the higher argument is. To derive these patterns, the probe must Agree with more than one clitic, comparing their features in some fashion.

³There is a question about how the lower third-person argument is realized as a clitic in (16). If this happens through Agree, then there must be an additional probe — sometimes assumed to be looking for number — that Agrees with it. This means the clitic licensing condition must require that local person clitics Agree with a *person* probe.

4.2 A relational theory

Anagnostopoulou (2005) and Nevins (2007, 2011) offer relational theories of the Weak PCC and other relative patterns, which aim to do just this. Both make use of Multiple Agree, an operation that establishes an Agree relation simultaneously between a probe and every goal in its domain (Hiraiwa 2001).⁴

Under these approaches, the clitic licensing condition is more general than under a nonrelational theory: all clitics must be licensed through Agree.

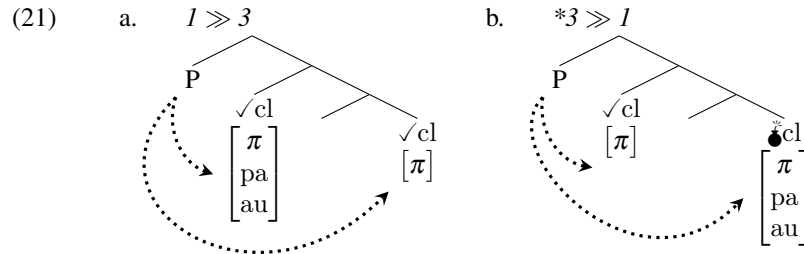
- (19) *Clitic Licensing Condition (relational theory)*
All clitics must be licensed by Agree with an appropriate functional category.

However, not all clitic combinations are able to participate in a Multiple Agree relation with the probe, because the operation is subject to a constraint requiring partial identity across goals.

- (20) *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.

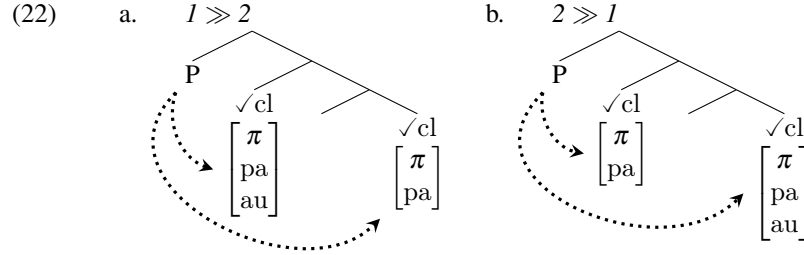
This condition is a version of Nevins's (2007:291) Contiguous Agree, which itself is inspired by a constraint proposed by Anagnostopoulou (2005:221). For a probe relativized to a given feature, it prohibits any goal lacking this feature from intervening between it and a goal that has this feature.

When the probe is relativized to [PA], this derives the Weak PCC: a third-person clitic cannot c-command a local-person clitic without violating clause (ii) in (20).



But any combination of local person clitics is still allowed, as they both have [PA].

⁴Anagnostopoulou's (2003) theory of the Strong PCC and Walkow's (2012) theory of the Ultrastrong PCC, neither of which appeals to Multiple Agree, might also be characterized as relational theories, as the probe can Agree with more than one goal, recording some information about each. We leave consideration of these theories, and their relation to the Multiple Agree theory we consider above for the future.



This theory can straightforwardly be extended to derive the full range of relative GCCs patterns conforming to the Growing Staircase generalization. Relativizing the probe to any feature except for $[\gamma]$ rules out a single block of cells, originating in the lower left corner. Combining these relativizations in a single language gives rise to the GCCs in Zoogocho, Laxopa, and Yalálag.

(23)

<i>Zoogocho</i> = [an]					<i>Laxopa</i> = [hu, an]				
	3.el	3.hu	3.an	3.in		3.el	3.hu	3.an	3.in
3.el	–	✓	✓	✓	3.el	–	✓	✓	✓
3.hu	✓	–	✓	✓	3.hu	✓	–	✓	✓
3.an	✓	✓	–	✓	3.an	*	*	–	✓
3.in	*	*	*	–	3.in	*	*	*	–

<i>Yalálag</i> = [el, hu, an]				
	3.el	3.hu	3.an	3.in
3.el	–	✓	✓	✓
3.hu	*	–	✓	✓
3.an	*	*	–	✓
3.in	*	*	*	–

While a relational theory is successful at deriving these GCCs, it does not derive the Growing Staircase generalization itself. There is nothing that rules out a relativization of [EL, AN], which correspond to an unattested GCC pattern.

(24) [el, an] (*unattested*)

	3.el	3.hu	3.an	3.in
3.el	–	✓	✓	✓
3.hu	*	–	✓	✓
3.an	*	✓	–	✓
3.in	*	*	*	–

Though, the attested GCCs in (23) all obey a simple generalization: for any feature that a probe is relativized to, it is also relativized to every feature entailed by it. It might be that this is a constraint on possible relativizations for probes.

While the condition on Multiple Agree in (20) deals quite neatly with relative patterns, it has nothing to say about absolute patterns. For the Strong PCC, Anagnostopoulou (2003, 2005) proposes that a different mechanism is responsible — namely, regular cyclic Agree plus a matching condition. Nevins (2007, 2011) continues to use Multiple Agree, but invokes an additional condition.

- (25) *Matched Values* (cf. Nevins 2007:291)

For a probe P relativized to a *contrastive* feature [F], either all goals G that are contrastive for [F] must have [F] or they do not have [F].

If a probe is relativized to a contrastive feature, Matched Values requires all goals contrastive for the feature have the same value (they either have it or lack it).

- (26) A pronoun G is *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)

As an additional constraint on Multiple Agree, Matched Valued is able to derive some of the absolute patterns comprising the Moving Wall generalization, though not the generalization itself. Without getting bogged down in the details, this is because a probe with a contrastive relativization can only rule out two adjacent columns in a paradigm.

- (27) *Strong PCC* = *Contrastive* [au] *Contrastive* [pa] (*unattested*)
- | | 1 | 2 | 3 |
|---|---|---|---|
| 1 | – | * | ✓ |
| 2 | * | – | ✓ |
| 3 | * | * | – |
- | | 1 | 2 | 3 |
|---|---|---|---|
| 1 | – | * | * |
| 2 | ✓ | – | * |
| 3 | ✓ | * | – |

This correctly derives the Strong PCC, but it also predicts the existence of a pattern in which a first person clitic is only possible as the lower argument. As Nevins (2007:300) notes, this “Me-Last” pattern is unattested, and somewhat “strange.”

For GCCs, Matched Values cannot derive the ban on animate object clitics in Teotitlán, and it predicts an even more extravagant range of unattested patterns.

- (28) *Contrastive* [el] (*unattested*) *Contrastive* [hu] (*unattested*)
- | | 3.el | 3.hu | 3.an | 3.in |
|------|------|------|------|------|
| 3.el | – | * | ✓ | ✓ |
| 3.hu | * | – | ✓ | ✓ |
| 3.an | * | * | – | ✓ |
| 3.in | * | * | ✓ | – |
- | | 3.el | 3.hu | 3.an | 3.in |
|------|------|------|------|------|
| 3.el | – | * | * | ✓ |
| 3.hu | ✓ | – | * | ✓ |
| 3.an | ✓ | * | – | ✓ |
| 3.in | ✓ | * | * | – |
- Contrastive* [an] (*unattested*)
- | | 3.el | 3.hu | 3.an | 3.in |
|------|------|------|------|------|
| 3.el | – | ✓ | * | * |
| 3.hu | ✓ | – | * | * |
| 3.an | ✓ | ✓ | – | * |
| 3.in | ✓ | ✓ | * | – |

If the “Me-Last” pattern in (27) is strange, these unattested GCCs are even stranger. Our three generalizations suggest why. The attested PCCs and GCCs obeying the Moving Wall, Rising Floor, and Growing Staircase generalizations

are all anchored to the bottom-left corner of the paradigm: a single contiguous block of stars spreads out from this cell. Intuitively, this reflects how hierarchies function in this and similar phenomena (e.g., differential object marking; Aissen 2003). A hierarchy is partitioned so that adjacent categories are treated identically. The “strange” patterns in (27) and (28) all connect discontinuous segments in a hierarchy, thereby undermining its descriptive and theoretical utility.

5 Conclusion and future prospects

We identified a class of GCCs, which parallel more familiar PCCs. As they operate over a larger combinatorial space, defined by four gender features rather than three person features, these GCCs reveal crosslinguistic generalizations that are less apparent in the smaller PCC paradigms.

Besides expanding the typology of this phenomenon, we identified some properties necessary for a unified treatment of PCC and GCC effects. Only a relational theory, one with the ability to compare the features of more than one clitic in a cluster, can derive our Growing Staircase generalization.

Existing theories of this kind do not completely conform to our empirical generalizations. Nevins’s account of some of the PCCs forming the Moving Wall generalization predicts several highly implausible GCCs. Nonetheless, given the formal properties and empirical coverage of a relational theory, we believe it holds the best hope for developing an explanatory theory of these generalizations.

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