

Extending the Person–Case Constraint to gender: Agreement, locality, and the syntax of pronouns*

Steven Foley and Maziar Toosarvandani
University of California, Santa Cruz

June 23, 2020

Abstract

In many languages with clitic or other weak pronouns, a *Person–Case Constraint (PCC)* (Perlmutter 1971, Bonet 1991) prohibits certain combinations of these pronouns based on their person features. This paper explores the crosslinguistic variation in such constraints, starting with several closely-related Zapotec varieties. These restrict combinations of clitics based not just on person, but also on a finely articulated largely animacy-based gender system. Operating within a larger combinatorial space, these constraints offer a new perspective on the typology of *Phi–Case Constraints (ΦCCs)* more generally. This typology has an overall asymmetrical shape correlating with the underlying syntactic position of pronominal arguments. We develop a principled theory of this typology that incorporates three hypotheses: (i) ΦCCs arise from how a functional head Agrees with clitic pronouns, subject to intervention-based locality (Anagnostopoulou 2003, Béjar and Rezac 2003, 2009); (ii) the variation in these constraints arises from variation in the relativization of probes (Anagnostopoulou 2005, Nevins 2007, 2011); and, (iii) clitic and other weak pronouns have no inherent need to be licensed via Agree with a functional head. Under this account, the crosslinguistic typology of ΦCCs has the potential to shed light on the grammatical representation of person and gender.

In many languages with clitic or other weak pronouns, a *Person–Case Constraint (PCC)* (Perlmutter 1971, Bonet 1991:176–221) prohibits certain combinations of these pronouns. In Greek, for instance, while two object pronouns can both cliticize (1a), this is impossible if the direct object is first or second person (1b–c).

- (1) a. Tha **mu**₁ **to**₂ stilune t₁ t₂.
FUT **1SG.DAT** **3SG.N.ACC** send.3PL
‘They will send it to me.’ (Anagnostopoulou 2005:202)

*We are extremely grateful to Fe Silva Robles, Raquel Robles, and two other native speakers of Zapotec for teaching us about their language. We are also grateful to two anonymous reviewers, whose generous comments greatly contributed to improving the paper. The initial work on this project took place in collaboration with Nick Kalivoda (Foley et al. 2019, to appear). Along the way, we have learned a lot from audiences at CLS 53, WSCLA 22, WSCLA 23, and NELS 49, as well as at Geneva, MIT, Queen Mary, Stanford, UC Berkeley, and UC Santa Cruz. We are, in addition, thankful to Pranav Anand, Heriberto Avelino Becerra, Jessica Coon, Mitcho Erlewine, Stefan Keine, Julia Nee, Omer Preminger, Ivy Sichel, Ur Shlonsky, and Coppe van Urk for their many helpful questions and suggestions.

- b. * O Kostas **su**₁ **me**₂ sístise t₁ t₂.
the Kostas **2SG.DAT 1SG.ACC** introduced
Intended: ‘Kostas introduced me to you.’

- c. * O Kostas **mu**₁ **se**₂ sístise t₁ t₂.
the Kostas **1SG.DAT 2SG.ACC** introduced
Intended: ‘Kostas introduced you to me.’

(Bonet 1991:178)

The literature on the PCC has sought to understand how the person of a pronoun can be linked to its syntactic position in this way. In one line of reasoning, a significant role is assigned to a functional head that Agrees (Chomsky 2000, 2001) with pronominal arguments (Anagnostopoulou 2003, 2005, Béjar and Rezac 2003, 2009, Nevins 2007, 2011, a.o.). The properties of this probe and how it interacts with clitic or other weak pronouns have been subject to intense scrutiny, informed by the extensive crosslinguistic variation that has been attested for the PCC.

This paper explores the typology of such constraints with the goal of achieving a better understanding of the syntax underlying them. Our empirical starting point is the pronoun system in Sierra Zapotec, a group of closely-related Zapotec varieties of the Sierra Norte region of Oaxaca, Mexico.¹ The constraints on cliticization in these languages make reference to an animacy-based gender system. In the (Santiago) Laxopa variety, an elder human subject and animal object can both cliticize (2a), but the inverse alignment of clitic pronouns is ungrammatical (2b).

- (2) a. Blenh=**e'**₁=**b**₂ t₁ t₂.
hug.COMP=**3.EL=3.AN**
‘S/he (an elder) hugged it (an animal).’

- b. * Udi'in=**eb**₁=**ne'**₂ t₁ t₂.
bite.COMP=**3.AN=3.EL**
Intended: ‘It (an animal) bit her/him (an elder).’

(Laxopa)

These *Gender–Case Constraints (GCCs)* are interesting for two reasons. First, they are *relative* constraints: they compare the properties of two arguments. This contrasts with Greek’s *absolute* constraint, which bans some class of arguments from a particular syntactic position. Second, these constraints operate over a four-way gender system (elder human, non-elder human, animal, and inanimate), not a three-way person system.

By operating within a larger combinatorial space, the GCCs in Sierra Zapotec offer a new perspective on the crosslinguistic variation that has been observed over the years in PCCs (see Nevins 2011 and Pancheva and Zubizarreta 2017 for a survey). In the first half of this paper, we consider these constraints together, showing that *Phi–Case Constraints (ΦCCs)* form a highly constrained typology. This is characterized by two crosslinguistic generalizations, one over absolute constraints and one over relative constraints. When we look across both types of constraints, the overall typology of ΦCCs has an asymmetrical shape correlating with the underlying position of the arguments.

¹The Zapotec languages are a branch of the Oto–Manguean family spoken throughout Oaxaca, Mexico. There is dense variation across the family, with distinct dialects spoken in towns only a few miles apart. We use *Sierra Zapotec* to refer specifically to the mutually intelligible varieties spoken in the towns of Santiago Laxopa (for which we report our own fieldwork data), Hidalgo Yalálag (López and Newberg 2005, Avelino Becerra 2004), and San Bartolomé Zoogocho (Long and Cruz 2000, Sonnenschein 2004).

In the second half of the paper, we aim to develop a principled account of this typology. We adopt the hypothesis, due to Anagnostopoulou (2003) and Béjar and Rezac (2003, 2009), that these constraints arise from how a functional head *Agree*s with clitic pronouns, subject to intervention-based locality (Rizzi 1990, Chomsky 2000). This enables a theory that translates the inherent asymmetry between pronominal arguments into the asymmetrical shape of the Φ CC typology. At the same time, we take the variation in these constraints to arise from variation in the relativization of the probe, as Anagnostopoulou (2005) and Nevins (2007, 2011) propose. Their theories differ from the one that we advance, however, in assuming that the probe finds all arguments in its domain in parallel via Multiple *Agree* (Hiraiwa 2000). While such a theory can generate a wide range of Φ CCs, it does not incorporate a unified notion of locality, and so cannot capture the generalization about the asymmetrical typology of these constraints.

An underlying assumption shared by all theories is that pronominal cliticization is, in some sense, a reflex of *Agree*. Often, a fairly tight connection is assumed: each clitic pronoun must be licensed by entering into an *Agree* relation with a functional head (Anagnostopoulou 2003, Béjar and Rezac 2003, Nevins 2007, 2011). This paper explores a different articulation of the relationship between *Agree* and pronominal cliticization. We suggest that clitic and other weak pronouns have no inherent need to be licensed via *Agree* with a functional head. A pronoun can only cliticize to a functional head that bears matching φ -features, so that an application of *Agree* will be required. But a separate *Agree* relation is not required for each clitic pronoun. Loosening the connection between *Agree* and pronominal cliticization in this way permits an understanding of the asymmetrical typology of Φ CCs as a product of how a functional head finds its goals subject to locality.

1 The Person–Case Constraint

The most well-known form of the *Person–Case Constraint* (*PCC*) is the *Strong PCC*. Canonically, it rules out a local-person (first or second) direct object clitic, when the indirect object also cliticizes, as in Greek (Bonet 1991:178) and Romance (Perlmutter 1971, Bonet 1991:178–179). While the Strong PCC is usually taken to restrict combinations of clitic and other weak pronouns, the syntactic mechanism underlying it has also been argued to shape verbal agreement, a possibility we return to below.

The Strong PCC is often linked to the syntax of ditransitives (e.g., Adger and Harbour 2007, Pancheva and Zubizarreta 2017). But the same constraint is attested with other combinations of arguments (Nevins 2011:948–949, cf. Ormazabal and Romero 2007). In Sierra Zapotec, for instance, both a subject and an object can cliticize (3a–b), but not if the object is first or second person (4a–d).

- (3) a. $I \gg 3$
 Bet=gak=a'=ba'.
 kill.COMP=PL=1SG=3.AN
 'I killed them [the animals].'
 b. $2 \gg 3$
 B-a-yilj=o'=e'.
 COMP-ITER-look.for=2SG=3.EL

- ‘You used to look for him.’
- (4) a. $I \gg 2$
 * Bi llre’=**la**’=**o**’.
 NEG see.HAB=**1SG=2SG**
 Intended: ‘I don’t see you.’
- b. $2 \gg I$
 * Bi llre’=**lo**’=**a**’.
 NEG see.HAB=**2SG=1SG**
 Intended: ‘You don’t see me.’
- c. $3 \gg I$
 * Bnaw=**ba**’=**a**’.
 follow.COMP=**3.AN=1SG**
 Intended: ‘It followed me.’
- d. $3 \gg 2$
 * Bet=te=**ba**’=**o**’.
 kill.COMP=ASS=**3.AN=2SG**
 Intended: ‘[It] killed you.’ (Yalálag: Avelino Becerra 2004:25–33)

The Strong PCC can be characterized in general terms as a restriction on just the object clitic, regardless of whether the higher argument is a subject, as in 4, or an indirect object, as in Greek (1).

- (5) *Strong PCC (general)*
 An object clitic pronoun cannot be local (first or second) person.

It is what we might call an *absolute* constraint, since it bans one or more categories from a particular syntactic position.

Building on Anagnostopoulou’s (2003:280–306) work, Béjar and Rezac (2003) offer an influential account of the Strong PCC, in which local-person pronouns have a special licensing requirement. This creates an important role for a functional head that Agrees with these arguments, as in Chomsky’s (2000, 2001) theory of case. As we will see, however, a licensing condition tied to a specific person category cannot underlie a general theory of the crosslinguistic variation in these constraints.

1.1 Person licensing and the Strong PCC

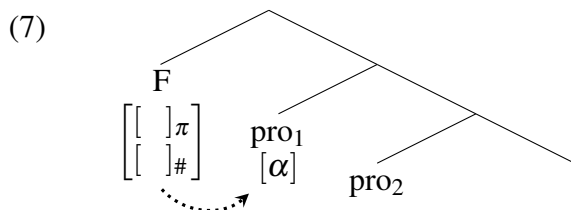
For Béjar and Rezac (2003), the Strong PCC arises because local-person pronouns are subject to the *Person Licensing Condition*, a requirement that they Agree with a functional head in person (cf. Anagnostopoulou 2005:212, Béjar and Rezac 2009:46–47, Preminger 2011:925–934).

- (6) *Person Licensing Condition (cf. Béjar and Rezac 2003:53)*
 A local-person pronoun must enter into an Agree relation for person.

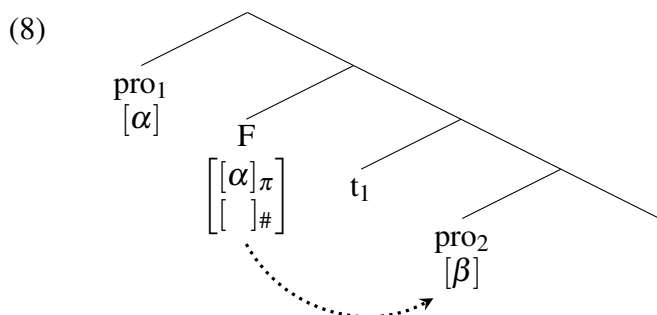
The PLC is intended as a component part of case theory, though it shapes the distribution of just one class of pronominal elements. In some sense, it is a more fine-grained version of the Case Filter, which in its traditional formulation imposes a uniform requirement on all noun phrases.

Béjar and Rezac assume a theory of case like the one developed by Chomsky (2000, 2001), in which case assignment is parasitic on agreement. Thus, for a local-person pronoun to be licensed, a certain functional head (the probe) must find and Agree with this pronoun (its goal) in person features. A functional head's ability to Agree in a given feature is represented in its *relativization*, a set of unvalued features. To derive the Strong PCC, Béjar and Rezac assume (pp. 53–54) that a probe's relativization can be sequenced (cf. Anagnostopoulou 2003:280–306). After a probe finds and is valued for one feature, it can then look again for a goal to value another feature.²

The probe implicated in pronominal cliticization is a functional head looking for φ -features (person, number, gender). It is sequenced, however, so that person (π) probes first, subject to an intervention-based locality constraint, e.g., Relativized Minimality (Rizzi 1990) or Attract Closest (Chomsky 2000:122). It finds the closest pronoun, regardless of whether it is local person or third person. This pronoun values the probe and is able to move out of its domain. (Following Preminger 2014:47–49, “unvalued features” are represented as “empty slots” into which features are copied from the goal.)



Number (#) probes next. With the higher pronoun no longer intervening, the lower pronoun can value the number probe.



When the lower pronoun — that is, the direct object — is third person, the derivation succeeds: it can value the number probe. However, when this pronoun is first or second person, the PLC is not satisfied. Since it can only Agree in number, not in person, the derivation crashes. Under Béjar and Rezac's account, then, a local-person pronoun can never cliticize from the lower argument position, since by the point in the derivation when it can Agree, the probe's person feature has already been valued.

²In principle, there are other ways to sequence probing. Each of a probe's unvalued features could be located on a distinct functional head (cf. Bianchi 2006, Preminger 2014:31–39). Or, a probe's features, while not intrinsically ordered, could be valued independently of one another (Béjar 2003, Béjar and Rezac 2009, Walkow 2012).

1.2 Agree and pronominal deficiency

In Sierra Zapotec, only clitic pronouns are subject to the Strong PCC, not all pronouns. When some combination of clitics is impossible, the lower one is realized as a strong pronoun: compare 9a and 9b to 4a and 4b, respectively.

- (9) a. Bi llre'=la'₁ t₁ **lue'**₂.
 NEG see.HAB=1SG 2SG
 'I don't see you.'
- b. Bi llre'=o'₁ t₁ **nada'**₂.
 NEG see.HAB=2SG 1SG
 'You don't see me.' (Yalálag; Avelino Becerra 2004:32)

These strong pronouns cannot be subject to the PLC in the same way that their corresponding clitic pronouns are; otherwise their presence would be ill-formed in 9a–b.

Béjar and Rezac (2003:54–55, 2009:46–47) argue that this difference between clitic and strong pronouns can be represented structurally, as in Cardinaletti and Starke's (1999) theory of pronominal syntax. For those authors, all strong pronouns contain a clitic pronoun. Clitic pronouns are missing certain functional structure that strong pronouns possess, in particular, a case-assigning functional head. This deficiency is the source of the *greediness*, in Chomsky's (1995:201) terms, of clitic pronoun: they must move to be local to a corresponding functional head in the clausal spine.

In adopting Chomsky's (2000, 2001) theory of case, Béjar and Rezac add another dimension to the deficiency of clitic pronouns: they are missing some functional structure that requires them to Agree with a functional head. For local-person clitic pronouns, the PLC requires them to Agree specifically in person. Third-person clitic pronouns are less discriminating, though, Agreeing in either person or number (Béjar and Rezac 2009:47). Strong pronouns inherently contain all the functional structure they need, and thus do not have to Agree or move.

1.3 Beyond the Strong PCC

It has long been known that there is substantial variation in the PCC. In the *Weak PCC*, attested for some speakers of Romance languages with the Strong PCC, a local-person direct object is still ruled out when indirect object is third person. But either combination of local persons is allowed (see Bonet 1991:180 for Catalan, Perlmutter 1971:62–63 and Pancheva and Zubizarreta 2017:19 for Spanish, and Bianchi 2006:2028 for Italian). This constraint, which is also attested between subjects and objects in Kashmiri (Nevins 2011:963), is stated in a maximally general way in 10 (the lower argument is the direct object, while the higher one is either the subject or indirect object).

- (10) *Weak PCC (general)*
 A lower clitic pronoun cannot be local (first or second) person if the higher clitic pronoun is third person.

As Anagnostopoulou (2005) observes, the Weak PCC is a *relative* constraint, since it rules out cliticization of a lower pronoun only if it and the higher pronoun belong to certain person categories.

For this reason, as Anagnostopoulou recognizes, a constraint like the PLC can have little role to play in deriving the Weak PCC. In a language with the Weak PCC, local-person clitic pronouns are only sometimes ungrammatical in direct object position. With a requirement like the PLC, if cliticization of a local-person pronoun is prohibited when the higher argument is third person, then it should be prohibited when it is local person, too. If the PLC is tied to structural deficiency, as Béjar and Rezac propose, a relative constraint of this kind simply cannot be encoded in terms of whether a pronoun lacks some functional structure or not.

There is some reason, too, to think that the PLC may be a general constraint, whose scope extends beyond weak pronouns. Icelandic, for instance, displays patterns which parallel the Strong PCC but involve strong pronouns. In this language, an in-situ local-person pronoun is generally not licensed as the nominative object of a dative-subject predicate, as shown in 11 (Sigurðsson 1990–1991 *apud* Sigurðsson 1996:26, Taraldsen 1995:309). Similar patterns have been identified in Italian (D’Alessandro 2004:89–131), as well as in Spanish and Romanian (Rivero and Geber 2003).

- (11) a. *Honum mund-um alltaf líka **við**.
him.DAT would-1PL always like **we.NOM**
Intended: ‘He would always like us.’
- b. *Honum mund-uð alltaf líka **þið**.
him.DAT would-2PL always like **you.PL.NOM**
Intended: ‘He would always like you (pl).’
- c. Honum mund-u alltaf líka **þeir**.
him.DAT would-3PL always like **they.NOM**
‘He would always like them.’ (Sigurðsson 2004:148)

Béjar and Rezac (2003:55–56) derive this pattern by expanding the scope of the PLC (cf. Anagnostopoulou 2003:249–321). If the dative subject Agrees with the probe in person, then a nominative object can never be a first- or second-person pronoun.

By contrast, the Weak PCC appears to be restricted just to combinations of clitic pronouns: this is, for instance, true both for Kashmiri and Romance. As far we know, there do not seem to be languages where *all* pronouns in *all* environments are subject to a relative constraint like the one in 10³ — nor to the other variants of the PCC, which we have not yet discussed here: the *Me-First* PCC, found in Romanian (Farkas and Kazazis 1980), and the *Ultrastrong* PCC, attested in Classical Arabic (Fassi Fehri 1993). Setting aside, for the moment, the precise properties of these constraints, they seem to be attested only as restrictions on combinations of clitic pronouns.

Moving forward, we set aside the PLC as a way to understand variation across PCCs.⁴ To uncover the syntactic mechanisms underlying these constraints, it seems reasonable to begin by looking at relative constraints like the Weak PCC, where the PLC clearly is not involved. We start by looking at a family of relative constraints in Sierra Zapotec, which make reference to gender rather than person.

³Parallel effects to the Weak PCC have been observed in copular constructions in German (Coon et al. 2017, Keine et al. 2019, Coon and Keine 2019) and Hindi (Bhatia and Bhatt 2019). These effects deserve further investigation, and should inspire a search for relative constraints on agreement in transitive clauses.

⁴The Strong PCC is by far the most common constraint, a fact that may follow if the PLC is an independent restriction on local-person pronouns that languages can avail themselves of. Under this view, the other PCCs could only arise from a different mechanism, one involved specifically in the licensing of weak pronouns.

2 Introducing Gender–Case Constraints

In Sierra Zapotec, there is a four-way distinction in third-person pronouns based on animacy, humanness, age, and formality, as shown in Table 1. This opposes *elder* humans (EL), *non-elder* humans (HU), *animals* (AN), and *inanimates* (IN). The pronoun inventory has the same structure in all three Sierra Zapotec varieties we consider, from the towns of (Santiago) *Laxopa*, (Hidalgo) *Yalálag*, and (San Bartolomé) *Zoogocho*.⁵

	STRONG	CLITIC		STRONG	CLITIC
1SG	<i>neda'</i>	<i>=a'</i>	3.EL	<i>lè'</i>	<i>=e' ~ =ne'</i>
1PL.EXCL	<i>dziu'</i>	<i>=dzu</i>	3.HU	<i>leba'</i>	<i>=ba'</i>
1PL.INCL	<i>netu'</i>	<i>=tu'</i>	3.AN	<i>leb</i>	<i>=(e)b</i>
2SG	<i>lhé'</i>	<i>=u'</i>	3.IN	<i>lenh</i>	<i>=(e)nh</i>
2PL	<i>le'e</i>	<i>=lhe</i>			

Table 1: Strong and clitic pronouns in Santiago Laxopa Zapotec (Toosarvandani 2017:129)

On a typological level, these distinctions form a strictly semantic gender system (Corbett 1991:8–12). The most familiar gender systems, found in European languages, often make reference to natural gender (male vs. female), though they also frequently distinguish animates from inanimates, as in English. The gender system in Sierra Zapotec, too, makes reference to animacy, though in a more fine-grained way, distinguishing inanimates from animals from humans. While it does not make any reference to natural gender, it does separate out “elder” humans, a complex category defined by both age and formality.⁶ The elder pronouns can be used to refer to all elderly humans (above a certain age relative to the speaker), as well as individuals with high social status (e.g., the president of the town, the priest, teachers). The non-elder pronouns are used to refer to all other humans.

Animacy-based gender systems like this are sometimes connected to person. A variety of syntactic phenomena can make reference to animacy distinctions in the same way they refer to person distinctions (e.g., Silverstein 1981). In certain cases, the distinction between animates and inanimates has even been encoded through the value for a person feature (Adger and Harbour 2007, Richards 2008). Gender in Sierra Zapotec, though, cannot be reduced to person in precisely this way, since it encodes more than a two-way contrast. We return later to the formal and semantic representation for this system, but it seems likely that some relation between gender and person underlies the constraints on clitic combinations that make reference to these categories.

There are three constraints on possible combinations of clitic pronouns: the Strong PCC, the

⁵For Yalálag and Zoogocho, we use data from descriptive grammars (Long and Cruz 2000, Sonnenschein 2004, Avelino Becerra 2004, López and Newberg 2005). For data on Laxopa, we draw on our own fieldwork with four native speakers residing in Santa Cruz, Los Angeles, and Santiago Laxopa itself. One of these speakers is originally from the smaller neighboring town of San Sebastián Guiloixi. While there are very minor differences between the Guiloixi and Laxopa varieties, there is no variation between them in the phenomena we consider.

⁶Other Zapotec languages have gender systems organized along different lines. They can have up to eight categories, including adult male or female, child, baby, young unmarried man, deity, and disparaged referent (Marlett 2010). And, these are not strictly semantic: in Tilquiapan Zapotec, mushrooms belong to the animal category, while in San Juan Guelavía, thunder, potable water, rain, corn, and edible corn products belong to the deity category (Marlett 2010:4). In the existing documentation on these languages, GCCs are not mentioned.

GCC, and an additional constraint on identical adjacent pronouns. The forms of the GCCs differ across the Sierra Zapotec varieties we consider. Before looking at these constraints in detail, we first lay out some background on their pronoun inventory.

2.1 Clitic and strong pronouns

In all persons and genders, there are two series of pronouns, shown in Table 1, corresponding to strong and clitic pronouns in Cardinaletti and Starke’s (1999) typology. The two series are used across a range of syntactic environments, as arguments of the verb (subject, direct object, and indirect object), possessors, and complements of prepositions. For arguments of the verb, up to three pronouns can cliticize; their form is, for the most part, invariant across these grammatical functions.⁷

- (12) a. Blenh=**ba’=b**.
hug.COMP=**3.HU=3.AN**
‘S/he hugged it.’ (Laxopa)
- b. Tsgaw=**a’=ba’=nh**.
feed.CONT=**1SG=3.HU=3.IN**
‘I feed it to her/him.’ (Laxopa)

These clitic pronouns occur in a fixed position, immediately following the verb, in a rigid order: subject–indirect object–direct object. We take this to indicate that these clitic pronouns move to a position adjacent to the verb. This obligatory syntactic movement is supported by the fact that: (i) a clitic pronoun cannot originate inside an island, e.g., a coordination (13a), and (ii) an object clitic pronoun cannot stay in situ (13b).

- (13) a. *Ts-ja-wi=**e’**₁ [t₁ na xna’=a’] taw=a’.
CONT-AND-visit=**3.EL** and mother=1SG grandmother=1SG
Intended: ‘S/he and my mother went to visit my grandmother.’
- b. *Bdel Maria=**b**.
hug.COMP Mara=**3.AN**
Intended: ‘Maria hugged it.’ (Laxopa)

Clitic and strong pronouns are not freely interchangeable. In subject position, for instance, a clitic is obligatory in information-structurally neutral contexts, e.g., out of the blue or with broad focus.

- (14) a. Dzaw{=**a’**, ***neda’**} yet.
eat.CONT=**1SG 1SG** tortilla
‘I am eating a tortilla.’

⁷There is only one exception that we know of. In some varieties, there is a separate series of clitics used for the subjects of experiencer verbs and causativized experiencer verbs (see fn. 12). The vowel in the third person animal and inanimate clitics is only epenthetic, inserted to avoid certain consonant clusters. And, the two allomorphs of the third person elder clitic, =*e*’ and =*ne*’, are conditioned by linear order, as we discuss in Section 2.3 below.

- b. Tsini'a{=**ba'**, ***leba'**} behle' jed.
 cook.CONT=**3.AN** **3.AN** meat chicken
 'S/he is cooking chicken.' (Laxopa)

The strong form occurs elsewhere. For instance, in a coordination, out of which cliticization is impossible (13a), only a strong pronoun can appear.

- (15) Ts-ja-wia [le' na xna'=a'] taw=a'.
 CONT-AND-visit **3.EL** and mother=1SG grandmother=1SG
 'S/he and my mother went to visit my grandmother.' (Laxopa)

To account for this complementary, we follow Cardinaletti and Starke (1999) in taking clitic and strong pronouns to be in competition with one another. The choice is mediated by an economy constraint, *Minimize Structure*, which prefers a clitic whenever one is possible, because it contains less structure. A strong pronoun can only appear when an independent principle blocks the availability of a clitic pronoun.

We assume that clitic pronouns move via phrasal movement to the specifier of a functional head (Nevins 2007, 2011, a.o.), though this is simply for concreteness. As far as we know, everything we say is compatible with clitics moving by head movement, as Preminger (2019) has recently proposed. We also set aside the issue of clitic doubling. While all of the examples above involve just a clitic pronoun, these can double a strong pronoun or an R-expression under certain circumstances. It may be that clitics originate inside a “big DP” (Uriagereka 1995, Nevins 2011, a.o.), or that they are simply a copy of D (Preminger 2019); see Anagnostopoulou 2006 for an overview of these issues. We focus here on the constraints on clitic combinations.

2.2 Three constraints on clitic combinations

In Sierra Zapotec, a subject of any gender can cliticize, as in 16a–d, as well as of any person, though this is not shown below.

- (16) a. Shlag=**e'** beku'.
 kick.CONT=**3.EL** dog
 'S/he is kicking out the dog.'
- b. Shle'e=**ba'** yet=**e'n**.
 smell.CONT=**3.HU** tortilla=DEF
 'S/he smells the tortilla.'
- c. Shtahs=**eb**.
 sleep.CONT=**3.AN**
 'It is sleeping.'
- d. Bllu'u=**nh**.
 rip.COMP=**3.IN**
 'It ripped.' (Laxopa)

Cliticization of an object is subject to three constraints based on person and gender. This is perhaps most clear in Yalálag Zapotec. Setting aside plural pronouns, the realization of all possible

		OBJECT					
		1SG	2SG	3.EL	3.HU	3.AN	3.IN
SUBJECT	1SG	–	V=a' rwe'	V=e' ⁹	V=a'=be'	V=a'=ba'	V=a'=n
	2SG	V=o' nada'	–	V=o=e'	V=o'=be'	V=o'=ba'	V=o'=n
	3.EL	V=e' nada'	V=e' rwe'	V=e' le'e	V=e'=be'	V=e'=ba'	V=e'=n
	3.HU	V=be' nada'	V=be' rwe'	V=be' le'e	V=be' lebe'	V=be'=ba'	V=be'=n
	3.AN	V=ba' nada'	V=ba' rwe'	V=ba' le'e	V=ba' lebe'	V=ba' leba'	V=ba'=n
	3.IN	V=en nada'	V=en rwe'	V=en le'e	V=en lebe'	V=en leba'	V=en len

Table 2: *Pronoun combinations in Yalálag* (López and Newberg 2005:8) (dark gray = Strong PCC; medium gray = GCC; light gray = *X–X Constraint)

person–gender combinations of subject and object pronouns is shown in Table 2.⁸ In cells with no shading, the object pronoun cliticizes. In shaded cells, it does not and is instead realized as a strong pronoun. This happens because one of three constraints is violated. The first is the familiar Strong PCC (in dark grey), which is found not just in Yalálag, as illustrated in 4 above, but also in Laxopa (Toosarvandani 2017:131) and Zoogocho (Sonnenschein 2004:54). In addition, there is a *Gender–Case Constraint* (GCC; in medium gray) and a morphological constraint on identical clitic combinations, which we call the **X–X Constraint* (in the lightest shade of gray).

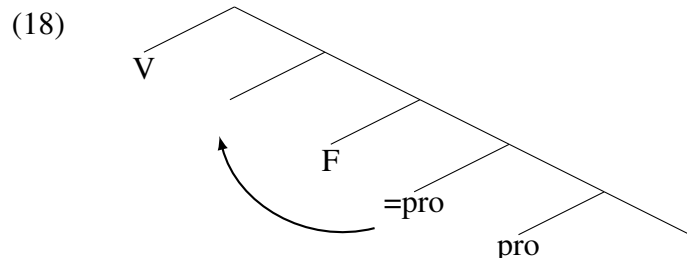
In all three varieties, regardless of which constraint is violated, the repair is the same: the use of a strong object pronoun. This was already shown for the Strong PCC in Yalálag in 9b; it is shown for the GCC in 17a and the *X–X Constraint in 17b (see Foley et al. 2019 for Laxopa and Sonnenschein 2004:38 for Zoogocho).

- (17) a. 3.AN >> 3.HU
 Bdin=**ba'**₁ t₁ **lebe'**₂.
 bite.COMP=**3.AN** **3.HU**
 'It bit [her]/him.'
- b. 3.AN >> 3.AN
 Bdin=**ba'**₁ t₁ **leba'**₂.
 bite.COMP=**3.AN** **3.AN**
 'It (animal) bit it (animal).' (Yalálag: Avelino Becerra 2004:34–35)

There is a ready explanation for this in Cardinaletti and Starke's theory of pronoun deficiency. Minimize Structure requires a pronoun to be realized as a clitic, if this is at all possible. The subject is most local, as the highest argument, and can always cliticize.

⁸The two combinations with identical local-person pronouns are ruled out for binding theoretic reasons, and so we set them aside.

⁹For this combination, a general phonological process of vowel coalescence turns the underlying sequence of =a'=e' into =e'.



The object, too, will cliticize when it can. But when one of the three constraints above prohibits it from cliticizing, it is realized instead as a strong pronoun.

While this works for Sierra Zapotec, the crosslinguistic picture is somewhat more complicated. As Rezac (2011:177–279) discusses extensively, there is variation in how violations of the PCC are repaired across languages. For instance, in French, it is the higher argument (the indirect object) that is realized as a strong pronoun, and not the lower one, as in Sierra Zapotec. This variation is somewhat surprising if a clitic pronoun is preferred whenever one is possible, as Minimize Structure dictates. Rezac proposes a unified account of these repairs that maintains the structural relationship between clitic and strong pronouns, even while abandoning Minimize Structure. He argues for a syntactic operation that *adds* functional structure, creating a strong pronoun out of a clitic pronoun. This operation could apply in different ways across languages: in Zapotec, it adds structure to the direct object, and in French to the indirect object.¹⁰

Moving forward, we will condense overfull representations like Table 2 into more manageable matrices like 19. The vertical axis represents the structurally higher argument, while the horizontal axis represents the structurally lower argument. For Sierra Zapotec, this is the subject and object, respectively, but in other languages it may be the indirect and direct objects.

(19) *Yalálag*

	1SG	2SG	3.EL	3.HU	3.AN	3.IN
1SG	—	*	✓	✓	✓	✓
2SG	*	—	✓	✓	✓	✓
3.EL	*	*	(✓)	✓	✓	✓
3.HU	*	*	*	(✓)	✓	✓
3.AN	*	*	*	*	(✓)	✓
3.IN	*	*	*	*	*	(✓)

A checkmark indicates that some combination of clitic pronouns is syntactically grammatical, while an asterisk indicates that it is syntactically ungrammatical.

Before turning to the Strong PCC and the GCC, we first discuss the third-person combinations on the diagonal. These are filtered morphologically, despite being syntactically well-formed, a status indicated in 19 with parentheses around a checkmark.

2.3 The morphological source of the *X–X Constraint

In Yalálag Zapotec, all combinations of third-person clitic pronouns with identical gender — those on the diagonal in 19 — are ill-formed.

¹⁰This approach may find a challenge in Catalan, where Bonet (1991:208–213) observes that the repair involves replacing the indirect object clitic with a locative clitic.

- (20) a. * Bchew=**e'**=**e'**.
kick.COMP=**3.EL=3.EL**
Intended: 'He kicked him.' (Avelino Becerra, p.c.)
- b. * Llne'=be'=be'.
speak.HAB=**3.HU=3.HU**
Intended: 'He is speaking to him.'
- c. * Bdinn=**ba'**=**ba'**.
bite.COMP=**3.AN=3.AN**
Intended: 'It bit it.'
- d. * Bchochj=**en=en**.
bite.COMP=**3.IN=3.IN**
Intended: 'It hit it.' (Yalálag: after Avelino Becerra 2004:34–35)

Foley et al. (2019) argue that this is the result of a morphological constraint that prohibits adjacent clitic pronouns from being exponed identically (cf. Bonet 1991:153–172 and Nevins 2007 on third-person combinations in Spanish).

- (21) *X–X Constraint (cf. Foley et al. 2019)
Adjacent clitic pronouns cannot have the same morphological exponent.

The combinations in 20a–d thus are syntactically well-formed, though they are filtered morphologically. The morphological nature of this constraint cannot be determined solely by looking at Yalálag, since the combinations along the diagonal are also featurally identical. But comparison across Sierra Zapotec varieties shows that the *X–X Constraint really is a morphological one.

In Laxopa, as well as in Zoogocho (see Sonnenschein 2004:54), the elder clitic pronoun has two allomorphs conditioned entirely by morphological environment: =*e'* appears immediately following the verb (22a), while =*ne'* appears elsewhere (22b).

- (22) a. Ba gut=**e'**.
already die.COMP=**3.EL**
'S/he already died.'
- b. Ba betw=u'=ne'.
already hit.COMP=2SG=**3.EL**
'You already hit her/him.' (Laxopa)

This allomorphy is not conditioned by syntactic position, but entirely by linear adjacency to the verb. In positive imperatives, which do not have an overt subject, the initial allomorph =*e'* is used for a third-person elder object.

- (23) B-ja-wi=**e'**!
COMP-AND-visit=**3.EL**
'Go visit her/him!' (Laxopa)

The crucial point here is that, in Laxopa¹¹ and Zoogocho, a combination of two elder clitic pronouns is well-formed, since the *X–X Constraint is not violated in these varieties, which have distinct exponents for them.¹²

- (24) a. Bdel=**e'**=**ne'**.
 hug.COMP=**3.EL**=**3.EL**
 ‘S/he (an elder) hugged her/him (an elder).’ (Laxopa)
- b. Na da Dolor=**en'** dxe=**e=ne'**...
 and late Dolores=DEF say.CONT=**3.EL**=**3.EL**
 ‘And the late Dolores said to him...’ (Zoogocho: Sonnenschein 2004:384)

By analogy, we take all third-person combinations on the diagonal to be syntactically grammatical, though some may be ruled out morphologically in certain varieties.

2.4 Constraints based on gender

Alongside the Strong PCC, all Sierra Zapotec varieties also have a GCC. This further restricts third-person clitic combinations based on a hierarchy of gender categories.

- (25) *Gender Hierarchy in Sierra Zapotec*
 EL > HU > AN > IN

Given the semantics of these gender categories, they form an intuitive hierarchy: the higher a category is, the more animate or sentient, roughly, its referents are.

The GCC in Yalálag, which is stated in 26, prohibits an object pronoun from cliticizing when it exceeds the subject pronoun on this hierarchy.

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

In contrast to the Strong PCC, this GCC in Yalálag is a relative constraint. Clitic pronouns from a given gender category — say, animal — are not prohibited categorically from occupying an object position, only if they are more animate than the subject.

- (27) a. Bchew=**be'**=**ba'**.
 kick.COMP=**3.HU**=**3.AN**
 ‘[S/h]e kicked it.’

¹¹There is some interspeaker variation within Laxopa Zapotec in the grammaticality of 24a. We suspect that the morphological constraint in 21 may, for some speakers, be stated in terms of featural makeup and not morphological exponents. Such variation is not surprising: for three out of four gender categories, featural and phonological identity are indistinguishable.

¹²Foley et al. (2019) provide another argument for the morphological source of the *X–X Constraint, based on the realization of experiencer subjects. In Zoogocho, when an elder clitic pronoun is the subject of an experiencer verb, it receives a distinct realization as =*de'* (Sonnenschein 2004:45). It can occur with an elder clitic object pronoun. Here, Zoogocho can be contrasted with a yet fourth Sierra Zapotec variety that we have not focused on in the main text. In San Baltazar *Yatzachi* el Bajo, elder clitic pronouns also have a distinct realization when they appear as an experiencer subject, though this is =*ne'* (Butler 1980:55). This is not able to occur with an object clitic pronoun, which has an identical form. The contrast between Zoogocho and Yatzachi follows directly if the *X–X Constraint is morphological in nature, since the two clitics in (i) have distinct exponents, while those in (ii) have the same form.

- b. * Bdinn=**ba'**=**be'**.
kick.COMP=**3.AN**=**3.HU**
'It bit [her]/him.'

(Yalálag: Avelino Becerra 2004:34)

So unlike the Strong PCC, it does not rule out one or more columns in the matrix in 19, which is repeated in 28 below.

(28) *Yalálag*

	1SG	2SG	3.EL	3.HU	3.AN	3.IN
1SG	—	*	✓	✓	✓	✓
2SG	*	—	✓	✓	✓	✓
3.EL	*	*	(✓)	✓	✓	✓
3.HU	*	*	*	(✓)	✓	✓
3.AN	*	*	*	*	(✓)	✓
3.IN	*	*	*	*	*	(✓)

Rather, the GCC in Yalálag rules out part of several rows below the diagonal. This is the characteristic shape of a relative constraint, which only prohibits one clitic pronoun if it exceeds another on the hierarchy.

While all three Sierra varieties have a relative GCC, their shapes vary (Sonnenschein 2004:51–54, Foley et al. 2019):

- Yalálag enforces the gender hierarchy strictly, as in 26: no object clitic can ever outrank a subject clitic (Avelino Becerra 2004:33–34, López and Newberg 2005:8).
- 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).

(29) *Laxopa*

	1SG	2SG	3.EL	3.HU	3.AN	3.IN
1SG	—	*	✓	✓	✓	✓
2SG	*	—	✓	✓	✓	✓
3.EL	*	*	(✓)	✓	✓	✓
3.HU	*	*	✓	(✓)	✓	✓
3.AN	*	*	*	*	(✓)	✓
3.IN	*	*	*	*	*	(✓)

In one way of understand this GCC, the hierarchy is only enforced for combinations involving non-human subject pronouns.

(30) *Gender–Case Constraint (Laxopa)*

If a subject clitic pronoun is non-human, an object clitic pronoun cannot exceed it on the gender hierarchy.

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

(31) *Zoogocho*

	1SG	2SG	3.EL	3.HU	3.AN	3.IN
1SG	—	*	✓	✓	✓	✓
2SG	*	—	✓	✓	✓	✓
3.EL	*	*	(✓)	✓	✓	✓
3.HU	*	*	✓	(✓)	✓	✓
3.AN	*	*	✓	✓	(✓)	✓
3.IN	*	*	*	*	*	(✓)

This GCC can be understood as applying the gender hierarchy only when the subject is an inanimate pronoun.

(32) *Gender–Case Constraint (Zoogocho)*

If a subject clitic pronoun is inanimate, an object clitic pronoun cannot exceed it on the gender hierarchy.

Looking across these GCCs in Sierra Zapotec, it is hard not to notice that the variation has a certain organization to it. As we will show next, this overall shape also characterizes the typology of PCCs.

3 A typology of Phi–Case Constraints

Since the GCCs in Sierra Zapotec operate over a four-way gender distinction, they offer a new perspective on the attested variation in PCCs, which operate just over a three-way person distinction. Alongside the *Strong* PCC in Greek, there is another absolute constraint, the *Me-First* PCC, which has been identified in Romanian (Farkas and Kazazis 1980, Nevins 2007:294). And, in addition to the Weak PCC, another relative constraint, the *Ultrastrong* PCC, has been described for Classical Arabic (Fassi Fehri 1993, Nevins 2007:297–299). See Pancheva and Zubizarreta 2017 for a comprehensive survey.¹³

When considered together, we argue that these *Phi–Case Constraints* (Φ CCs) form a highly constrained typology, characterized by two crosslinguistic generalizations (Foley et al., to appear). The first generalization, *Growing Staircase*, characterizes relative constraints, like the GCCs in Sierra Zapotec. The second, *Moving Wall*, characterizes absolute constraints, such as the Strong PCC.

3.1 Relative constraints

Starting with the relative constraints on pronoun movement, if we look across the higher-resolution paradigms of GCCs, a striking pattern emerges. Moving from Zoogocho in 31 to Laxopa in 29 to Yalálag in 28, starred cells are arranged in successively taller “staircases.” For any of these constraints, a combination is ungrammatical only if it is below the diagonal and all combinations below it and to its left are also ungrammatical. This generalization is defined more formally in 33.

¹³Pancheva and Zubizarreta (2017) also recognize a “Superstrong” PCC, differing from the Strong PCC only in prohibiting identical third-person combinations as well. As we discussed in Section 2.3, these combinations are often ruled out for morphological reasons (see Bonet 1991:153–172 and Nevins 2007 for relevant discussions of these combinations in Spanish).

(33) *Growing Staircase*

For every ungrammatical combination of a higher clitic α and a lower clitic β , (i) $\beta > \alpha$ (on a feature hierarchy), and (ii) every combination of a higher clitic δ and a lower clitic γ such that $\delta < \alpha$ or $\gamma > \beta$ is also ungrammatical.

As it happens, Growing Staircase also characterizes the typology of relative PCCs, albeit in miniature, since these paradigms are smaller (three by three).

(34) a. *Weak PCC*

	1	2	3
1	–	✓	✓
2	✓	–	✓
3	*	*	(✓)

b. *Ultrastrong PCC*

	1	2	3
1	–	✓	✓
2	*	–	✓
3	*	*	(✓)

The Weak PCC, described in 10, forms the shortest staircase. The Ultrastrong PCC, attested between indirect and direct object clitics in Classical Arabic (Fassi Fehri 1993), for some speakers of Spanish (Perlmutter 1971:21), and for some speakers of Catalan (Bonet 1991:179), has an additional step. It requires total conformity to a person hierarchy ($1 > 2 > 3$).

3.2 Absolute constraints

In the absolute constraints, a different generalization emerges. Starting this time in the person domain, where it is most clear, the Me-First PCC in Romanian (Farkas and Kazazis 1980, Nevins 2007:297–299) prohibits cliticization of a first-person direct object pronoun.¹⁴ The Strong PCC, found in Greek and Sierra Zapotec, is more stringent, banning any local-person pronoun from cliticizing from this position.

(35) a. *Me-First PCC*

	1	2	3
1	–	✓	✓
2	*	–	✓
3	*	✓	(✓)

b. *Strong PCC*

	1	2	3
1	–	*	✓
2	*	–	✓
3	*	*	(✓)

In other words, if a clitic is prohibited as the lower argument in a combination, then so too is any clitic higher on the person hierarchy. This generalization, which we call *Moving Wall*, is stated in a more general form in 36.

(36) *Moving Wall*

For every ungrammatical combination of a higher clitic α and a lower clitic β , every combination with a lower clitic γ such that $\gamma > \beta$ (on a hierarchy) is also ungrammatical.

¹⁴The details are somewhat more complicated in Romanian. For example, while 1SG \gg 2SG is acceptable, 1SG \gg 2PL is not (Farkas and Kazazis 1980:79–80, Nevins and Săvescu 2010). These kinds of interactions are perhaps expected if probes can be relativized to number features and these enter into the same calculations as person and gender features. A similar number-based constraint is found in Teotitlán del Valle Zapotec (see footnote 15). It should be pointed out that #CCs are usually assumed not to exist (Nevins 2011:965–966).

The Strong PCC and Me-First PCC exhaust the possible absolute constraints permitted by Moving Wall in a three-by-three paradigm.

In the domain of gender, we have to be a bit more speculative, since the GCCs in Sierra Zapotec are all relative constraints. For the same four-way gender system, Moving Wall would permit only the absolute constraints in 37a–c.

(37)

a.		3.EL	3.HU	3.AN	3.IN
	3.EL	(✓)	✓	✓	✓
	3.HU	*	(✓)	✓	✓
	3.AN	*	✓	(✓)	✓
	3.IN	*	✓	✓	(✓)

b.		3.EL	3.HU	3.AN	3.IN
	3.EL	(✓)	*	✓	✓
	3.HU	*	(✓)	✓	✓
	3.AN	*	*	(✓)	✓
	3.IN	*	*	✓	(✓)

c.		3.EL	3.HU	3.AN	3.IN
	3.EL	(✓)	*	*	✓
	3.HU	*	(✓)	*	✓
	3.AN	*	*	(✓)	✓
	3.IN	*	*	*	(✓)

While we have not yet found a Zapotec language with an absolute GCC corresponding to 37a or 37b, Teotitlán del Valle Zapotec, a Central Zapotec language, may have the constraint in 37c. Only inanimate direct object clitics are permitted (Gutiérrez Lorenzo 2014:45–47, Julia Nee, p.c.).¹⁵ Future fieldwork will have to discover whether the GCCs in 37a–b in fact exist, completing the typology of absolute constraints.¹⁶

3.3 A further generalization

Taken together, Growing Staircase and Moving Wall reveal a deep asymmetry in this typology of Φ CCs. A staircase can be anchored in the bottom left corner of the paradigm, but not any other; walls move across the paradigm from the left (and perhaps also bottom) edge, but not the right edge. There are no attested relative constraints that look like 38a, nor absolute constraints that look like 38b.

¹⁵This simplifies things slightly. Teotitlán del Valle Zapotec actually has a five-way gender distinction, which includes the four categories familiar from Sierra Zapotec plus a deity category, which plausibly occupies the highest rung on the hierarchy. In addition, the constraint in 37c only holds when the subject is singular. There are some additional idiosyncrasies that we are setting aside here (see Gutiérrez Lorenzo 2014:45–47 for full details).

¹⁶The absolute GCC in 37a is the inverse of the relative GCC in Zoogocho (31). This suggests a further connection between Growing Staircase and Moving Wall.

(38) a.

(✓)	*	*	*
✓	(✓)	*	*
✓	✓	(✓)	*
✓	✓	✓	(✓)

b.

✓	✓	*	*
✓	✓	*	*
✓	✓	(✓)	*
✓	✓	*	(✓)

That is to say, it is always *the lower clitic* whose person or gender cannot exceed some cutoff on the relevant hierarchy, whether this is fixed, as in an absolute constraint, or set by the higher clitic, as in a relative constraint.

It seems likely that this deep asymmetry originates in a syntactic mechanism. However, as we discussed in Section 1.3, no condition like the PLC, which Béjar and Rezac propose for the Strong PCC, can account for it. To start, for any given relative constraint, such as one of the GCCs in Sierra Zapotec, there is no single class of pronouns that must Agree: whether or not an object can cliticize always depends both on its gender and that of the subject. In Yalálag, for instance, a human object is possible if the subject is elder or human, but not if it is animal or inanimate. Moreover, if each of these individual constraints did originate in a condition like the PLC, that condition would bear responsibility for deriving the attested crosslinguistic variation. In other words, each language would have a different condition stating which pronouns would have to Agree. This seems extremely unlikely (cf. Coon and Keine 2019), a point brought home most clearly in Sierra Zapotec: neither the gender hierarchy nor the inventory of pronouns varies across these varieties, yet their GCCs do.

That does not mean that we have to give up on all of Béjar and Rezac’s theory. They include a central role for a functional head that Agrees with the closest clitic it can find. It would be reasonable to keep this component of their theory to provide some purchase on the asymmetrical typology of Φ CCs. Since this probing is subject to locality, it inherently distinguishes the highest goal from other possible goals. To derive the typology, though, the relationship between this functional head and clitic pronouns has to be further articulated. The PLC served, in part, to link the presence of an Agree relation to the possibility of cliticization. Without it, the relationship between the functional head and clitic pronouns must be mediated in some other way.

4 Toward a theory of Φ CCs

In what follows, we advance a theory of Φ CCs that tries to capture the asymmetrical shape of their typology. This incorporates the following three hypotheses:

1. There is a functional head that Agrees in φ -features with clitic pronouns, subject to an intervention-based locality constraint, e.g., Attract Closest (Anagnostopoulou 2003, Béjar and Rezac 2003, 2009).
2. Clitic pronouns do not have to be licensed through Agreement with this functional head. They can only move, however, if their φ -features match its value.
3. The relativization of the functional head varies across languages and is responsible for attested variation in Φ CCs (Anagnostopoulou 2005, Nevins 2007, 2011).

Like Béjar and Rezac’s account of the Strong PCC, this theory assumes the presence of a functional head that Agrees in φ -features with the closest goal. This serves to distinguish the higher clitic pronoun from the lower one.

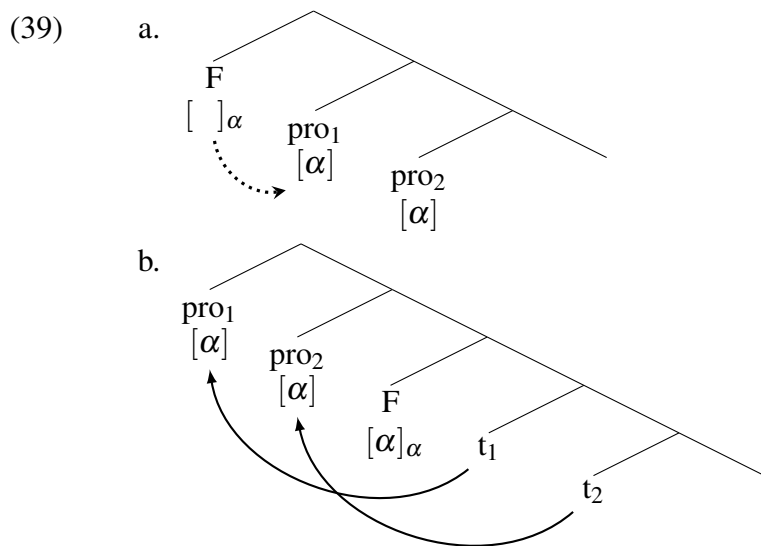
Without the PLC, something else needs to mediate the relationship between the functional head and clitic pronouns. We explore the possibility that this has nothing to do with licensing. As we discussed in Section 1.3, relative constraints like the Weak PCC restrict combinations of clitics, and do not seem to be attested in the domain of verb agreement. It thus seems plausible that they could arise from a mechanism specific to cliticization, rather than the more general mechanism of Agree. Otherwise, we might expect to find patterns of verb agreement that mirror the typology of Φ CCs. We suggest that, for a clitic pronoun to move to a functional head, its φ -features must match the head's value. The clitic does not necessarily have to Agree with the head.

This can derive the typology of Φ CCs with one final ingredient: the variation in constraints arises from variation in the relativization of the probe. This hypothesis is formulated by Anagnostopoulou (2005) and Nevins (2007, 2011), though they fold it into a theory in which the probe Agrees with every clitic in its domain via Multiple Agree (Hiraiwa 2001). While this can derive variation in the PCC, we argue it does not suffice to capture the generalizations embedded in Growing Staircase and Moving Wall.

4.1 Clitic pronouns need not Agree

It is an old intuition that clitic pronouns are reflexes, in some way, of agreement (Borer 1984, Suñer 1988, Sportiche 1993, Anagnostopoulou 2003:249–320, a.o.). Béjar and Rezac (2003) include a specific version of this hypothesis in their account of the Strong PCC: each clitic pronoun must be licensed by Agreeing with a functional head in φ -features (see also Anagnostopoulou 2003:315 and Nevins 2011:952–954). For them, this follows from Chomsky's (2000, 2001) theory of case, in which case assignment is parasitic on Agree. If clitics lack case, each clitic must Agree with a suitable functional head.

This is not the only way, though, that clitic pronouns could be linked to agreement. We would like to suggest that a clitic can move to a functional head just in case it has φ -features that match, in some sense yet to be made precise, those on the head. If the probe starts out with unvalued φ -features, an application of Agree will still be necessary before any pronoun can cliticize. But a separate Agree operation is not required for each one. When more than one clitic is present (39a), they can all move based on a single Agree relation, as long as their features match the probe's value (39b).



Decoupling cliticization from Agree in this way backs off from Béjar and Rezac’s attempt to link the deficiency of clitic pronouns to Chomsky’s theory of case.

Concretely, we propose that cliticization can only take place when the condition in 40 is satisfied.

(40) *Condition on Pronominal Cliticization*

For a functional head H that has been valued (i.e., $\text{VALUE}(H) \neq \emptyset$), a clitic pronoun P can (internal) Merge with H iff, for the set of relevant features F on P , $F \subseteq \text{VALUE}(H)$.

We assume that movement is the product of two distinct operations: Agree between a functional head and a syntactic object plus (internal) Merge of two syntactic objects (Chomsky 2000:135–137). The condition in 40 permits a clitic pronoun to Merge with a functional head as long as its features are a subset of the head’s value. It might have Agreed with and valued this head or not, depending on its position. As we will show below, this enables a grammatical explanation for the asymmetrical Φ CCs typology, grounded in the locality condition on Agree.

4.2 The featural representation of animacy

First, some additional assumptions are needed about the grammatical encoding of the animacy-based gender system in Sierra Zapotec. For person, it is standard to encode a three-way distinction on pronouns with two features, one that picks out just the speaker and another that picks out all discourse participants, including the speaker (Benveniste 1956, Noyer 1992:151–152, Sauerland 2006:70–71, a.o.). First-person pronouns have both PA(PARTICIPANT) and SP(EAKER), second-person pronouns only have PA, and third-person pronouns lack both features. A familiar semantics for these features is given in 41, assuming they are privative (Harley and Ritter 2002, Béjar 2003:47–50) and presuppositional (Cooper 1979, Dowty and Jacobson 1988, Heim and Kratzer 1998, Sauerland 2006, a.o.). (There is much more to say here, especially about how these features combine semantically: see Harbour 2016 and Ackema and Neeleman 2018.)

- (41) a. $\llbracket \text{SP} \rrbracket^c = \lambda x : x \text{ is SPEAKER}(c) . x$
b. $\llbracket \text{PA} \rrbracket^c = \lambda x : x \text{ is a participant in the conversation of SPEAKER}(c) . x$

Sometimes, a third feature π is added, which all persons, including third person, possess (Béjar 2003:48).

It seems plausible that the four-way gender distinction in Sierra Zapotec might be encoded, by analogy, with three features; an initial semantics is given in 42. The denotations for HU and AN are relatively straightforward. More speculatively, we take EL to pick out those individuals standing in some relevant social relation to the speaker.¹⁷

- (42) a. $\llbracket \text{EL} \rrbracket^c = \lambda x : x \text{ stands in some social relation to SPEAKER}(c) . x$
b. $\llbracket \text{HU} \rrbracket^c = \lambda x : x \text{ is human} . x$
c. $\llbracket \text{AN} \rrbracket^c = \lambda x : x \text{ is animate} . x$

Just like the person features in 41, these gender features entail one another: HU describes a subset of AN, and EL describes a subset of HU. Thus, a pronoun with just AN will refer to animate individuals

¹⁷We are grateful to Jessica Coon for suggesting this possible semantics for the EL feature.

that are not human (i.e., animals), while a pronoun with HU that lacks EL will refer to humans who do not stand in the requisite relation to the speaker (i.e., non-elder humans).

For semantic purposes, it might be sufficient for pronouns to bear just one of these features, but this would not capture their morphosyntactic properties. Pronouns form classes for the purposes of agreement, requiring some shared featural content. Following Harley and Ritter (2002), we take person and gender features to be arranged in geometries. In addition, following Béjar 2003:47–50, we take the dominance relation in these structures to correspond directly to the entailment relationships amongst features. Thus, if a pronoun bears some feature, it will also bear all features that are entailed by it. The inventory of third-person pronouns in Sierra Zapotec is shown in 43b, with (possibly partial) featural representations for local pronouns in 43a.

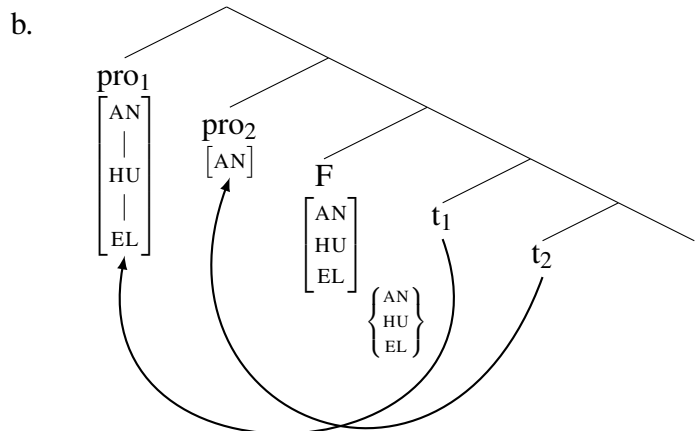
- (43) a. 1 2
- | | |
|---|---------------|
| $\begin{bmatrix} \text{PA} \\ \\ \text{SP} \end{bmatrix}$ | $[\text{PA}]$ |
|---|---------------|
- b. 3.EL 3.HU 3.AN 3.IN
- | | | | |
|---|---|---------------|-------------|
| $\begin{bmatrix} \text{AN} \\ \\ \text{HU} \\ \\ \text{EL} \end{bmatrix}$ | $\begin{bmatrix} \text{AN} \\ \\ \text{HU} \end{bmatrix}$ | $[\text{AN}]$ | $[\quad]$ |
|---|---|---------------|-------------|

These representations might be incomplete. If the structural relationship between features is determined entirely by semantic entailment, as Béjar proposes, there should be a structural relationship between the local pronouns and the third-person pronouns, given the semantics of person and gender features in 41–42. In particular, local pronouns would structurally contain all third-person pronouns. If the speaker and other conversational participants are always human, SP and PA must be dominated by HU and AN. And, if we understand the relation between a speaker and other conversational participants as one of the relations described by EL, it should dominate SP and PA as well. This would integrate the gender system in Sierra Zapotec fully into person.

4.3 Deriving relative constraints

With the featural specifications in 43, the shapes of relative constraints arise from the locality constraint on Agree and the Condition on Pronominal Cliticization in 40. Take the GCC in Yalálag, the Zapotec variety where the gender hierarchy is most transparently reflected, described in 19 above. In a derivation containing an elder subject clitic and an animal object clitic, the probe first finds the subject, in keeping with Attract Closest (44a). Assuming that the probe in Yalálag is relativized to all gender features, it copies every gender feature on this elder pronoun.

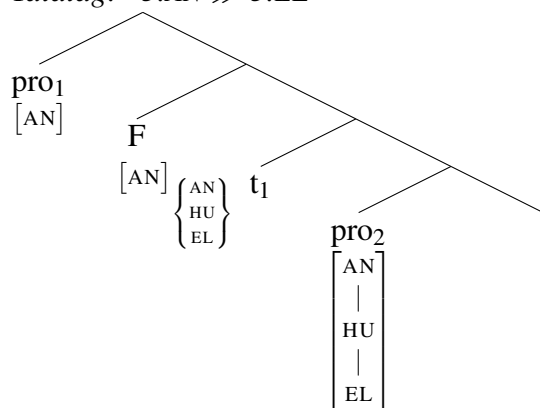
- (44) *Yalálag*: 3.EL \gg 3.AN
- a.
-



Then, the subject and object pronouns can cliticize, since the gender features of both are a subset of the probe's value (44b).

At the same time, with this relativization, the lower pronoun will not be able to cliticize for any combination below the diagonal, e.g., 45.

(45) *Yalálag*: *3.AN \gg 3.EL



The probe is now able to copy only some of the features it is looking for from the higher pronoun. While the subject pronoun is able to cliticize according to the Condition on Pronominal Cliticization, the lower pronoun cannot: it has more relevant features than have been valued on the probe. The logic here is fully general and extends to all other third-person combinations, giving rise to the full GCC in *Yalálag*.

Crucially, while the Condition on Pronominal Cliticization dictates when clitic pronouns can and cannot move, it is silent about why they *must* move when they can. We believe this should come from a more general theory of pronoun movement. The condition is, for instance, compatible with a greed-based motivation for cliticization, as in Cardinaletti and Starke's (1999) theory of pronominal deficiency. For them, clitic and other weak pronouns are missing some functional structure, and so must surface in the specifier of a functional head in the clausal spine. This cannot be just any functional head; at the very least, its syntactic category must matter. From this perspective, the Condition on Pronominal Cliticization can be seen as an additional restriction on the features that the functional head must have in order to satisfy the needs of a clitic.

Recently, Coon and Keine (2019) have advanced a more probe-centric view of pronominal cliticization. As in the theory advanced here, they eschew a licensing condition on pronouns. They

differ, however, in taking Agreement to feed cliticization, a dependency they state as 46: if a functional head Agrees with a pronoun, it must then move.

- (46) For a probe *P* which requires clitic-doubling, every DP that *P* has Agreed with must cliticize onto *P*. (Coon and Keine 2019:21)

Successful application of Agree is, in other words, a sufficient condition for cliticization. If, in addition, movement only takes place to satisfy the needs of a probe, then an application of Agree would also be a necessary condition for movement (Chomsky 2000:135–137). For Coon and Keine, the requirement in 46 forms part of a system, designed to derive the typology of PCCs, which assumes that person and number features are sequenced, much as Béjar and Rezac (2003) propose. Without going into the other parts of Coon and Keine’s account, it may be possible to integrate the Condition on Pronominal Cliticization with just the cliticization component.

In the contemporary theory of attraction, the dependence between the two steps of movement — Agreement, followed by (internal) Merge of the goal — is motivated by considerations of economy. The principle of Last Resort mandates, for a given operation, as few applications as are necessary for the derivation to succeed (Chomsky 1995:200–201). If (internal) Merge can only apply after the establishment of a prior Agree relation, the result is fewer instances of Merge (Chomsky 1995:297, cf. Lasnik 1995, Collins 1997). In this context, the Condition on Pronominal Cliticization might be seen as allowing movement to further satisfy the demands of Last Resort, reducing applications of Agree, by removing it in certain cases as a precondition for Merge. In particular, it does this when one Agree relation has already taken place and subsequent Agree relations would not produce a significantly different result.

Whether the Condition on Pronominal Cliticization is integrated into a greed-based or attraction-based theory of pronoun movement, it makes the prediction that, since the probe is only valued by the highest clitic, there should be no restrictions based on gender between any clitics lower in the structure. They should be able to move as long as they have a subset of the features of the first goal. This prediction may be borne out in ditransitives in Sierra Zapotec, where up to three pronouns can cliticize. In Laxopa, both combinations of an animal and an elder clitic are permitted when these are objects, as in 47a–b; this contrasts with the subject–object combinations in 2a–b above.¹⁸

- (47) a. Ba blhu'id=ba'₁=b₂=ne'₃ t₁ t₂ t₃.
 already show.COMP=3.HU=3.AN=3.EL
 ‘S/he already showed it (an animal) him/her (an elder).’
 b. Ba blhu'id=ba'₁=ne'₂=b₃ t₁ t₂ t₃.
 already show.COMP=3.HU=3.AN=3.EL
 ‘S/he already showed him/her (an elder) it (an animal).’ (Laxopa)

This assumes, of course, that all three clitics interact with the same functional head. While further investigation is needed, the predictions of the current account are clear (see Foley and Toosarvandani 2019 for a discussion of some alternative analyses).

¹⁸As Foley and Toosarvandani (2019) argue, indirect objects asymmetrically c-command direct objects. Many Zapotec languages have a “backwards binding” construction, in which an argument can be “omitted” just in case it c-commands a coreferential possessor (Black 1996, Avelino et al. 2018). In this construction, the subject — which otherwise is obligatory — can be null, when it corefers with the possessor of the object. Similarly, the indirect object can also be omitted if it corefers with the possessor of the direct object. But the direct object cannot be omitted under coreference with the possessor of an indirect object.

4.4 Accounting for Growing Staircase

Under this account, no relative constraint that violates Growing Staircase is possible, regardless of the probe's relativization. It excludes, for instance, the existence of a constraint like that in 38a above, which allows a lower pronoun to cliticize when its relevant features are a *superset* of the probe's value. This comes directly from how the probe must Agree with the closest goal it can find. It is always the highest pronoun that values the probe, setting the threshold for which pronouns are able to cliticize.

In addition, it is not possible to give rise to an unattested constraint in which a combination on or along the diagonal is ungrammatical, as in 48a below. In all hierarchy-satisfying combinations along or above the diagonal, the lower clitic has fewer features than the higher clitic, and so they will both always be able to move.

(48)

a.		3.EL	3.HU	3.AN	3.IN
	3.EL	(✓)	✓	✓	✓
	3.HU	*	*	*	✓
	3.AN	*	*	*	✓
	3.IN	*	*	*	(✓)

b.		3.EL	3.HU	3.AN	3.IN
	3.EL	(✓)	✓	✓	✓
	3.HU	✓	(✓)	✓	✓
	3.AN	✓	*	(✓)	✓
	3.IN	*	*	*	(✓)

Nor can an unattested constraint like 48b ever arise, where some combinations under the diagonal are ruled out that do not form a step. If the probe has been valued for some feature (say, AN), *all* pronouns with that feature will be able to cliticize, thereby ruling in every combination in that row below the diagonal.

The variation in relative constraints that is permitted under this account — which is restricted almost entirely to the constraints that are attested — arises from how the probe is relativized. The GCC in Yalálag, which enforces the gender hierarchy strictly, corresponds to a probe that is looking for all gender features. The increasingly lax constraints found in Laxopa and Zoogocho correspond, as shown in 49a, to probes that are relativized to fewer features.

(49)

a.	[] _{AN, HU, EL}	Yalálag GCC	b.	[] _{PA, SP}	Ultrastrong PCC
	[] _{AN, HU}	Laxopa GCC		[] _{PA}	Weak PCC
	[] _{AN}	Zoogocho GCC			

When a feature is subtracted from the probe's relativization, it is never copied onto the probe as part of its value, and hence it is never relevant for pronominal cliticization. For the GCC in Laxopa, for instance, any human pronoun, whether elder or non-elder, can value the probe for HU and cliticize.

Not every logically possible relativization is listed above. There are four (2^2) such relativizations drawing from two person features, and eight (2^3) for the three gender features in Sierra Zapotec. Some of these seem desirable, such as []_{ }, which does not allow for any pcliticization at

all. The remaining realizations yield constraints that conform to Growing Staircase, as it is defined in 33 above, though they are not currently attested. For instance, $[\]_{\{AN, EL\}}$ creates a staircase with one very large step.

(50)

	3.EL	3.HU	3.AN	3.IN
3.EL	(✓)	✓	✓	✓
3.HU	*	(✓)	✓	✓
3.AN	*	✓	(✓)	✓
3.IN	*	*	*	(✓)

If such constraints are never attested, it would be possible to restrict the relative constraints to just those in 49a–b by imposing a very natural condition on possible probes (cf. Béjar and Rezac 2009:43).

(51) *Entailment Condition on Probe Relativizations*

If the relativization for a probe includes feature F , it also includes every feature F' such that $\llbracket F \rrbracket \subseteq \llbracket F' \rrbracket$.

But even without such a restriction on relativizations, under this account there is no probe that gives rise to a Φ CC violating Growing Staircase.

4.5 A parallel alternative

Our account is inspired, in part, by Anagnostopoulou's (2005) and Nevins' (2007, 2011) theories of the PCC, which locate the source of variation in the relativization of the probe. For this reason, there is a certain superficial resemblance between them, though they have deeper empirical and conceptual differences. Both Anagnostopoulou and Nevins assume that every clitic pronoun Agrees with a functional head. For them, this head interacts with all the goals in its domain via Multiple Agree (Hiraiwa 2001). No one goal is closer than another since they are all found simultaneously. As a consequence, there must be independent conditions on Multiple Agree that give rise to PCCs.

We consider only Nevins' theory in detail here, since it attempts to account for the full typology of PCCs. He proposes a constraint called *Contiguous Agree* that is responsible for the relative constraints. It prohibits a probe from Agreeing with a goal in some feature just in case there is a higher goal lacking that feature.¹⁹

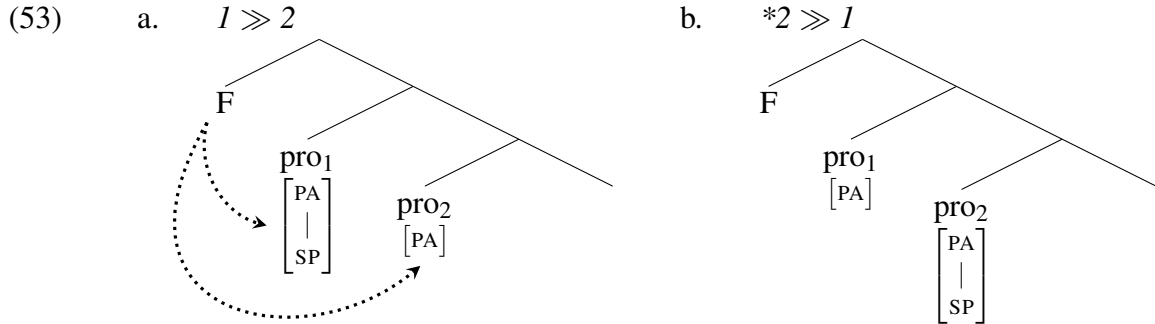
(52) *Contiguous Agree (cf. Nevins 2007:291)*

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 .

¹⁹Nevins (2011) argues that person features are bivalent. We adapt his theory to the current assumptions, where these are privative. This does not significantly affect his account of PCCs, though it does elide the differences that he seeks to draw between person and number.

The Ultrastrong PCC, for instance, is produced by a probe relativized to at least the SP and PA features. Contiguous Agree is satisfied when the higher clitic has all the features of the lower clitic (53a). But if the lower clitic has either SP or PA and the higher clitic does not, then Multiple Agree is impossible (53b).²⁰



Each step in the staircase is produced by adding a feature to the relativization. The Weak PCC thus would arise from a less-specified probe, one relativized just to PA. This can be extended straightforwardly to the GCCs in Sierra Zapotec. In Yalálag, where the gender hierarchy is obeyed most closely, the probe would be relativized to EL, HU, and AN. In Laxopa, it would be relativized to HU and AN, and in Zoogocho just to AN.

As in our theory, some degree of partial identity is enforced between clitics based on a probe's relativization. Moreover, this relation is asymmetrical: the lower clitic must have a subset of the relevant features of the higher clitic. Under Nevins' theory, however, the privileged status of the highest clitic is enforced in the definition of Contiguous Agree. The Multiple Agree relation between a probe and its goals is not inherently constrained by locality, since it interacts simultaneously with all of them. Nevins (2011:941 *et passim.*) does draw an analogy between Contiguous Agree and an intervention-based locality condition. But, while Relativized Minimality in its traditional form prohibits a syntactic dependency between two elements if there is an intervening element that bears the same feature, Contiguous Agree imposes the *opposite* condition: it prohibits an intervener that *lacks* some feature (see also Coon and Keine 2019). The similarity to a locality constraint might thus be somewhat less close than it appears.

More importantly, as we discuss below, another condition on probing, one different from Contiguous Agree, is needed to account for absolute constraints. As two separate conditions, these are not able to capture the deeper generalization that we saw characterized the typology of Φ CCs. The absolute constraints exhibit the same asymmetry that the relative constraints do. This overall unity deserves a principled account, one that does not seem forthcoming if a probe can find all the pronouns in its domain in parallel. The question is whether it is possible to capture this generalization if a probe finds its goals one at a time, subject to locality. Next, we attempt to do this by extending the present account of relative constraints to absolute constraints.

²⁰It is unclear how, under Nevins' theory, just the higher pronoun is, in fact, able to cliticize in this circumstance. If Multiple Agree is not constrained by locality, as Hiraiwa (2001) originally intends, either it should apply simultaneously to all goals, in which case they all cliticize, or not apply at all, in which case none should cliticize.

5 Extending the account to Moving Wall

This is not an easy task, since the absolute constraints impose a restriction on the lower of two clitics regardless of what the higher one is. Under the theory of Φ CCs in Section 4, in which a functional head Agrees subject to locality, the closest pronoun to the probe enjoys a special status. It invariably cliticizes, because its features are copied onto the probe and these are the metric by which it and other clitics move. To derive the absolute constraints, whichever features are copied from the highest pronoun must fail to match, in the requisite sense, the relevant featural content of pronouns belonging to some class (e.g., local person for the Strong PCC).

To do this, we think it may be possible to take advantage of the featural representation of person and gender on pronouns. We have been assuming that φ -features are privative features arranged in a feature geometry. When the valuation mechanism involved in Agree copies individual features from these structures, a relative constraint arises, as we described in Section 4.3. For an absolute constraint, however, all lower pronouns from a given class must be prohibited from cliticizing. We suggest that both types of constraints can be subsumed under a single mechanism, if “valuing” a probe consists of copying a *feature treelet* — a subtree in a feature geometry — from its goal. This can either be a trivial (non-branching) treelet, consisting of just the feature the probe is relativized for, or a branching treelet, consisting of that feature and the feature structure it dominates, following a suggestion by Preminger (2014:47–49). With these two possible copying mechanisms, it is possible to derive both relative and absolute constraints and, with the locality condition on Agree, account for the asymmetrical typology of Φ CCs.

5.1 Absolute constraints and Matched Value

First, we should consider how absolute constraints might be derived in a theory in which a probe finds its goals in parallel. In Nevins’s (2007, 2011) theory based on Multiple Agree, Contiguous Agree derives the attested relative constraints, and hence Growing Staircase, but an additional constraint is needed to take care of the absolute constraints. Nevins identifies this as *Matched Values*, a restriction on Multiple Agree whose effects are felt when a probe is relativized to the *contrastive* value for a feature.

(54) *Matched Values* (cf. Nevins 2007:291)

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

Contrastiveness is defined paradigmatically: 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). So, for instance, first and second person pronouns are contrastive for SP, but not PA.

A probe with a contrastive relativization rules out any two adjacent columns in a paradigm. For person, this means that Matched Values can give rise to the Strong PCC (55a). But, as Nevins (2007:300) notes, Matched Values also predicts an unattested “Me-Last” constraint that is somewhat “strange” (55b).

- (55) a. *Contrastive* [SP] (*Strong PCC*) b. *Contrastive* [PA] (*unattested*)
- | | | | |
|---|---|---|-----|
| | 1 | 2 | 3 |
| 1 | – | * | ✓ |
| 2 | * | – | ✓ |
| 3 | * | * | (✓) |
- | | | | |
|---|---|---|-----|
| | 1 | 2 | 3 |
| 1 | – | * | * |
| 2 | ✓ | – | * |
| 3 | ✓ | * | (✓) |

Extended to the gender domain, Matched Values would predict an even more extravagant range of constraints with the four-way contrast in Sierra Zapotec. While one of these conforms to Moving Wall (56a), the others do not (56b–c).

- (56) a. *Contrastive* [EL] (*unattested*)
- | | | | | |
|------|------|------|------|------|
| | 3.EL | 3.HU | 3.AN | 3.IN |
| 3.EL | (✓) | * | ✓ | ✓ |
| 3.HU | * | (✓) | ✓ | ✓ |
| 3.AN | * | * | (✓) | ✓ |
| 3.IN | * | * | ✓ | (✓) |
- b. *Contrastive* [HU] (*unattested*)
- | | | | | |
|------|------|------|------|------|
| | 3.EL | 3.HU | 3.AN | 3.IN |
| 3.EL | (✓) | * | * | ✓ |
| 3.HU | ✓ | (✓) | * | ✓ |
| 3.AN | ✓ | * | (✓) | ✓ |
| 3.IN | ✓ | * | * | (✓) |
- c. *Contrastive* [AN] (*unattested*)
- | | | | | |
|------|------|------|------|------|
| | 3.EL | 3.HU | 3.AN | 3.IN |
| 3.EL | (✓) | ✓ | * | * |
| 3.HU | ✓ | (✓) | * | * |
| 3.AN | ✓ | ✓ | (✓) | * |
| 3.IN | ✓ | ✓ | * | (✓) |

Matched Value can generate the absolute constraints comprising Moving Wall, but it cannot account for the generalization itself.

While it would be possible, no doubt, to define a new constraint that only generates absolute Φ CCs anchored in the bottom-left corner of the paradigm, this would fail to capture the generalization that this asymmetry characterizes the typology of relative constraints as well. A probe that enters into a Multiple Agree relation finds all of its goals simultaneously.

5.2 Probing for feature treelets

Instead, we would like to try and extend the theory of relative constraints advanced in Section 4 to derive absolute constraints. There, we assumed that a probe copies the individual features in a feature geometry from the goal. Preminger (2014:47–49) proposes, however, that a probe might be able to copy an entire subtree in the geometry. The label for such a *feature treelet* is, like other syntactic objects, the root node, and so a probe’s relativization would contain features that it will

seek to match to the root node of a treelet. We suggest that, once a probe finds a node on its goal that matches its relativization, there are, in principle, two things that might happen: it could copy the (nonbranching) treelet that contains just that feature or it could copy the entire (branching) treelet rooted in that feature.

(57) *Feature Treelet Copying*

For a probe P whose relativization contains a feature F , when P finds a matching goal G , it copies from G onto P either:

- (i) F , or (nonbranching treelet)
- (ii) F and any nodes that F dominates. (branching treelet)

While we will not attempt to derive these two copying modalities from more general principles, we can draw a parallel to a more familiar syntactic mechanism. Movement can target either a single syntactic node, as in head movement, or a node and all the nodes it dominates, as in phrasal movement. Likewise, we are positing that a probe can copy an individual feature or a whole sub-constituent of a feature geometry from a goal.

Feature treelet copying in 57 permits a unification of absolute and relative constraints. An absolute constraint arises when the probe searches for a branching treelet. Then, it will not be enough simply for the features copied onto the probe and a pronoun to match: the structures within which those features are contained will also have to match. A slight reformulation of the Condition on Pronominal Cliticization is first needed, so it refers to feature treelets rather than to features.

(58) *Condition on Pronominal Cliticization (final version)*

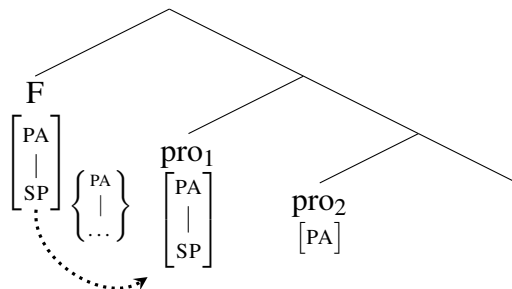
For a functional head H that has been valued (i.e., $\text{VALUE}(H) \neq \emptyset$), a clitic pronoun P can (internal) Merge with H iff, for the set of relevant feature treelets F on P , $F \subseteq \text{VALUE}(H)$.

This revision leaves the account of relative constraints untouched, since individual features are just nonbranching treelets. At the same time, it opens up the possibility of deriving the Strong PCC and other absolute constraints.

A local-person pronoun can never cliticize from object position when the probe is relativized to copy a branching feature treelet rooted in PA. First, consider a configuration in which the higher clitic is first person. (We notate a probe searching for a branching treelet rooted in a feature F as

$[\]_{\{F\}} \cdot$)

(59) $*I \gg 2$

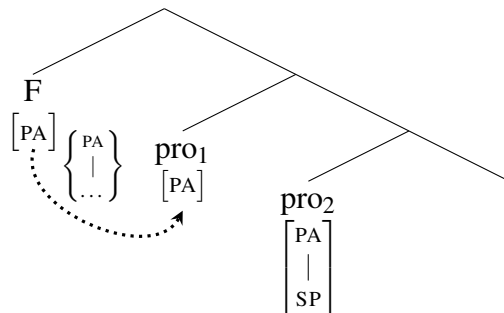


The probe copies a branching feature treelet rooted in PA from the highest clitic: since it is first person, this treelet contains SP as the daughter of PA. While the higher pronoun can cliticize, a

second-person pronoun cannot cliticize from object position when the probe has this value, according to the Condition on Pronominal Cliticization in 58. The matching feature treelet rooted in PA on the second-person clitic is just a single feature — namely just PA — and this is not an element of the probe’s valuation set, which contains a branching treelet rooted in PA. While the two treelets share some features, a set containing one would not be a subset of a set containing the other.

The same logic holds when the higher clitic is second person, as in 60. Again, while the higher pronoun matches the value of the probe, the lower pronouns does not, in the sense required by 58, and cannot cliticize.

(60) *2 \gg 1



By contrast, a third-person object will always be able to cliticize because it does not have any of the features relevant for this relativization. It matches the probe’s value, in the sense dictated by 58, since the empty set is a subset of every set.

To appreciate how this works, consider two derivations identical to 59 and 60 except that the probe is relativized to search for a nonbranching treelet rooted in PA, e.g., in 49b. This probe would give rise to the Weak PCC, which permits any combination of local-person clitics. Since the probe only copies nonbranching treelets — that is, individual features — it would copy, in both derivations, just PA from the highest pronoun. Since the lower pronoun also possesses this feature, it would satisfy the Condition on Pronominal Cliticization and be able to move.

Importantly, both copying modalities must, by hypothesis, be able to coexist in the same language, since the Strong PCC coexists alongside relative GCCs in all the Sierra Zapotec varieties. The probe in Yalálag, for instance, must have the full relativization in 61, copying some nonbranching treelets to give rise to the relative constraint, alongside the branching treelet that gives rise to the Strong PCC.

(61) $\left[\begin{array}{c} \\ \end{array} \right] \left\{ \begin{array}{c} PA \\ AN,HU,EL, \mid \\ \dots \end{array} \right\}$

Each relativization simply places additional restrictions on what may cliticize, so they can be added to one another in this way.

5.3 Deriving Moving Wall

The possible relativizations for copying a branching feature treelet only generate absolute constraints conforming to Moving Wall. Two of these generate the Me-First and Strong PCCs, respec-

tively (62a). Similar relativizations in 62b for treelets rooted in EL, HU, and AN derive the more speculative absolute GCCs in 37.

$$\begin{array}{ll}
 (62) \quad \text{a.} & \left[\begin{array}{c} \\ \\ \end{array} \right]_{\{SP\}} \quad \text{Me-First PCC} \\
 & \left[\begin{array}{c} \\ \\ \end{array} \right]_{\{PA\}} \quad \text{Strong PCC} \\
 \text{b.} & \left[\begin{array}{c} \\ \\ \end{array} \right]_{\{EL\}} \quad (37a) \\
 & \left[\begin{array}{c} \\ \\ \end{array} \right]_{\{HU\}} \quad (37b) \\
 & \left[\begin{array}{c} \\ \\ \end{array} \right]_{\{AN\}} \quad (37c)
 \end{array}$$

There is one final relativization to a treelet rooted in π , which would be found in any language in which only the highest pronoun cliticizes. If the Moving Wall generalization holds up, this restricted inventory of probes would be a desirable outcome.

6 Final thoughts

This paper has had two main goals. The first was to establish a typology of the constraints on combinations of clitic pronouns sensitive to their φ -features and structural position. The second was to relate this typology to the syntax of pronominal cliticization. We argued that a fundamental asymmetry in the typology of Φ CCs requires a theory of these constraints in which a functional head Agrees with clitics subject to intervention-based locality. Unlike earlier work arising from the investigation of the Strong PCC, however, we explored a theory in which these constraints originate in a mechanism specific to cliticization. We advanced the hypothesis that clitic pronouns do not have to be licensed through Agreement with a functional head, though they can only move to a functional head if their φ -features match its value.

This choice was guided, in part, by our focus on relative constraints. In the person domain, it has not always been clear whether the Weak and Ultrastrong PCCs deserve an explanation on the same terms as the Strong PCC. In the languages where these constraints are attested, they are not entirely robust. The Weak PCC in Romance languages, for instance, is attested only for some speakers; other members of the same speech communities have the Strong PCC (Perlmutter 1971:62–63, Bonet 1991:180, Bianchi 2006:2028, Pancheva and Zubizarreta 2017:19). By contrast, the GCCs in Sierra Zapotec are each robustly attested in a single community, reinforcing the importance of relative constraints in developing a theory of Φ CCs.

Much remains to be done to establish the full range of typological variation in Φ CCs. The theory advanced here makes strong predictions about which constraints we should find and which we should not. While there is some suggestive evidence from Teotitlán del Valle Zapotec, the full range of absolute GCCs has not been uncovered. If no such constraints are ever attested, the Moving Wall generalization would only characterize person-based constraints. This would raise at least two questions. First, it might lead us to revisit the role of the PLC in deriving absolute constraints. Second, it might invite additional scrutiny of the relationship between person and gender. With

the semantics we have given them, the person features entail gender features. But if there are no absolute GCCs, this might indicate that these two domains are less connected to each other.

To account for the full typology of Φ CCs, we took strategic advantage of feature geometries as syntactic objects, though we assumed, at the same time, that these geometries were grounded in the semantics of the features involved. This assumption seems crucial for making sense of why GCCs are found in Sierra Zapotec, but not in other languages with robust gender systems, such as Romance or Bantu, where the gender (or noun class) systems are not organized along the same semantic lines. But, if the structural organization of gender features is derived entirely from semantic entailment, it is reasonable to question whether a feature geometry is necessary in the first place, as Harbour (2008:51–115, 2011, 2014:223–225) has argued in the person domain. It is worth noting that, for the relative constraints at least, the theory advanced here does not require that features stand in any structural relationship to each other. Feature geometries were necessary in order to extend this theory to the absolute constraints. Whether this is, in the end, the right move or not, we think that the continued investigation of these constraints will yield significant insights into how person and gender should be represented in the grammar.

References

- Ackema, Peter and Ad Neeleman. 2018. *Features of person: From the inventory of persons to their morphological realization*. Cambridge, MA: MIT Press.
- Adger, David and Daniel Harbour. 2007. Syntax and syncretisms of the Person Case Constraint. *Syntax* 10:2–37.
- Anagnostopoulou, Elena. 2003. *The syntax of ditransitives: Evidence from clitics*. Berlin: Mouton de Gruyter.
- Anagnostopoulou, Elena. 2005. Strong and weak person restrictions: A feature checking analysis. In *Clitic and affix combinations: Theoretical perspectives*, eds. Lorie Heggie and Francisco Francisco Ordóñez, 199–235. Amsterdam: John Benjamins.
- Anagnostopoulou, Elena. 2006. Clitic doubling. In *The Blackwell companion to syntax*, eds. Martin Everaert and H. C. van Riemsdijk, 519–581. Oxford: Blackwell.
- Avelino, Heriberto, John Foreman, Pamela Munro and Aaron Huey Sonnenschein. 2018. Covert subjects in Zapotec. *Symposium on Oaxacan Linguistics (SOL)* 2.
- Avelino Becerra, Heriberto. 2004. Topics in Yalálag Zapotec, with particular reference to its phonetic structure. Ph.D. Dissertation, University of California, Los Angeles.
- Béjar, Susana. 2003. Phi-syntax: A theory of agreement. Ph.D. Dissertation, University of Toronto.
- Béjar, Susana and Milan Rezac. 2003. Person licensing and the derivation of PCC effects. In *Romance linguistics: Theory and acquisition*, eds. Ana Teresa Pérez Leroux and Yves Roberge, 49–62. Amsterdam: John Benjamins.
- Béjar, Susana and Milan Rezac. 2009. Cyclic Agree. *Linguistic Inquiry* 40:35–73.
- Benveniste, Emile. 1956. La nature des pronoms. In *For Roman Jakobson: Essays on the occasion of his sixtieth birthday, 11 October 1956*, ed. Morris Halle, 34–37. The Hague: Mouton.
- Bhatia, Sakshi and Rajesh Bhatt. 2019. Implications of feature realization in Hindi-Urdu: Copular sentences and fake indexicals. Handout from the Workshop on Dependency in Syntactic Covariance, University of Leipzig.
- Bianchi, Valentina. 2006. On the syntax of personal arguments. *Lingua* 116.

- Black, Cheryl A. 1996. A backwards binding construction in Zapotec. *Work Papers of the Summer Institute of Linguistics* 40:75–87.
- Bonet, Eulàlia. 1991. Morphology after syntax: Pronominal clitics in Romance. Ph.D. Dissertation, Massachusetts Institute of Technology.
- Borer, Hagit. 1984. Restrictive relatives in Modern Hebrew. *Natural Language and Linguistic Theory* 2:219–260.
- Butler, Inez M. 1980. *Gramática zapoteca: Zapoteco de Yatzachi el Bajo*. Mexico City: Instituto Lingüístico de Verano.
- Cardinaletti, Anna and Michal Starke. 1999. The typology of structural deficiency: A case study of the three classes of pronouns. In *Clitics in the languages of Europe*, ed. H. C. van Riemsdijk, 145–233. Berlin: Mouton de Gruyter.
- Chomsky, Noam. 1995. Bare phrase structure. In *Evolution and revolution in linguistic theory*, eds. Héctor Campos and Paula Kempchinsky, 57–109. Washington: Georgetown University Press.
- Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by step: Essays on Minimalist syntax in honor of Howard Lasnik*, eds. Roger Martin, David Michaels, and Juan Uriagereka, 89–156. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in language*, ed. Michael Kenstowicz, 1–52. Cambridge, MA: MIT Press.
- Collins, Chris. 1997. *Local economy*. Cambridge, MA: MIT Press.
- Coon, Jessica and Stefan Keine. 2019. Feature gluttony. Ms., McGill University and University of Southern California, URL <https://ling.auf.net/lingbuzz/004224>.
- Coon, Jessica, Stefan Keine and Michael Wagner. 2017. Hierarchy effects in copular constructions: The PCC corner of German. *Proceedings of the Northeast Linguistic Society (NELS)* 47:205–214.
- Cooper, Robin. 1979. The interpretation of pronouns. In *Selections from the third Groningen round table*, eds. Frank Heny and Helmut S. Schnelle, volume 10 of *Syntax and Semantics*, 61–92. San Diego.
- Corbett, Greville G. 1991. *Gender*. Cambridge: Cambridge University Press.
- D'Alessandro, Roberta. 2004. *Impersonal Si constructions: Agreement and interpretation*. Berlin: De Gruyter.
- Dowty, David and Pauline Jacobson. 1988. Agreement as a semantic phenomenon. *Eastern States Conference on Linguistics (ESCOL)* 95–108.
- Farkas, Donka and Kostas Kazazis. 1980. Clitic pronouns and topicality in Rumanian. *Chicago Linguistic Society (CLS)* 16:75–82.
- Fassi Fehri, Abdelkader. 1993. *Issues in the structure of Arabic clauses and words*. Amsterdam: Springer.
- Foley, Steven, Nick Kalivoda and Maziar Toosarvandani. 2019. Forbidden clitic clusters in Zapotec. *Chicago Linguistic Society (CLS)* 53:87–102.
- Foley, Steven, Nick Kalivoda and Maziar Toosarvandani. To appear. Gender–Case Constraints in Zapotec. *Workshop on Structure and Constituency in Languages of the Americas (WSCLA)* 22.
- Foley, Steven and Maziar Toosarvandani. 2019. Pronoun cliticization, *wh*-movement, and the principle of minimal compliance. *North East Linguistic Society (NELS)* 49:251–264.
- Gutiérrez Lorenzo, Ambrocio. 2014. Construcciones de verbos seriales en el zapoteco de Teotitlán del Valle. Master's thesis, Centro de Investigaciones y Estudios Superiores en Anthropología Social.

- Harbour, Daniel. 2008. *Morphosemantic number: From Kiowa noun classes to UG number features*. Dordrecht: Springer.
- Harbour, Daniel. 2011. Valence and atomic number. *Linguistic Inquiry* 42:561–594.
- Harbour, Daniel. 2014. Paucity, abundance, and the theory of number. *Language* 90:185–229.
- Harbour, Daniel. 2016. *Impossible persons*. Cambridge, MA: MIT Press.
- Harley, Heidi and Elizabeth Ritter. 2002. Person and number in pronouns: A feature-geometric analysis. *Language* 78:482–526.
- Heim, Irene and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Oxford: Blackwell.
- Hiraiwa, Ken. 2000. On nominative-genitive conversion. *MIT Working Papers in Linguistics* 39:66–124.
- Hiraiwa, Ken. 2001. Multiple Agree and the defective intervention constraint in Japanese. *MIT Working Papers in Linguistics* 40:67–80.
- Keine, Stefan, Michael Wagner and Jessica Coon. 2019. Hierarchy effects in copula constructions. *Canadian Journal of Linguistics* 64:617–648.
- Lasnik, Howard. 1995. Case and expletives revisited: On Greed and other human failings. *Linguistic Inquiry* 26:615–633.
- Long, Rebecca and Sofronio Cruz. 2000. *Diccionario Zapoteco de San Bartolomé Zoogocho Oaxaca*. Mexico City: Instituto Lingüístico de Verano.
- López, Filemón and Ronaldo Newberg. 2005. *La conjugación del verbo zapoteco, zapoteco de Yalálag*. Mexico City: Instituto Lingüístico de Verano.
- Marlett, Stephen A. 2010. Personal pronouns: Inventory. In *The Zapotec grammar files*, eds. Cheryl A. Black, H. Andrew Black, and Stephen A. Marlett. SIL International.
- Nevins, Andrew. 2007. The representation of third person and its consequences for person-case effects. *Natural Language and Linguistic Theory* 25:273–313.
- Nevins, Andrew. 2011. Multiple agree with clitics: Person complementarity vs. omnivorous number. *Natural Language and Linguistic Theory* 29:939–971.
- Nevins, Andrew and Oana Săvescu. 2010. An apparent ‘number case constraint’ in romanian. In *Romance linguistics 2008: Interactions in romance. selected papers from the 38th linguistic symposium on romance languages (lsrl), urbana-champaign, april 2008*, 185–200.
- Noyer, Rolf. 1992. Features, positions, and affixes in autonomous morphological structure. Ph.D. Dissertation, Massachusetts Institute of Technology.
- Ormazabal, Javier and Juan Romero. 2007. The object agreement constraint. *Natural Language and Linguistic Theory* 25:315–347.
- Pancheva, Roumyana and Maria Luisa Zubizarreta. 2017. The Person Case Constraint: The syntactic encoding of perspective. *Natural Language and Linguistic Theory*.
- Perlmutter, David. 1971. *Deep and surface structure constraints in syntax*. New York: Holt, Reinhart, and Winston.
- Preminger, Omer. 2011. Asymmetries between person and number in syntax: A commentary on Baker’s SCOPA. *Natural Language and Linguistic Theory* 29:917–937.
- Preminger, Omer. 2014. *Agreement and its failures*. Cambridge, MA: MIT Press.
- Preminger, Omer. 2019. What the PCC tells us about “abstract” agreement, head movement, and locality. *Glossa* 4:13.
- Rezac, Milan. 2011. *Phi-features and the modular architecture of language*. Dordrecht: Springer.
- Richards, Marc. 2008. Defective Agree, case alternations, and the prominence of person. *Linguistische Arbeits Berichte* 86:137–161.

- Rivero, María Luisa and Dana Geber. 2003. Quirky subjects and person restrictions in Romance: Rumanian and Spanish. *Cahiers Linguistiques d'Ottawa* 31:53–66.
- Rizzi, Luigi. 1990. *Relativized minimality*. Cambridge, MA: MIT Press.
- Sauerland, Uli. 2006. On the semantic markedness of phi-features. In *Phi theory: Phi-features across interfaces and modules*, eds. Daniel Harbour, David Adger, and Susan Béjar, 57–82. Oxford: Oxford University Press.
- Sigurðsson, Halldór Ármann. 1990–1991. Beygingarsamræmi [Agreement]. *Íslenskt mál og almenn málfræði* 12–13:31–77.
- Sigurðsson, Halldór Ármann. 1996. Icelandic finite verb agreement. *Working Papers in Scandinavian Syntax* 57:1–46.
- Sigurðsson, Halldór Ármann. 2004. Icelandic non-nominative subjects: Facts and implications. In *Non-nominative subjects*, eds. Peri Bhaskararao and K. V. Subbarao, volume 2, 137–159. Amsterdam: John Benjamins.
- Silverstein, Michael. 1981. Case marking and the nature of language. *Australian Journal of Linguistics* 1:227–244.
- Sonnenschein, Aaron. 2004. A descriptive grammar of San Bartolomé Zoogocho Zapotec. Ph.D. Dissertation, University of Southern California.
- Sportiche, Dominique. 1993. Clitic constructions. In *Phrase structure and the lexicon*, eds. Johan Rooryck and Laurie Zaring, 213–276. Dordrecht: Springer.
- Suñer, Margarita. 1988. The role of agreement in clitic-doubled constructions. *Natural Language and Linguistic Theory* 6:391–434.
- Taraldsen, Knut Tarald. 1995. On agreement and nominative objects in Icelandic. In *Studies in comparative german syntax*, eds. Hubert Haider, Susan Olsen, and Sten Vikner, 307–327. Dordrecht: Kluwer.
- Toosarvandani, Maziar. 2017. On reaching agreement early (and late). In *Asking the right questions: Essays in honor of Sandra Chung*, eds. Jason Ostrove, Ruth Kramer, and Joseph Sabbagh, 124–138. Santa Cruz, CA: Department of Linguistics, University of California, Santa Cruz.
- Uriagereka, Juan. 1995. Aspects of the syntax of clitic placement in Western Romance. *Linguistic Inquiry* 26:79–123.
- Walkow, Martin. 2012. Cyclic agree derives restrictions on cliticization in Classical Arabic. In *Papers from Arabic Linguistics XXVI: Papers from the annual symposium on Arabic linguistics, 2012*, eds. Reem Khamis-Dakwar and Karen Froud, 135–160. Amsterdam: John Benjamins.