

The featural life of nominals¹

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Abstract We introduce a novel locality violation and its repair in Southeastern Sierra Zapotec: an object pronoun cannot cliticize when the subject is a lexical DP. We develop an account in which pronouns and lexical DPs interact with the same probe because they share featural content. In particular, we suggest that the Person domain extends to include non-pronominal DPs, so that all nominals are specified for a feature we call $[\delta]$ (to resonate with DP), while all and only personal pronouns are specified for $[\pi]$. This account aims to unify the locality violation with the Weak Person Case Constraint (PCC), as well as parallel constraints based on animacy, and requires a departure from Chomsky’s (2000, 2001) classical system of featural co-variation (Agree). In particular, a functional head must be able to *overprobe*: that is, interact with more than one goal, even if its requirements appear to be met. We introduce a *probe activation* model for Agree in which, after applying once, the operation can apply again, subject to certain restrictions. We compare probe activation to two other systems recently proposed to account for overprobing: Deal’s (2015, to appear) “insatiable probes” and Coon & Keine’s (2021) “feature gluttony.” Neither is able to account for the locality pattern in Zapotec.

Keywords nominal structure, features, Person, animacy, Agree, locality, Person Case Constraint (PCC), pronominal cliticization, defective intervention, object shift

1. Pronouns and lexical DPs

How does natural language differentiate among nominal classes? And how does it unify them? Within formal semantics, a lively debate continues to examine the referential trajectories of pronouns and definite descriptions, and whether they are categorically different in this respect or not. But within syntax, discussions of how these nominal classes might overlap or diverge have been surprisingly narrow. They have focused almost exclusively on the typology of nominal structure, and the degree to which pronouns should be distinguished from *lexical DPs* (also called full DPs) in terms of the hierarchical structure they contain: whether pronouns are associated with the same amount of external DP structure, or less (e.g., Cardinaletti & Starke

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1999), and how much (silent) internal structure they possess, such as an elided NP (e.g., Patel-Grosz & Grosz 2017).

There exists, however, a family of quintessentially syntactic phenomena, involving pronominal displacement and cliticization, which sharply distinguish pronouns from lexical DPs. These include scrambling and object shift, which in many languages affect only pronouns; clitic doubling, which also targets only pronouns in many languages; restrictions on pronominal cliticization like the Person Case Constraint; and differential object marking, which in some languages differentiates between pronouns and lexical DPs.

The relevant distinctions involved here do not appear directly related to any semantic notions involving referentiality, since it places all non-pronominal DPs on the same side. Nor does the hierarchical structure inside nominals obviously seem to be the key to understanding why such different syntactic phenomena make the same cut. It seems rather, since these phenomena involve displacement, that natural language distinguishes pronominal from non-pronominals in a currency that is legible to the syntactic operations underlying movement, namely features. Are there features that all nominals possess? And are there morphosyntactic features that only personal pronouns or lexical DPs have?

There is a rich literature on the featural representations needed to distinguish classes of pronouns (e.g., Person features), as well as features that are shared across nominal classes (e.g., Number). But hardly any work considers the possibility that pronouns might also be distinguished as a class, and in featural terms, from non-pronouns.

In this paper, we introduce a novel phenomenon involving the movement of pronouns, which provides a window into the featural life of nominals and suggests that just such a distinction is needed. Our analysis of nominal features defines a particular division of labor between their syntax and semantics. On the one hand, these features have a semantics which determines the co-occurrence relations among them, but as essentially syntactic creatures, they participate in Agree relations which can set the stage for movement.

This approach is motivated by a locality violation and its repair in Southeastern Sierra Zapotec (*Dille'xhunh* or *Dille'xhonh*).² While subject pronouns can cliticize when the object is a lexical DP, as in (1a), an object pronoun cannot cliticize across a subject lexical DP, as in (1b).³

² The Zapotec languages (Oto-Manguean) exhibit dense variation, and it is often difficult to draw sharp language boundaries. What we call *Southeastern Sierra Zapotec* is a group of closely related Northern Zapotec varieties from the southeastern Sierra Norte of Oaxaca, Mexico. Most data in this paper comes from the three neighboring towns of Santiago Laxopa, San Sebastián Guiloxi, and Santa María Yalina, for which we report our own fieldwork data. Additional data is provided from the closely related varieties of Hidalgo Yalálag (Avelino Becerra 2004, Lopez and Newberg 2005), San Baltazar Yatzachi el Bajo (Butler 1980, 1989), and San Bartolomé Zoogocho (Long 1993, Long & Cruz 2000, Sonnenschein 2004). All are grouped as *zapoteco serrano del sureste* by the *Catálogo de las lenguas indígenas nacionales* (Instituto Nacional de Lenguas Indígenas 2008).

The original data reported in this paper comes from meetings with three adult speakers, all living in the large diaspora community in California. They learned Zapotec as their first language and moved to the United States as adults. We have been working with all three speakers continuously since 2016, and our weekly meetings took place remotely by Zoom in 2020–2021.

³ For original fieldwork data, the orthography used is the *alfabeto práctico de zapoteco de la Sierra Juárez*, distributed by the Centro de Investigaciones y Estudios Superiores en Antropología Social and used widely by Zapotec speakers in the Sierra Norte, as well as in California. All symbols have values identical to the International

- (1) a. *pro* > *DP*
 Blenh³=**ba**²₁ t₁ be¹ku³=nh.
 carry.COMP=**3.HU** dog=DEF
 ‘S/he carried the dog.’ (Laxopa: FSR, SLZ1051-s, 1)
- b. *DP* > *pro*
 *Blenh³=**eb**³₁ Xwanh¹=a³ t₁.
 carry.COMP=**3.AN** Juana=DEF
 Intended: ‘Juana carried it.’ (Laxopa: FSR, SLZ1051, 7:30)

What makes this pattern puzzling is that the subject blocks movement of the object even though it does not itself move. In this respect, it is reminiscent of defective intervention in A-movement (McGinnis 1998); it also recalls the locality effect observed with object shift (Holmberg 1999), though it differs in important ways.

We will suggest that, although the subject does not move, it is able to Agree, and we develop an account in which pronouns and lexical DPs can interact with the same functional head because they share a certain feature, which we name [δ] (to resonate with the functional head D). While pronouns have [δ] plus additional Person features, lexical DPs only have [δ]. Laying out the ingredients for an account of this effect opens up a new perspective on the relationship between the system responsible for featural co-variation (that is, Agree) and the system responsible for displacement itself. And, it supports a particular implementation of the decomposition of movement into Agree, which is subject to an intervention-based locality constraint, plus an (internal) Merge operation that is otherwise free (Chomsky 2000, 2001).

We start, in Section 2, with a discussion of locality and its role in deriving the restriction in (1). As we will argue, only a syntactic locality constraint built into the Agree operation will suffice. Then we turn to our proposal, which has two components:

1. Extended Person:

Lexical DPs and pronouns share a feature (δ) that is part of the structure of Person; only personal pronouns are specified for additional Person features.

Phonetic Alphabet except: *ch* = [tʃ], *chh* = [dʒ], *j* = [ɟ ~ ɟ̥], *lh* = [l̥] (lenis lateral), *ll* = [ʒ], *nh* = [m ~ n ~ ŋ] (lenis nasal), *sh* = [ʃ], *x* = [ɕ] (fortis retroflex fricative), *xh* = [z] (lenis retroflex fricative), and ' = [ʔ]. Tone is transcribed phonetically with superscripted numerals, representing three levels of tone ranging from 1 (highest) to 3 (lowest).

The interlinear abbreviations used are: AN = animal, AND = andative, APL = associative plural, CAUS = causative, CL = classifier, COMP = completive, CONT = continuative, DEF = definite, DUB = dubitative, EL = elder human, EXCL = exclusive, F = feminine, FREQ = frequentative, HU = (non-elder) human, IN = inanimate, INCL = inclusive, INF = infinitive, INT = intensifier, M = masculine, N = neuter, NEG = negative, PL = plural, POT = potential, PTC = particle, Q = question particle, REP = repetitive, SG = singular, STAT = stative, VEN = venitive. Previously published data has been morphologically reanalyzed and reglossed.

2. Probe activation:

For a given probe, Agree applies at least once, subject to an intervention-based locality constraint; the probe is able to Agree with additional goals, just in case they are not featurally distinct from it.

With the first component, which we discuss in Section 3, we aim to draw a parallel between the restriction involving lexical DPs, illustrated in (1), and another restriction on cliticization in Zapotec sensitive to animacy, akin to the Weak Person Case Constraint (PCC) found in Romance and other languages (Perlmutter 1971, Bonet 1991). With the second component, introduced in Section 4, we advance a unified mechanism for deriving both restrictions, in which a single probe is able to interact with multiple arguments.

We compare this *probe activation* model to two recent theories of Agree: Deal’s (2015, to appear) “insatiable probing” and Coon & Keine’s (2021) “feature gluttony.” Neither is able to derive the interaction in (1), between pronominal cliticization and lexical DPs. In Section 5, we turn to cross-linguistic variation in this and related restrictions. We show how probe activation can be integrated within a theory of variation in probe relativization, and how this integrated model extends to account for variation in the PCC across languages. We also offer some directions for understanding variation in which argument serves as an intervener for these constraints, and the difference between intervention by a subject, which is observed in Zapotec, and intervention by an indirect object, found in other languages.

2. Introducing Lexical DP Blocking

We call the effect in (1a–b) *Lexical DP Blocking (LDB)*. It involves some kind of locality, since subject and object cliticization are not equally available: only the higher argument can cliticize.⁴

(2) *Lexical DP Blocking (LDB)*

An object pronoun cannot cliticize when the subject is a lexical DP.

There are related effects involving A-movement. In Romance, Greek, and Icelandic, for instance, a goal or experiencer PP intervenes for raising to subject, as shown in (3) for French (McGinnis 1998, Anagnostopoulou 2003). Just as in the LDB, a higher argument that does not itself move blocks movement of a lower argument.

- (3) a. Jean₁ semble (*à Marie) [avoir du talent t₁].
John seems to Mary have some talent
b. *À Marie₁ semble t₁ [Jean avoir du talent].
to Mary seems John have some talent (McGinnis 1988: 90)

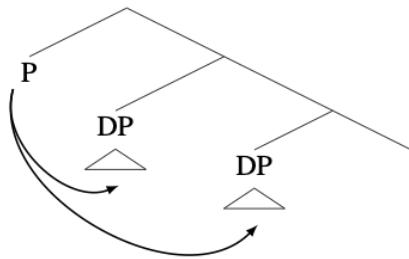
⁴ The indirect object does not intervene for direct object cliticization in the same way (Toosarvandani 2017). We discuss why this might be — and why the indirect object is an intervener in some languages for parallel constraints, like the Weak PCC — in Section 5. For now, we simply point out that there are languages in which the subject is the intervener for the Weak PCC, including Kashmiri (Nevins 2011: 963).

Similarly, genitive-marked goal and experiencer DPs in Greek block movement of a theme DP in raising to subject, as well as in passive and unaccusative clauses (Anagnostopoulou 2003).

Such defective intervention effects are usually linked to an intervention-based locality constraint (Rizzi 1990, Ura 1996). In contemporary theories of movement, where movement is decomposed into an Agree operation followed by an (internal) Merge operation, this locality constraint applies to the Agree component, e.g., Attract Closest (Chomsky 2000: 135–137). Thus in (3), both arguments compete to satisfy the needs of matrix T via Agree, with the higher blocking movement of the lower because it is closer.

We will argue that Agree also lies at the source of the LDB, even though it involves pronoun movement rather than movement of lexical DPs. Based on evidence reviewed below, we posit a single probe, located above the subject and object, which is able to Agree with both arguments.

(4)



Pronominal cliticization is a reflex of this Agree relation (Borer 1984, Suñer 1988, Sportiche 1993, Anagnostopoulou 2003: 249–320, among others). The relationship to Agree allows us to draw an analytical analogy between the LDB and other restrictions on pronominal cliticization.

We also consider a parallel between the LDB and Holmberg’s Generalization. In Swedish, although two object pronouns can generally move out of the verb phrase, a dative lexical DP blocks movement of an accusative pronoun (Holmberg 1999).

- (5) a. Jag gav **henne**₁ **den**₂ inte t₁ t₂.
 I gave **her** **it** not
 ‘I did not give it to her.’ (Holmberg 1999:26)
- b. *Jag gav **den**₁ inte **Elsa** t₁.
 I gave **it** not **Elsa** (Holmberg 1999:2)

While syntactic accounts of Holmberg’s Generalization exist (Anagnostopoulou 2005a), it has also been derived from principles of *shape conservation*, which constrain surface realization across levels of syntactic representation (Sells 2001, Williams 2003, and others).

After reviewing basic facts of clause structure and pronominal cliticization in Southeastern Sierra Zapotec, we consider whether an account of the LDB based on shape conservation is possible. We argue that it is not, and that a syntactic account based on Agree is required instead. We identify a parallel between the LDB and animacy-based constraints on object cliticization, which in turn suggests the necessary ingredients for an Agree-based account of both.

2.1. Setting the empirical scene

These Zapotec varieties have rigid verb-subject-object word order, with no case marking or verb agreement.

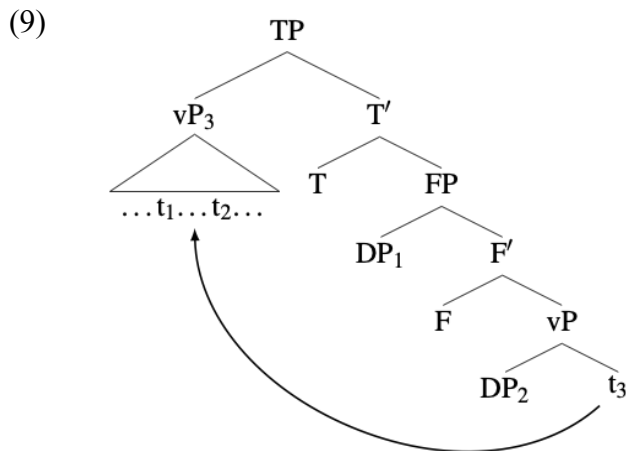
- (6) Blenh³ Xwanh¹=a³ be¹ku³=nh³.
 carry.COMP Juana=DEF dog=DEF
 ‘Juana carried the dog.’ (Laxopa: FSR, SLZ1051-s, 2)

The subject occupies a fixed position immediately following the verb to the left of a manner adverb, whether it is a theme (7) or agent (8) (Adler et al. 2018).

- (7) a. Dz-i³-yag³ Pe¹dro³=nh xti¹dao¹.
 CONT-INCH-be.cold Pedro=DEF quickly
 ‘Pedro is getting cold quickly.’ (Yalina/Guiloxi: FA/RM, GZYZ019, 1:19:07)
 b. *Dz-i³-yag³ xti¹dao¹ Pe¹dro³=nh.
 CONT-INCH-be.cold quickly Pedro=DEF
 (Yalina/Guiloxi: FA/RM, GZYZ019, 1:19:20)

- (8) a. U³do³ Jwa¹nh=a³ yet³=e³nh³ xtido¹-yes¹.
 eat.COMP Juan=DEF tortilla=DEF quickly-INT
 ‘Juan ate the tortillas very quickly.’ (Laxopa: FSR, SLZ1009-s, 21)
 b. *U³do¹ xti¹do¹-yes¹ Jwa¹nh=a³ yet³=e³nh³.
 eat.COMP quickly-INT Juan=DEF tortilla=DEF
 (Laxopa: FSR, SLZ1009, 31:15)

This suggests that the highest argument in a clause raises to a low subject position, located outside the verb phrase. Following Adler et al. (2018), we assume this is a functional projection located below T.



For concreteness, we also assume that the verb moves via predicate fronting to specTP, after the object and any other internal arguments have been evacuated (for instance, by object shift). But nothing we say distinguishes this from alternative mechanisms for verb initiality.

Up to three arguments can cliticize. These are rigidly ordered, immediately following the verb: subject, indirect object, direct object.

- (10) a. Txix¹=a³₁ t₁.
sneeze.CONT=1SG
'I sneeze.'
(Laxopa: FSR, SLZ1010-s, 15)
- b. Blenh³=ba²₁=b³₂ t₁ t₂.
carry.COMP=3.HU=3.AN
'S/he carried it.'
(Laxopa: FSR, SLZ1051-s, 3)
- c. Blhi¹i¹=da¹₁=ne¹₂=b³₃ t₁ t₂ t₃.
show.COMP=1SG=3.EL=3.AN
'I showed it to her/him.'
(Laxopa: RD, SLZ1029-s, 8)

We take the functional head responsible for pronominal cliticization to be (around) T, so that it is above the subject, but outside the left periphery. This finds support in sentences with non-verbal predication, which convey no tense or aspect information, suggesting that T is deficient or absent in these clauses. As expected, no subject cliticization is permitted (Sichel & Toosarvandani 2020).

- (11) (*Bi llinh dzonhu*? 'What do you do?')
- a. Bene' skwelh nada'.
person school 1SG
'I am a teacher.'
- b. *Bene' skwelh=a'.
person school=1SG (Guiloxi/Yalina: Sichel & Toosarvandani 2020: 110)

At the same time, wh-movement is possible to a clause-initial position in non-verbal predications, just as in a finite clause.

- (12) **Nhulhe le'e** bene' skwelh?
which 2PL person school
'Which of you is a teacher?'
(Laxopa: FSR, SLZ1075, 12:08)

If the functional head that Agrees with pronouns were higher (in C), we would have no understanding of why cliticization is impossible in non-verbal predications, since their left periphery appears otherwise unaffected.

The role of a functional head in pronominal cliticization is perhaps most evident in patterns of doubling (Sichel 2001, 2002). When a local person subject bears narrow focus in these Zapotec varieties, it is realized as a strong pronoun, which must be doubled by a clitic pronoun

(Sichel & Toosarvandani 2020). (Third person pronouns and lexical DPs in their base argument position cannot be doubled.)

- (13) (*Nhu yega'an?* 'Who is going to stay?')
- a. **Yega'an=ø' lhe'**.
stay.POT=**2SG 2SG**
'YOU are going to stay.'
- b. ***Yega'an lhe'**.
stay.POT **2SG** (Guiloxi/Yalina: Sichel & Toosarvandani 2020: 104–105)

The obligatory cliticization in (13) can be attributed to the needs of a functional head, which must enter into a syntactic relation with the subject. It cannot be attributed to the strong pronoun itself, which is perfectly grammatical on its own, as shown in (11a).

2.2. Against shape conservation

The LDB bears a surface resemblance to one of the restrictions on object shift in Swedish and other Scandinavian languages, which are known collectively as Holmberg's Generalization (Holmberg 1986, 1999). Object shift is blocked by a dative lexical DP, as we saw in (5); but it is also blocked by a verb that has not raised to T, as well as by verb particles. To account for the heterogeneity of these blocking effects, a family of *shape conservation* constraints have been proposed, which apply at the PF interface to preserve the linear order of elements across levels of syntactic representation (Müller 2000, Fox & Pesetsky 2005; see also Sells 2001, Williams 2003).

While these differ in their details, they all trace the ill-formedness of (5b) to a linear misalignment across syntactic domains. If the indirect object precedes the object inside, say, the VP, then it must also precede it in all larger domains. As a result, shape conservation is violated whenever an object pronoun moves without the indirect object moving as well.

- (14) a. [_{VP} gav Elsa den] VP: gav < **Elsa < den**
b. *[_{TP} jag gav_{v1} den₂ [_{VP} t₁ Elsa t₂]] TP: **den < Elsa**

In the well-formed (5a), by contrast, the additional movement of the indirect object preserves the linear order of the lower domain.

It is clear how shape conservation might be extended to account for the LDB. Assuming that, at an initial level of representation, the subject and object occur within the same domain, their order will have to be preserved in all larger domains. It will then be impossible, as shown in (15b), for an object pronoun to move across a lexical DP subject.

- (15) a. [_{VP} **Xwanha'** blenh =**eb**] vP: **Xwanha'** < blenh < =**eb**
b. *[_{TP} blenh₁=**eb**₂ [_{VP} **Xwanha'** t₁ t₂]] TP: blenh < =**eb < Xwanha'**

This source for the LDB leads to the expectation that further shape-conserving movement should remediate the problem, just as it does in Swedish, where A'-movement can repair a violation of Holmberg's Generalization.

- (16) **Henne**₁ visar jag **den**₂ helst inte t₁ t₂.
her show I **it** rather not
 'I'd rather not show it to HER.' (Holmberg 1999: 17)

In some Southeastern Sierra Zapotec varieties (including Laxopa, Guiloixi, and Yalina), A'-moving the subject, through focus movement (17a) or wh-movement (18a), does not repair the violation.⁵ In these configurations, the object can only surface in its base position as a strong pronoun, as in (17b) and (18b).

- (17) a. *Xwanh¹=a³₁ blenh³=b³₂ t₁ t₂.
 Juana=DEF carry.COMP=**3**.AN
 Intended: 'JUANA carried it.' (Laxopa: FSR, SLZ1051, 14:54)
 b. Xwanh¹=a³₁ blenh³ t₁ **leb**¹³.
 Juana=DEF carry.COMP **3**.AN
 'JUANA carried it.' (Laxopa: FSR, SLZ1051-s, 7)
- (18) a. *Nhu³¹₁ blenh³=eb³₂ t₁ t₂?
 who COMP.carry=**3**.AN
 Intended: 'Who carried it?' (Laxopa: FSR, SLZ1051, 16:31)
 b. Nhu³¹₁ blenh³ t₁ **leb**¹³?
 who COMP.carry **3**.AN
 'Who carried it?' (Laxopa: FSR, SLZ1051-s, 8)

Since LDB violations cannot be characterized in surface terms, we conclude that the locality restriction that underlies it must apply in the course of the derivation.

In particular, we are proposing that the LDB arises from the interaction of lexical DPs and pronouns with a functional head via Agree. To motivate this account, we draw an analytical parallel between the LDB and another constraint on pronominal cliticization, which makes reference to the animacy of third person arguments.

2.3. Another constraint on object cliticization

All Southeastern Sierra Zapotec varieties realize a four-way animacy distinction in third person pronouns: elder humans (EL) vs. non-elder humans (HU) vs. animals (AN) vs. inanimates (IN). Some object pronouns are unable to cliticize, even when the subject is another pronoun,

⁵Marlett (1993: 96–97) identifies the same pattern in (18) for wh-movement in the Yalalág variety, though for the Yatzachi variety, he provides data suggesting that wh-movement *can* remedy an LDB violation. Interestingly, he also shows that, in both Yalalág and Yatzachi Zapotec, fronting a subject *quantifier* (e.g., a numeral) to a preverbal position still blocks object cliticization. Whatever controls this apparent variation, in whether wh-movement can remedy the LDB, must be relativized to movement type, a puzzle we leave for the future.

depending on the animacy of both arguments. In the Yalálag variety, for instance, an elder object pronoun cannot cliticize when the subject is human (19b), though a human object pronoun can cliticize when the subject is elder (19a).

- (19) a. $3.EL > 3.HU$
 Wkwell=e'₁=be'₂ t₁ t₂.
 cause.cry.DUB=3.EL=3.HU
 'S/he (an elder) will make her/him (a non-elder) cry.'
- b. $3.HU > 3.EL$
 *Wkwell=be'₁=e'₂ t₁ t₂.
 cause.cry.DUB=3.HU=3.EL
 Intended: 'S/he (a non-elder) will make her/him (an elder) cry.'
 (Yalálag: Avelino Becerra 2004:33)

This restriction parallels the LDB, since the subject pronoun blocks object cliticization, just as a lexical DP does: compare (19b) to (1b). Unlike a lexical DP, however, the subject pronoun itself independently undergoes movement: (19b) becomes grammatical if the object is not a clitic pronoun, and just the subject pronoun cliticizes, as we show below in (26).

By analogy to the PCC, Foley & Toosarvandani (2022) call this restriction a *Gender Case Constraint (GCC)*, following traditional categorizations of animacy as part of Gender. In the Yalálag Zapotec variety, the GCC forbids object cliticization whenever the animacy of the object exceeds the subject's on an intuitive hierarchy.⁶

- (20) *Gender Case Constraint (GCC)*
 An object clitic pronoun cannot exceed a subject clitic pronoun on the animacy hierarchy: EL > HU > AN > IN.

This was illustrated for combinations of human pronouns in (19), and its effects are demonstrated pairwise for the other animacy categories in (21) and (22).

- (21) a. $3.HU > 3.AN$
 Bchew=be'=ba'.
 kick.COMP=3.HU=3.AN
 'S/he kicked it (an animal).'
- b. $3.AN > 3.HU$
 *Bdinn=ba'=be'.
 bite.COMP=3.AN=3.HU
 'It (an animal) bit her/him.'

⁶There is variation within Southeastern Sierra Zapotec in how strictly the animacy hierarchy is obeyed in the GCC. In this section, we have presented data from the Yalálag variety, which enforces it most strictly. We return to this variation in Section 5.

- (22) a. $3.AN > 3.IN$
 Bchochj=ba'=n.
 hit.COMP=3.AN=3.IN
 'It (an animal) hit it (a thing).'
- b. $3.IN > 3.AN$
 *Bchochj=en=ba'.
 hit.COMP=3.IN=3.AN
 'It (a thing) hit it (an animal).' (Yalálag: after Avelino Becerra 2004: 34)

The GCC permits cliticization when subject and object pronouns have the same animacy, though many such combinations are nonetheless ill-formed. Foley et al. (2019) attribute this to a morphological constraint on adjacent identical exponents (cf. third person clitic pronouns in Spanish; Bonet 1991, Nevins 2011). In some of the Zapotec varieties we are considering, certain clitic pronouns have more than one allomorph. As long as subject and object clitic pronouns can be realized with different exponents, as in (23) from the Zoogocho variety, same animacy combinations are well-formed.

- (23) Na da Dolor=en' dx=e=**e=ne'**...
 and late Dolores=DEF say.CONT=**3.EL=3.EL**
 'And the late Dolores said to him. . . ' (Zoogocho: Sonnenschein 2004: 384)

This supports the characterization of the GCC in (20) as a relative constraint, which prohibits cliticization of an object pronoun only when it is *more* animate than a subject pronoun.

Foley & Toosarvandani take the GCC to arise from an Agree operation that holds between a functional head and the two pronouns. This parallels the dominant analysis of the Weak PCC, which assigns an important role to an Agree operation that holds between a functional head and the arguments that it c-commands (Anagnostopoulou 2003, 2005b and others). And since Agree makes reference to features, the four-way animacy distinction must be encoded in featural terms. This can be done using three privative features: [ELDER], [HUMAN], and [ANIMATE]. Elder pronouns are fully specified, bearing all three features; non-elder humans and animal pronouns are partially specified; inanimates bear none of these features.

- (24) a. $3.EL$ b. $3.HU$ c. $3.AN$ d. $3.IN$
 ANIMATE ANIMATE ANIMATE
 | |
 HUMAN HUMAN
 |
 ELDER

We discuss the Agree mechanism that is involved in deriving the GCC in more detail in Section 4. For now, we simply observe that Agree must enable cliticization of two arguments when the subject is at least as featurally specified as the object, e.g., $3.EL > 3.HU$ (19a), but not when it is

less featurally specified than the object, e.g., 3.HU > 3.EL (19b). This same mechanism extends, we will argue, to the LDB.

2.4. Toward a unified syntactic source

Importantly, we are not claiming that the LDB can simply be subsumed under the GCC. The LDB holds for any lexical DP subject and any pronominal object, regardless of animacy, including cases where the subject happens to denote an entity that is higher on the animacy hierarchy than the object, e.g., (1b) above. Rather, we are proposing that the Agree mechanism underlying the GCC is also responsible for the LDB. In particular, it is the intervention-based locality constraint on Agree, Attract Closest, which derives the structural asymmetry inherent to the LDB and the GCC. This prohibits Agree between a probe P and a goal G' when there is a closer potential goal G (Chomsky 2000:122).

(25) *Attract Closest (Chomsky 2000:122)*

*P	...	G	...	G'
[F:]	[F]	[F]	[F]	
				

What counts as a goal is defined in featural terms: both G and G' are potential goals if they share a feature [F] that the probe is looking for.

In both the LDB and GCC, then, object cliticization is prohibited because the subject is closer than the object to the probe, and both share some feature the probe is looking for. Both patterns are intervention effects, in other words, and are not so different from defective intervention. The core computational mechanism involved in all of them is the same, with their differences arising from specific properties of the probes and goals involved.

Preliminary evidence for generalizing across these patterns comes from their repair. When the GCC is violated, the object is realized as a strong pronoun; the subject pronoun must still cliticize (26a–b). Similarly, when the subject is a lexical DP, an object pronoun can only be realized as a strong pronoun (27).

- | | | | | | |
|------|---------------------|--|---------------------|-----------------------------------|-------------------------------|
| (26) | a. | U ³ di'in ³ =eb ³ ₁ | t ₁ | le ¹ ba ² . | |
| | | bite.COMP=3.AN | | 3.HU | |
| | | ‘It bit her/him.’ | | | (Laxopa: FSR, SLZ1051-s, 5) |
| | b. | *U ³ di'in ³ =ba ² ₁ | leb ¹³ | t ₁ . | |
| | | bite.COMP=3.HU | 3.AN | | |
| | | Intended: ‘It (an animal) bit her/him.’ | | | (Laxopa: FSR, SLZ1051, 13:45) |
| (27) | Blenh ³ | Xwanh ¹ =a ³ | leb ¹³ . | | |
| | carry.COMP | Juana=DEF | 3.AN | | |
| | ‘Juana carried it.’ | | | (Laxopa: FSR, SLZ1051-s, 6) | |

In principle, the two constraints could have distinct repairs, such as realizing the higher argument as a strong pronoun (for the GCC) or moving the higher argument. But they do not. Of course, to

evaluate this argument, a unified theory of both the violations and their repairs is needed. In what follows, we will develop a theory of these violations, informed by the nature of their repairs, as arising from intervention — in other words, a failure to Agree.

3. Extending the domain of Person

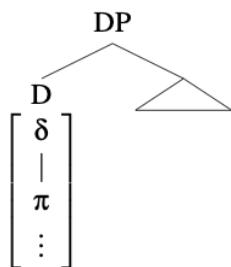
For both lexical DPs and pronouns to be eligible as goals for the same probe, they must count as the same in some way. There must be some property they share, such that a clitic pronoun is sensitive to a higher lexical DP, but not to a higher PP or AP. At the same time, there must be some property that distinguishes them, since the intervention effect is asymmetric: lexical DPs intervene for clitic pronouns, but not the other way around.

In anticipation of the proposal that the LDB is regulated via Agree, these properties must be represented in featural terms, since features are the kind of entity that is visible to Agree. So, how feasible is it that lexical DPs are featural interveners? It is just as feasible as the existence of a feature shared by all nominals.

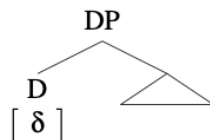
We do not usually think of lexical DPs and pronouns as possessing the same features (besides Number and Gender, which are irrelevant in this case). Lexical DPs are usually associated with categories like N or D, whereas pronouns are associated with more granular Person features. But it is possible that the syntactically active property which has been characterized as a nominal “category” is actually less disjoint from the Person system than the term “category” would suggest. Motivating the existence of two related features for nominals, a unifying feature and a distinctive one, is our task in this section. We will suggest that these two features are configured structurally, and that the so-called “categorical” feature of lexical DPs is an extension of Person.

In particular, we propose that all nominals have a feature $[\delta]$, located on the highest nominal functional head (what is traditionally called D). Only personal pronouns are further specified for Person: they have at least a $[\pi]$ feature (Béjar 2003).

(28) a. *Pronouns*



b. *Lexical DPs*



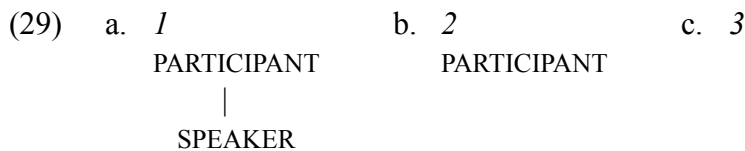
We suggest that the $[\delta]$ feature is common to all nominals because it is responsible for their shared ability to individuate and participate in reference tracking. And we motivate the $[\pi]$ feature, distinguishing personal pronouns from lexical DPs, by relating this distinction to other oppositions within third person. We do not take lexical DPs and pronouns to differ in terms of their outer structure.

This approach fits into a line of investigation on the structure of Person, which shifts the focus from looking solely at morphological paradigms and their syncretisms, to investigating their semantics and the semantic markedness relations amongst them (Béjar 2003, Sauerland 2006, Harbour 2016, Sichel & Wiltschko 2021). Person features have meanings, and these determine their structural arrangement. The structural relations among features are, in turn, what matter for the analysis of the LDB and related intervention patterns. Disjoint ontological or grammatical classes of features would not interact with the Agree system in the way necessary to produce them.

3.1. The internal structure of Person

In traditional grammars, Person is typically conceived of as non-hierarchical, with first, second, and third person categories arranged horizontally. But the cross-linguistic typology of pronominal inventories and morphological processes that make reference to Person suggests this domain has more structure (Ingram 1978, Noyer 1992: 145–175, Harley & Ritter 2002, building on earlier work). One commonly assumed structure, suggested by Benveniste (1956), builds on the discourse roles of speech situation participants. A [PARTICIPANT] feature characterizes local (first and second) persons together, while another feature, [SPEAKER], characterizes just first person.

This means that the presence of [SPEAKER] implies the presence of [PARTICIPANT], a co-occurrence restriction that is frequently encoded using a feature geometry (Harley & Ritter 2002, Béjar 2003: 47–50).

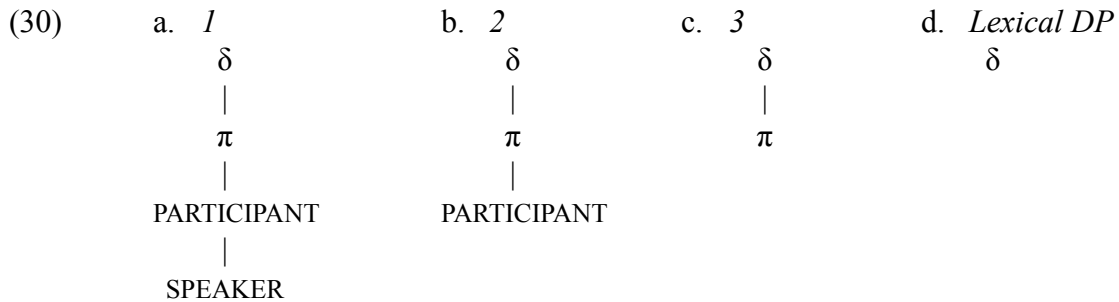


With just these two features, third person is characterized by the absence of Person features altogether, in line with the old idea that third person is simply the elsewhere category (Forscheimer 1953, Benveniste 1956, Zwicky 1977, Noyer 1997, Harley & Ritter 2002, Ackema & Neeleman 2018: 52–56).

This analytical move, which eliminates a third person feature, is justified only if the category of third person is homogenous. Many languages, however, distinguish two (or more) non-local pronouns (Béjar 2003: 47–50). In descriptive terms, languages may have personal pronouns and d(emonstrative)-pronouns (Wiltschko 1998, Sichel 2001, Patel-Grosz & Grosz 2017, Sichel & Wiltschko 2021), logophoric and non-logophoric pronouns (Hagège 1974, Clements 1975), proximate and obviative pronouns (Aissen 1997), or several pronouns expressing animacy distinctions, as we described for Zapotec above. These inventories require the existence of one or more additional features, in addition to those shown in (29).

Béjar (2003) posits a universally available [π] feature, corresponding to a cluster of properties characterizing the third person. Sichel & Wiltschko (2021) further argue that, once [π] is added to the inventory of Person, it can be used, via the logic of markedness, to distinguish

between third person categories: when $[\pi]$ is present, it underlies one class and when it is absent, it underlies another. Building on Béjar and Sichel & Wiltschko, we propose that, in many languages, the $[\pi]$ feature represents the boundary between personal pronouns and lexical DPs. Thus, instead of (29) above, we propose (30) for these languages. All personal pronouns, but not lexical DPs, have $[\pi]$.⁷



At the same time, we take all nominals to share the $[\delta]$ feature, which is also part of the structure of Person. The presence of $[\pi]$ asymmetrically entails the presence of $[\delta]$, just as the presence of $[\text{SPEAKER}]$ asymmetrically entails the presence of $[\text{PARTICIPANT}]$ and $[\pi]$.

We understand $[\pi]$ and its sub-categories $[\text{SPEAKER}]$ and $[\text{PARTICIPANT}]$ as *grammatical* features, whose presence distinguishes personal pronouns from lexical DPs.⁸ But it is not clear that the hierarchical structure of Person, represented in the feature geometries in (30) above, has a grammatical source. Harley & Ritter (2002) argue that these geometries are part of Universal Grammar, based on the cross-linguistic typology and acquisition of pronouns. They do not, however, specify a particular connection between feature geometries and the semantics of the features they contain. As McGinnis (2005) points out, such a mapping is needed if these geometries are to have any cross-linguistic predictive power.

Béjar (2003) advances a strong hypothesis for mapping feature geometries to the meanings of features. She proposes that the dominance relation in a geometry corresponds directly to asymmetric semantic entailment. Thus a feature whose presence is mandated by another feature must be semantically entailed by it. Under this view, the feature structures in (30) must be grounded in a semantics for Person which can derive the asymmetric structural relationship that $[\pi]$ and $[\delta]$ stand in. We provide a semantics for these features below which can do this.

3.2. The semantics of $[\pi]$

⁷ The featural content of pronouns is orthogonal to the morphological characterization of pronouns in terms of strength. We take all personal pronouns to have at least the specification in (30c), whether they are clitic, weak, or strong pronouns.

⁸ Under this view, personal pronouns are characterized by the presence of $[\pi]$ and other Person features and the absence of descriptive content. There is, in principle, another route to pronominalization: there could be “non-personal pronouns,” which lack descriptive content, and yet are not specified for $[\pi]$ (like lexical DPs). The semantic difference between personal and non-personal pronouns, in languages that had both, would then hinge entirely on the semantics of $[\pi]$ (Sichel & Wiltschko 2021).

We take $[\pi]$ to have content related to the discourse roles represented in the local person paradigm. A familiar semantics for [SPEAKER] and [PARTICIPANT] is given in (31a–b), in which these privative features denote one-place predicates which combine intersectively (e.g., Heim & Kratzer 1998, Sauerland 2006). Both features make reference to discourse roles, to the speaker of the speech situation or another participant in that situation.

- (31) a. $[[\text{SPEAKER}]]^c = \lambda x : x \text{ is SPEAKER}(c) . x$
 b. $[[\text{PARTICIPANT}]]^c = \lambda x : x \text{ is a participant in the conversation of SPEAKER}(c) . x$

The denotations of these Person categories are further restricted by a markedness calculation (Sauerland 2006). Thus, the second person can only be used to refer to the addressee because of the availability of the more specific first person, which has the [SPEAKER] feature.

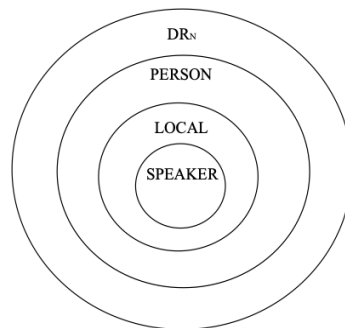
Sichel & Wiltschko (2021) propose that all Person features are characterized in terms of discourse roles, i.e., the actual or possible ability of an individual to participate in a conversation (whether spoken or signed). This includes $[\pi]$, which they argue describes an underspecified discourse role which characterizes all those individuals who are possible discourse subjects — or, put differently, all potential interlocutors who can talk and be talked to.

- (32) $[[\pi]] = \lambda x : x \text{ is a potential participant in a conversation} . x$

They motivate this semantics for $[\pi]$ by the need to distinguish, both morphosyntactically and interpretatively, between third personal pronouns and d-pronouns in Hebrew, German, and other languages. The former can always refer to a human (who is a potential participant in a conversation), while the latter only do so when a personal pronoun is not available. Otherwise, there is a pejorative effect which specifically targets human referents.

Given this semantics, [SPEAKER] asymmetrically entails [PARTICIPANT] (their [LOCAL]), which in turn asymmetrically entails $[\pi]$ (their [PERSON]), an arrangement they call the Person Sphere, depicted in Figure 1. The Person Sphere stretches up to include discourse objects, those individuals which can be talked about, thereby extending over the entire set of Discourse Referents (DR_N). The subset relation between the two outer layers places the relationship between DR_N and $[\pi]$ on a continuum with [PARTICIPANT] and [SPEAKER].

Figure 1: Person Sphere (Sichel & Wiltschko 2021:53)



The animal and inanimate pronouns in Zapotec raise a problem for Sichel & Wilschko’s original semantics for $[\pi]$. The referents of these third person pronouns cannot plausibly be characterized as potential discourse subjects, even though we are committed to all personal pronouns having $[\pi]$. This is because the LDB affects all object pronouns, regardless of their animacy, as shown in (33a–d).

- (33) a. *DP > 3.EL*
 *Blenh³=e^{’1}₁ Xwanh¹=a^{’3} t₁.
 COMP.carry=3.EL Juana=DEF
 Intended: ‘Juana carried her/him (an elder).’ (Laxopa: FSR, SLZ1054, 10:00)
- b. *DP > 3.HU*
 *Blenh³=ba^{’2}₁ Xwanh¹=a^{’3} t₁.
 COMP.carry=3.HU Juana=DEF
 Intended: ‘Juana carried her/him (a non-elder).’ (Laxopa: FSR, SLZ1054, 10:45)
- c. *DP > 3.AN*
 *Blenh³=b^{’3}₁ Xwanh¹=a^{’3} t₁.
 COMP.carry=3.AN Juana=DEF
 Intended: ‘Juana carried it (an animal).’ (Laxopa: FSR, SLZ1054, 12:00)
- d. *DP > 3.IN*
 *Blenh³=enh^{’3}₁ Xwanh¹=a^{’3} t₁.
 COMP.carry=3.IN Juana=DEF
 Intended: ‘Juana carried it (a thing).’ (Laxopa: FSR, SLZ1054, 13:15)

One way of incorporating these pronouns into Sichel & Wilschko’s proposal would be to expand the denotation of $[\pi]$ universally to include both animals and inanimates. This would require a revision to their semantics for $[\pi]$, so that this feature ranges over both discourse subjects (who can talk) and discourse objects (who can be talked about). While this would admit non-human referents, it would undercut the explanation for Sichel & Wilschko’s analysis of the pejorative effect that arises when d-pronouns are used to refer to humans.

Instead, we assume that both semantics for $[\pi]$ are available, and languages choose which one they encode. Béjar (2003) proposes that there may, in fact, be a finely-articulated hierarchy of such semantic categories, from which languages pick the semantic extent for $[\pi]$. On this interpretation, the Person Sphere can be understood *extensionally*, defining a range of semantic categories and the relations among them, to which linguistic entities such as [SPEAKER], [PARTICIPANT], $[\pi]$, or $[\delta]$ are mapped. While these abstract semantic categories — along with asymmetrical entailment relations encoded in the Person Sphere — would be universal, languages could vary in terms of the semantic coverage of $[\pi]$. In some, it would only denote potential interlocutors (i.e., humans); in others, it would range over non-interlocutors as well, as in the Zapotec animate and inanimate pronouns.⁹ This would have interpretive consequences:

⁹ One way in which $[\pi]$ might be distinguished from $[\delta]$ involves the concrete-abstract distinction. An inanimate pronoun does not, for instance, seem to be able to refer to propositions:

languages would vary in their third person pronoun’s referential potential, depending on which semantics for [π] they deploy.

3.3. The semantics of [δ]

Since we are proposing that all nominals bear the [δ] feature, its meaning must be general enough to encompass both pronouns and lexical DPs. There have been related proposals for a general nominal feature, including Harley & Ritter’s (2002) [REFERRING EXPRESSION] and Béjar & Kahnemuyipour’s (2017) [d]. The semantics for these features are tied to a linguistic expression’s ability to refer. However, it is not just referential expressions (definite descriptions, possessive descriptions, proper names) which participate in the LDB. All lexical DPs, including quantificational ones, block object cliticization.

- (34) a. Ts-ja¹-se’e¹-naw¹² to³to³ bi¹dao^{’1} le^{b13}.
 CONT-AND-PL-follow every child 3.AN
 ‘Every boy chased the dog.’ (Guiloxi: RM, GZYZ083, 1:40)
- b. *Ts-ja¹-se’e¹-naw¹=b³₁ to³to³ bi¹dao^{’1} t₁.
 CONT-AND-PL-follow=3.AN every child (Guiloxi: RM, GZYZ083, 1:45)

Thus a semantic property is required for [δ] which characterizes both referential and quantificational nominals, but does not hold of other categories (e.g., adjectives or verbs).

We call the semantic property implicated by this most inclusive Person category *determination* and identify it with Baker’s (2003:94–189) notion of “individuation,” a property that is unique to nominals (following Geach 1962, Gupta 1980, and Larson & Segal 1995). Whereas all lexical categories have “criteria of application” which make it possible to decide whether an individual is a member of that category, nominals have an additional “criterion of identity.” This makes it possible to individuate entities and to determine whether particular individuals are the same entity or not, as required by expressions such as: *That is the (same) book that you left here yesterday*. Determination is a precondition for quantification, since it is necessary to individuate entities — to determine which are identical, or not, to others — in order to know, and count, how many entities there are of a particular type. Determination, as established by such criteria of identity, is also a precondition for reference tracking, and thus it can serve as the basis for unifying referential and quantificational expressions. This also explains why only nominal elements can directly form referential or quantificational expressions. For

- (i) Q: E¹ nhez^{d3}=u^{’3} wx^{e1} ye¹lha^{’a1} bi¹³zanh³=a^{’3?}
 Q STAT.know=2SG tomorrow POT.arrive sister=1SG
 ‘Do you know that my sister is arriving tomorrow?’
 A: Nhez^{d13}=a^{’(*=nh)³}.
 STAT.know=1SG=3.IN
 ‘I know (it).’ (Guiloxi: RM, GZYZ096, 2:00)

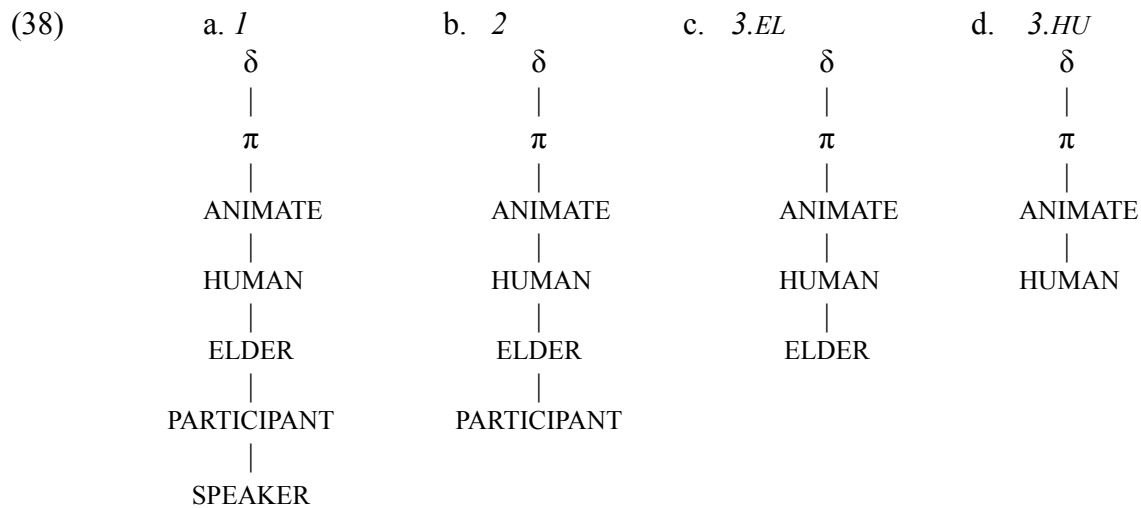
This follows if [π] only describes e-type entities (see Sichel & Wiltschko 2021 for discussion).

We can think of the individuation implicated in Number as an *internal* property of DPs, whereas determination is *outward* looking, pointing to the integration of the nominal with the sentential/propositional scaffolding. This enables an understanding of the $[\delta]$ feature as part of Person, due to the relation of the determination property to discourse roles. By picking out all entities that can be talked about, it is the most inclusive discourse “role.” Just like all other categories in the Person Sphere, there is a relation of asymmetric entailment between the class of entities that can be referred to or counted, and the more restricted class of discourse participants, or “subjects”: only the latter are a subset of the former (see also Hopper & Thompson 1984).¹⁰

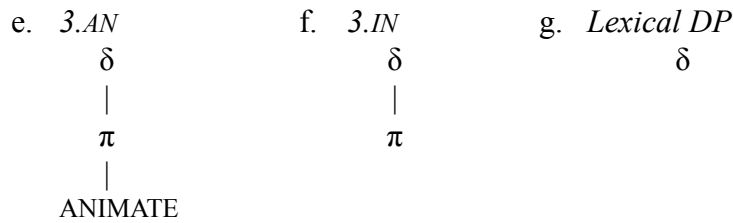
3.4. Animacy in the Person domain

The $[\pi]$ feature distinguishes personal pronouns from lexical DPs, and it is implicated in certain oppositions within third person pronouns (e.g., personal versus d-pronouns). In Southeastern Sierra Zapotec, there are even finer-grained distinctions within the third person, encoded by the animacy features in (24). The entailment-based view of feature structure, advanced by Béjar (2003) and Sichel & Wiltschko (2021), opens the door to understanding how these animacy features might fit into Person.

Not all languages necessarily use any or all of these animacy features. But in those that do, they can be present, not just in third person categories, but also in the first and second person.



¹⁰ Our semantic characterization of $[\delta]$, which links it directly to Person, may also position it at the root of a semantic-based feature geometry. In traditional ϕ -feature classifications, Person and Number features are represented separately, in distinct nodes of a feature geometry (Harley & Ritter 2002). Semantically, however, a connection between reference, and entities talked about (i.e., extended Person) and counting (i.e., Number and quantification) is already suggested in the line of thought leading up to Baker’s (2003) proposal. If we add the assumption that Person and Number are both categories which classify *all* nominals, it follows that $[\delta]$ — the most inclusive Person category — must also be the most inclusive Number category, ranging over both count and mass entities, as shown in (37).



For [ANIMATE] and [HUMAN], it is easy to see how their semantics fits into the nested entailment relations characteristic of Person. [HUMAN] asymmetrically entails [ANIMATE], which in turn asymmetrically entails [π]. These features, together, serve to carve out more fine-grained distinctions, in the space between [PARTICIPANT] and [π].

The [ELDER] feature, too, can be integrated into Person along the same lines, with the semantics in (39) (Toosarvandani 2021).

$$(39) \quad \llbracket \text{ELDER} \rrbracket^c = \lambda x : x \text{ holds a salient social role in } c . x$$

Despite its name, [ELDER] has a wider denotation than just elder humans according to this lexical entry. It contains all individuals who hold a salient social role in the context, which includes the actual conversational participants in the context. As a consequence, both [SPEAKER] and [ADDRESSEE] entail [ELDER].

The wider extension of [ELDER] is motivated by the fact that, while the third person elder pronoun is used to refer to humans roughly above the age of 60, it is also used to refer to younger individuals, as long as they occupy a socially significant role (e.g., occupying a position of authority in the municipal government). But the third person elder pronoun is still unable to refer to the speaker or addressee, because of competition with first and second person pronouns, by the same logic of markedness discussed above.

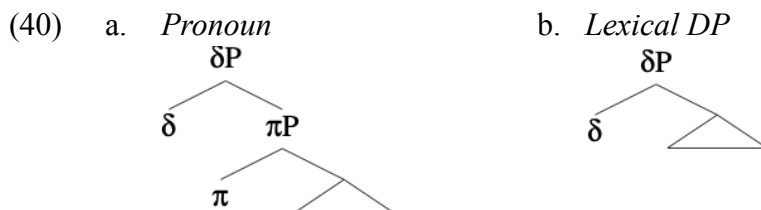
Not all languages have the feature specifications for first and second person in (38a–b). If animacy features are not active in a language with just first, second, and third person, then they will have the specifications in (30a–b). This is one aspect of the broader variation found in pronoun inventories. While many languages distinguish three person categories, some only have two, while others have four (with an inclusive–exclusive distinction). These inventories can be represented by removing or adding Person features (Harley & Ritter 2002, Harbour 2016, and others), much as we have added animacy features to capture the finer-grained distinctions within third person in Zapotec.

3.5. Features or categories?

In advancing a semantic characterization for the [π] and [δ] features, we are not suggesting that their denotations directly affect the intervention calculation for locality. Their meaning is relevant only for determining the structural dependencies amongst features. They must still be represented formally on nominals in the syntactic currency appropriate for interacting with the Agree mechanism.

While we have been assuming that this involves features, there is another possibility: $[\pi]$ and $[\delta]$ could correspond to syntactic categories that project as heads in the syntax. The choice between features and categories might seem like a purely theory-internal matter, depending on how a particular theory views the relationship between categories and features.¹¹ For us, there are two substantive issues related to this choice. The first is about the motivation for structure within Person. Are the dependencies between Person categories defined featurally, as in (30), via feature geometries? Or, are they encoded in syntactic terms, through the selectional properties of heads, such that certain phrases dominate smaller phrases? The second one is about the type of locality that is involved in the LDB. Is it a locality principle that deals in hierarchical depth, as in classical phase-based locality, or the locality involved in Attract Closest, which deals in relative distance from a probe?

We do not think an account of the LDB is possible if $[\pi]$ and $[\delta]$ are viewed as categories only, as opposed to features. If they were categories, they would be syntactic heads that project functional structure (e.g., Carstens 1991, Ritter 1993, Déchaine & Wiltschko 2002, Oxford 2017). The structure within Person would then have to be represented in terms of the hierarchical ordering of functional heads. As shown in (40), δP would dominate πP in pronouns, while πP would not be projected at all in lexical DPs. More specific Person categories could presumably project as functional heads below πP , as Bianchi (2006) proposes.



Both pronouns and lexical DPs would be δP s, which would contain other nominal structure, including but not necessarily limited to NP. With all nominals belonging to the same category, selection by external heads (e.g., V or P) could be stated simply in terms of selection for the highest category; this would (correctly) prohibit selection for person and other ϕ -features.

The empirical substance of this choice, between categories and features, would then involve the kind of locality implicated in the LDB. We do not think that it is the type of locality that is sensitive to hierarchical structure, as in classical phase-based locality. If clitic pronouns were πP s, they would be too deeply embedded to be directly extracted, assuming that the containing δP is a phase (for related ideas, see Oxford 2017 and Preminger 2019). For a clitic pronoun to be sub-extracted, the phase would first need to be “opened up,” for instance by Agree (Rackowski & Richards 2005). The impossibility of object cliticization across a lexical DP could then be understood as a product of phase impenetrability. If Agree with a higher lexical δP “uses up” the

¹¹ As originally conceived, categories determine distribution through selection, while features are morphological, interacting with movement in a (morpho-)syntactic guise. The theory of bare phrase structure (Chomsky 1995) calls into question the existence of a discrete boundary between these concepts. Similarly, within a nano-syntactic approach, there might be no difference between $[\delta]$ and $[\pi]$ being “features” or “syntactic heads,” since the elements which project *are* individual features.

phase-opening potential of a probe, then the lower δ P would remain “closed” to cliticization. This could potentially derive the LDB, but without saying anything more, it would imply that all subjects, including pronominal subjects, should prohibit object cliticization. Since this is not the case, an account of the LDB in terms of phase-based locality, based on the structures in (40), does not seem to be tenable.

Nor does it help to give up on the initial assumption that all nominals belong to the same category, assuming instead that pronouns are π Ps and only lexical DPs are δ Ps (with or without an internal π P). Besides the question of why δ P and π P would interact in this way, it is not clear why a higher δ P would block movement of a lower π P, but a higher π P would not. It might be possible to appeal to the fact that, when the higher argument is a pronoun, it moves, thereby getting out of the way of the lower argument’s movement trajectory. But this would be an account based on position, not internal structure, and we have already shown in Section 2 that an exclusive appeal to position, as in shape conservation approaches, does not fully cover the empirical terrain.

Thus, it seems that the internal structure of nominals and classical phase-based locality *do not* play a role in LDB. That is not to say that there can be no π P projection within δ P, only that this is not part of an account of the LDB.

The alternative is to treat [π] and [δ] as features, as we have suggested, and this implies that the dependency between them is represented in featural terms, as in (30). On this approach, Agree interacts directly with these features in the familiar way. A functional head probes into its domain, subject to Attract Closest; it finds the highest argument and Agrees with it. To derive the LDB, something more has to be added. Sometimes the probe is able to look again and find an additional lower argument; but sometimes, if the higher argument is a lexical DP, it cannot. That is, a probe’s ability to Agree depends in some way on what it has already Agreed with. We turn to the mechanism that enables this next.

4. The probe activation model of Agree

The featural representations proposed in Section 3 for lexical DPs and pronouns create an asymmetry across nominal classes. Pronouns are more specified than lexical DPs, since they bear Person features beyond the [δ] shared by all nominals. This asymmetry opens the door to a uniform understanding of the LDB (41) and the GCC (42).

(41) *Lexical DP Blocking (LDB)*

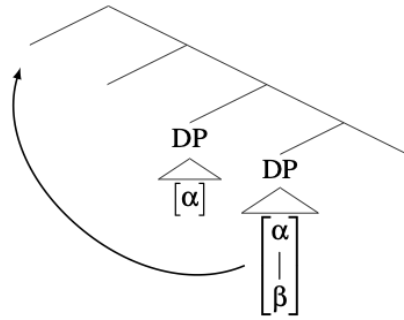
An object pronoun cannot cliticize when the subject is a lexical DP.

(42) *Gender Case Constraint (GCC)*

An object clitic pronoun cannot exceed a subject clitic pronoun on the animacy hierarchy: EL > HU > AN > IN.

Both are inherently *relative* constraints, since cliticization of an object pronoun is only prohibited when it is more featurally specified than a higher argument.

(43) *



This correspondence can be translated into a grammatical mechanism by building on work on the Weak PCC, which prohibits object cliticization if a structurally higher argument is lower on the Person hierarchy (see Bonet 1991:180 for Catalan, Perlmutter 1971:62–63, Pancheva & Zubizarreta 2017:19 for Spanish, Bianchi 2006:2028 for Italian, and Nevins 2011:963 for Kashmiri).

(44) *Weak PCC*

An object clitic pronoun cannot exceed a structurally higher clitic pronoun on a hierarchy of person: 1/2 > 3.

Like the LDB and GCC, the Weak PCC is relational: an object pronoun is only prohibited from cliticizing if it is a local person, and a higher argument is third person.

Anagnostopoulou (2005b) proposes an account of the Weak PCC in terms of how a single functional head interacts with multiple arguments in its domain via Agree. She hypothesizes that whether a probe can Agree with, and move, an object pronoun depends on the features it finds when it Agrees with a higher goal. Anagnostopoulou's idea, which we describe in neutral terms as *overprobing* in (45), can be implemented in more than one way.

(45) *Overprobing*

A probe P can Agree with a goal G' when there is a closer goal G only if P Agrees with G in some feature(s) F.

This assumes that cliticization is, in some way, the reflex of agreement, so that Agree is a precondition for pronominal cliticization (Borer 1984, Suñer 1988, Sportiche 1993, Preminger 2019). We assume that a clitic can satisfy this precondition if it Agrees with the probe in any subset of its features.

It is clear how overprobing might underlie the LDB/GCC. Object pronoun cliticization requires Agree, which in turn depends on the Agree relation between the probe and the higher argument. But how does the Agree mechanism permit overprobing in the first place? At least superficially, it is incompatible with the classical Minimalist theory of agreement and movement. In Chomsky's (2000, 2001) original version of Agree, it can only take place when a probe bears some uninterpretable features, which must be matched against interpretable feature(s) on a goal.

Once the closest suitable goal with matching features has been found, subject to Attract Closest, the uninterpretable feature(s) on the probe are deleted. If the matching goal is eligible for movement, it is Merged in a local configuration to the probe. After its uninterpretable feature(s) are deleted, the probe cannot interact with any other goals. This permits only a single round of Agree between the probe and the closest goal, and hence only this one goal is able to move.

One approach to this limitation is to abandon the classical theory of Agree altogether and adopt Hiraiwa's (2001) Multiple Agree instead, which allows a probe to interact simultaneously with all goals in its domain (Anagnostopoulou 2005b, Nevins 2007, 2011). Multiple Agree would still have to be constrained in some way, since overprobing is only allowed, according to (45), when a higher goal has certain features. Building on Anagnostopoulou's work, Nevins (2007, 2011) proposes a condition called *Contiguous Agree*, which blocks Multiple Agree when a lower goal is less featurally specified than a higher goal.

(46) *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.

A constraint like Contiguous Agree is clearly sufficient to rule out ungrammatical configurations like (43). But as Coon & Keine (2021) and Foley & Toosarvandani (2022) argue, it simply encodes an empirical generalization as a grammatical principle, by stipulating that it is the higher argument which cannot have more features than lower arguments. This structural asymmetry cannot be derived from a locality condition, since Multiple Agree is, by hypothesis, not subject to locality.

A growing number of proposals have aimed instead to derive overprobing by revising the classical theory of Agree, while maintaining a standard theory of locality (Anagnostopoulou 2003, Béjar & Rezac 2003, 2009, Coon & Keine 2021, Deal, to appear). We advance our own such revision here, which we call the *probe activation* model:¹²

(47) *Probe activation*

(i) **Locality:**

The probe P must Agree with the highest goal G first, because Agree is subject to intervention-based locality (i.e., Attract Closest) and P c-commands all its goals.

¹² We are building here on Foley & Toosarvandani's (2022:21–23) account of the GCC, which locates the source of both grammatical and ungrammatical combinations in the mechanism underlying cliticization. They propose that a pronoun can cliticize just in case the condition in (i) is satisfied.

(i) *Condition on Pronominal Cliticization* (Foley & Toosarvandani 2022:23)

For a functional head H that has been valued (i.e., VALUE(H) ≠ ∅), a clitic pronoun P can (internal) Merge with H iff, for the set of relevant features F on P, F ⊆ VALUE(H).

While the motivation for the additional cliticization is much the same, as are the featural preconditions that must be met for this additional stage of cliticization to take place, we attribute the mechanism explicitly to Agree. This is motivated by our goal to assimilate the grammatical mechanisms underlying the LDB and GCC.

(ii) **Activation:**

After Agreeing with G, the probe is “activated” and is able to Agree with another goal G', just in case G' is not featurally distinct from the probe P: i.e., G' is not more featurally specified than P for the features P searched for ($G' \subseteq P$).

The first hypothesis requires the probe to Agree with the highest goal first, due to its position and the familiar locality condition. The second hypothesis, which is novel, allows for the probe to be “activated” by Agreeing with the highest goal. It is then free to interact with lower matching goals. What counts as a matching goal for these subsequent relations is determined by (47ii), which makes reference to the features of the higher goal, along with the features of the probe, building on Anagnostopoulou’s original idea.

We discuss the conceptual and empirical motivations for this proposal below, comparing it to other recent attempts to derive overprobing. It differs from Deal’s (2015, 2020) proposal to allow for “insatiable probes,” which must interact with all accessible goals in their domain. It also diverges from Coon & Keine’s (2021) “feature gluttony” approach, in which a probe is only able to enter into Agree relations with multiple goals when its featural requirements are articulated and sequenced (cf. Anagnostopoulou 2003, Béjar & Rezac 2003, 2009). As we will show below, all three approaches can derive the GCC, but only the probe activation model is able to unify the LDB and GCC. The LDB thus provides a crucial wedge into the grammatical mechanism that underlies overprobing, and a different perspective on the contours of a restrictive theory of Agree.

4.1. Probe activation

How is Agree with a second goal possible, once a probe has successfully Agreed with one goal? We suggest that it is possible because Agree is an optional operation: it *can* freely apply at any stage of any derivation, and this includes in subsequent rounds. By calling Agree an optional operation, we are saying simply that it is *possible* — as opposed to *impossible* — with its closest goal as well as other goals in its domain. This must be carefully distinguished from a conception of optionality which opposes it to obligatoriness. We often say that Agree is “obligatory” when we talk about why a probe *necessarily* interacts with its closest goal. Agree — as an optional operation, in our sense — is compatible with two approaches to what actually makes it “obligatory” on the first round.

In the classical theory of Agree, the operation takes place to value uninterpretable features and delete them from the derivation. In this view, which Preminger (2014) calls a “derivational time bomb” approach, it is the removal of uninterpretable features that is grammatically required (by Full Interpretation), not the operation of Agree itself, which can apply freely. Thus, if it is some features on the probe which mandate at least one round of Agree, once those features are checked, subsequent Agree relations should be possible, though not necessary.

The possibility of subsequent rounds of Agree in the probe activation model is equally compatible with Preminger’s “obligatory operations” view, in which Agree necessarily applies when an appropriate trigger, a probe, is present in the derivation. On this view, Agree need not be productive, resulting in valuation — it only needs to be initiated. But this approach is silent as to

what might make *Agree possible* on subsequent rounds, and so it is entirely compatible with a probe Agreeing with goals beyond its closest one. What we say in this section is an effort to understand what makes Agree possible at all after the first round. We will return, in Section 5, to fill out the empirical consequences of this, for the derivational time bomb and obligatory operations views of obligatoriness.

While Agree is possible beyond a first round, we still assume it is subject to an economy principle, mandating as few derivational steps as possible. This would generally militate against Agree applying, unless independent factors require it for the derivation to converge. One such factor involves the syntactic requirements of the probe itself, which we just discussed. But another factor involves the syntactic needs which goals might themselves have. We have adopted the hypothesis that pronominal clitics must Agree with an eligible functional head, as a precondition for cliticization. Thus, in a derivation containing two or more clitic pronouns, the Agree operation will have to iterate, after satisfying the probe's needs, in order to satisfy those of the clitics.¹³

Further applications of Agree are, however, limited by the condition in (47ii). After one round of interaction, the probe can go on to Agree only with goals which would not affect the featural signature left by the first goal. So, as long as a goal's features can fit into the footprint created by the closest goal, it is free to Agree. This recalls the strict cyclicity of grammatical operations, which have no option to erase or revise information recorded at an earlier stage.¹⁴ That is, once a probe has been valued by a goal, subsequent Agree relations cannot alter these values. Switching metaphors, if we imagine the probe's feature specification in mechanical terms, as levers that get pulled, we can think of overprobing as resulting from "activation": the subject activates the levers that it needs, and this then primes the probe for subsequent rounds. We could, alternatively, think of this in terms of "deactivation": whatever levers were not activated by Agree with the subject atrophy and become deactivated. Either way, the result is the same.

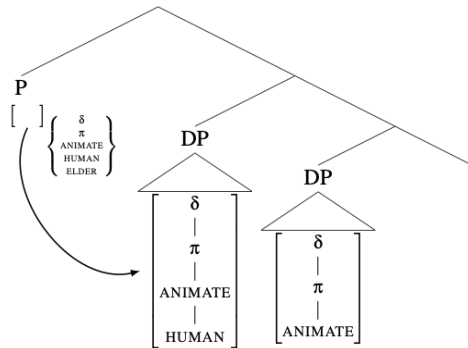
This component of the probe activation model is responsible for the featural asymmetry underlying overprobing, which enables the assimilation of the LDB and GCC. Consider two configurations — 3.HU > 3.AN in (48a) and 3.HU > lexical DP in (48b) — which satisfy the GCC and LDB, respectively. In the Yalálag Zapotec variety, we take the probe to be fully specified to search for all Person and animacy features, including [δ]. We represent this *featural relativization* as "empty slots" on the probe, into which features are copied from a goal (following Preminger

¹³ Other relevant considerations which might force Agree to (not) apply in a given derivation, include expressivity (a probe must have its features exponed) and economy. For the latter, we have to assume that a clitic is used whenever possible, and strong pronouns are limited to cases in which a clitic does not work. This can be attributed to an economy principle which favors local licensing, i.e., internal Merge over "case licensing," or to any other economy preference which would replace a simple preference for less structure, as in Cardinaletti & Starke's (1999) Minimize Structure. This is no longer an option for us, as all pronouns are DPs and specified for [δ].

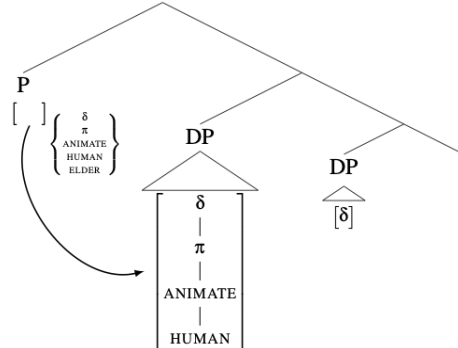
¹⁴ It might be tempting to think about this in purely morphological terms: that Agree with the highest goal results in a morphological signature for the probe, which cannot be altered. This, however, might lead us to expect that the probe could only Agree with both subject and object clitics in Zapotec if they were formally identical. Of course, this is not the case: the object may have a different realization, as when it is less featurally specified than the subject.

2014:47–49). (Since we are focusing on just the GCC and LDB for now, we omit local person features in these structures; we return to their status in Section 5.)

(48) a. *3.HU > 3.AN*

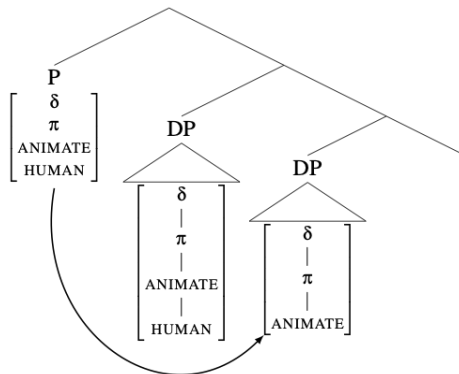


b. *3.HU > DP*

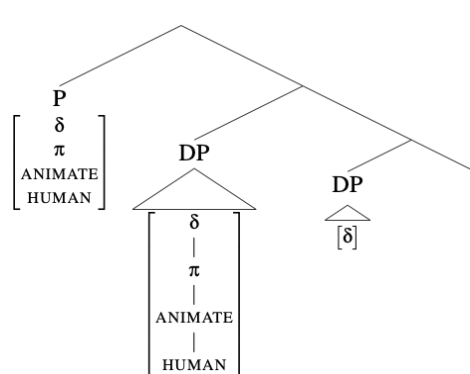


In both (48a) and (48b), the probe finds and Agrees with the subject. The result, in both cases, is that the human pronoun's features are copied onto the probe. Its need to Agree is thereby satisfied, even though the probe is not valued for all the features it searched for.¹⁵ Now, when the object is an animal pronoun, it is also able to Agree, as shown in (49a), since its features are a subset of those copied to the probe. And so, it is able to cliticize.¹⁶

(49) a. *3.HU > 3.AN*



b. *3.HU > DP*



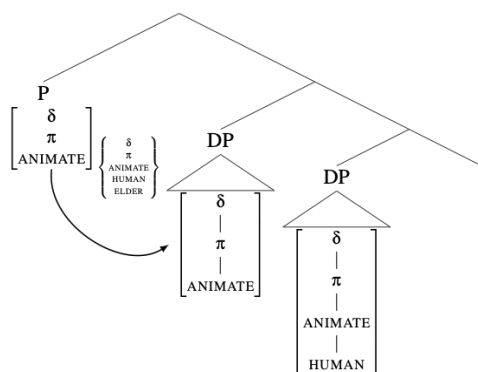
¹⁵ We take these probes to Agree for all features in their relativization simultaneously, in all rounds. This means that, once they have copied all features they are able to on the first round, their need to Agree is satisfied: they are not able to Agree again just to copy any unvalued features. In other words, we assume that these probes are *not* articulated, as Béjar & Rezac's (2009) propose, so that they can be valued by more than one goal. This is an additional assumption, integral to our account of the GCC and LDB, which is separate from the probe activation model. This is, strictly speaking, compatible with the possibility that Béjar & Rezac contemplate, in which a probe's unvalued features after one round enable it to Agree again to value them. We are only committed to there being *some* probes that are not articulated. This does have consequences for the choice between the derivational time bombs and obligatory operations approaches, which we come back to in Section 5.2.

¹⁶ For local person subjects, third person objects can cliticize in Zapotec because first and second person pronouns in that language possess all animacy features, as discussed in Section 3.4.

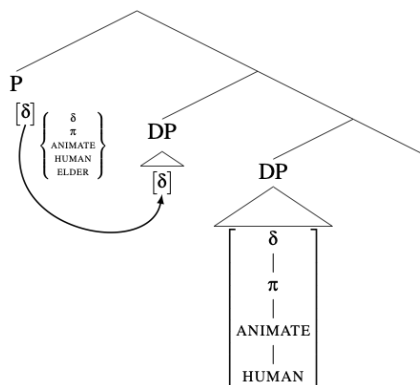
However, when the object is a lexical DP, as in (49b), an additional round of Agree does not take place. While it is in principle possible, the lexical DP does not demand it.

The inverse configurations in (50a–b) are ungrammatical then because Agree is required by the objects, but the activated features of the probe are insufficient to give rise to a subsequent round. In (50a), Agree with an animal subject pronoun only copies the [ANIMATE], [π], and [δ] features to the probe, and so Agree with a human object pronoun is not possible. This lower goal cannot fit into the footprint created by the higher goal, since it bears an additional feature, [HUMAN]. If this object pronoun is a clitic, it will not be able to cliticize because it did not Agree, causing the derivation to crash.

(50) a. *3.AN > 3.HU



b. *DP > 3.HU



Similarly, if Agree with the subject only results in [δ] being copied to the probe, as in (50b), then Agree with an object pronoun will also be impossible. All pronouns have at least [π], in addition to any other Person or animacy features, and so the object pronoun here will not be able to Agree, given the features that have been activated. If it is a clitic, it will not be able to cliticize, resulting in ungrammaticality.

4.2. Empirical evidence for the optionality of Agree

Given this somewhat abstract mapping from syntax to surface form, what empirical support is there for the idea that Agree with lower goals is optional as far as the Agree operation itself is concerned? Again, what we mean by this is that Agree may recur (as opposed to *may not recur*) after one round. To demonstrate this, we must show two things: (i) that Agree is possible beyond the first round, by showing that Agree is the mechanism involved in ruling out object cliticization in the LDB/GCC, and (ii) that a stronger characterization does not hold — namely, that while a subsequent round of Agree may be made necessary in the context of a particular goal, this is not a requirement imposed by Agree itself. In other words, we must distinguish carefully between the Agree operation itself and any needs imposed by lower goals, such as a clitic pronoun.

In Zapotec, the evidence for both elements is indirect, but clear, and can be observed in the nature of the strategy for overcoming LDB/GCC violations. When a second round of Agree is not sanctioned by (47ii), a strong pronoun surfaces instead of a clitic. We will argue that this strong pronoun, unlike a clitic, does not Agree (Anagnostopoulou 2003, Rezac 2011), and this is not a problem either for the pronoun or for Agree. It is perfectly fine if, after the first round, Agree does not iterate. To the extent that the difference between a clitic and its strong pronoun counterpart is that only the former requires Agree, we will have shown that Agree is (i) the mechanism implicated in LDB/GCC violations, and (ii) not subject to a stronger characterization, since nothing goes wrong if Agree does not apply to the strong pronominal counterpart.

We can start by considering a configuration in which Agree is sanctioned after a first round. In (51a), the object is less specified than the subject, and hence Agree with it is permitted. In (51b), by contrast, Agree with the object is impossible, ruled out by (47ii) because the object is more specified than the subject. Since the object cannot Agree, it cannot cliticize. The ungrammaticality of (51b) is thus attributable solely to the clitic's needs, which cannot move.

- (51) a. $3.HU > 3.AN$
 Blenh³=ba'²₁=b³₂ t₁ t₂.
 bite.COMP=3.HU=3.AN
 'S/he carried it (an animal).' (Laxopa: FSR, SLZ1012, 16:53)
- b. $3.AN > 3.HU$
 *U³di'in³=eb³₁=ba'²₂ t₁ t₂
 bite.COMP=3.AN=3.HU
 Intended: 'It (an animal) bit her/him.' (Laxopa: FSR, SLZ1012, 19:45)

When the object is not able to be realized as a clitic, because it does not Agree, it must be realized as a strong pronoun, as in (52b) and (53b) below. This is true whenever the activation condition in (47ii) is not satisfied, whether the GCC is violated (52a), or the LDB (53a).

- (52) $3.AN > 3.HU$
 a. *U³di'in³=eb³₁=ba'²₂ t₁ t₂
 bite.COMP=3.AN=3.HU
 Intended: 'It (an animal) bit her/him.' (Laxopa: FSR, SLZ1012, 19:45)
- b. U³di'in³=eb³₁ t₁ le'¹ba'³.
 bite.COMP=3.AN 3.HU
 'It (an animal) bit her/him.' (Laxopa: FSR, SLZ1051-s, 5)
- (53) $DP > 3.AN$
 a. *Blenh³=eb³₁ Xwanh¹=a'³ t₁.
 carry.COMP=3.AN Juana=DEF
 Intended: 'Juana carried it.' (Laxopa: FSR, SLZ1051, 7:30)
- b. Blenh³ Xwanh¹=a'³ le'¹b¹³.
 carry.COMP Juana=DEF 3.AN
 'Juana carried it.' (Laxopa: FSR, SLZ1051-s, 6)

Why does a strong object pronoun, with the very same features as its clitic counterpart, not run afoul of the activation constraint in (47ii)? Since it is not a clitic, it need not move, and this implies that it need not Agree. That is, there is no Agree in the derivations of (52b) and (53b) beyond the first round, which directly follows from the optionality of Agree.

This can be shown more transparently by looking at local person pronouns. Typically, local strong pronouns must be doubled by a clitic (Sichel & Toosarvandani 2020), much as in French (Kayne 2000). This holds across grammatical positions, including subjects (54a), possessors (54b), and prepositional objects (54c).

- (54) a. (*Nhu^{3l} de³ ye^l ga³ an³?* ‘Who is going to stay?’)
 Ye^l ga³ an³* (=u³) lhe^{3l}.
 stay.POT=2SG 2SG
 ‘YOU are going to stay.’ (Laxopa: FSR, SLZ1061, 5:45)
- b. (*Nhu^{3l} xna³ beh³ bia³ Xwanh^l=a³?* ‘Whose mother did Juana meet?’)
 Beh³ bia³=ba² xna³* (=o³) lhe^{3l}.
 meet.COMP=3.HU mother=2SG 2SG
 ‘She met YOUR mother.’ (Guiloxi: RM, GZYZ101, 6:50)
- c. (*Nhu^{3l} tse³ dzekd³ Xwanh^l=a³?* ‘Who does Juana love?’)
 Dzekd³=ba² {tsi^l=a³, *tse³} nada^{3l}.
 love.CONT=3.HU {of=1SG of } 1SG
 ‘She loves ME.’ (Guiloxi: RM, GZYZ101, 22:17)

In all three environments, clitic doubling of the highest argument is obligatory, presumably because the probe must Agree. However, when the LDB is violated and the object is a local person pronoun, a strong pronoun appears on its own, and doubling is impossible.¹⁷

- (55) a. Dza^{3l} la^{3l} lle³ Xwanh^l=a³ **lhe^{3l}**
 forget.CONT Juana=DEF **2SG**
 ‘Juana forgot you.’ (Laxopa: FSR, SLZ1061, 11:45)
- b. *Dza^{3l} la^{3l} ll=u³ Xwanh^l=a³ **lhe^{3l}**.
 forget.CONT=2SG Juana=DEF **2SG**
 ‘Juana forgot you.’ (Laxopa: FSR, SLZ1061, 12:50)

If cliticization is only possible when there is an Agree relation, then the absence of clitic doubling with the object in (55a) demonstrates that Agree does not apply after the first round in

¹⁷ More generally, local person pronouns in object position can never be clitic doubled, even if the subject is a pronoun. This Strong PCC is an absolute constraint on object cliticization based on Person, and so it is not parallel to the LDB, which only prohibits cliticization when the object is more featurally specified than the subject. See Section 5 for a discussion of how the Strong PCC can be incorporated into the theory of the LDB/GCC advanced here.

this derivation. If the strong pronoun itself has no need to Agree, then the derivation succeeds because there is no need for Agree to iterate.

There is independent support that strong pronouns do not need to Agree, coming from syntactic environments in which cliticization is suspended for reasons which have nothing to do with the LDB/GCC. In the subject position of a non-verbal predication, only a strong pronoun appears, whether for local person (56a) or third person (56b). (These are the same forms that emerge when the LDB/GCC is violated.)

- (56) a. (*Bi*³¹ *lɪnh*³ *dzunh*¹² *u*²? ‘What do you do?’)
 Be¹ne¹ skwelh¹³(*=a³³) **ne¹da³³**.
 person school=1SG **1SG**
 ‘I am a teacher.’ (Laxopa: FSR, SLZ1061, 14:45)
- b. (*Bi*³¹ *lɪnh*³ *dzunh*¹² *Xwanh*¹ *a*³³? ‘What does Juana do?’)
 Be¹ne¹ skwelh¹³(*=ba²²) **le¹ba³³**.
 person school=3.HU **3.HU**
 ‘She is a teacher.’ (Laxopa: FSR, SLZ1061, 15:45)

As we suggested in Section 2.1, the probe is plausibly either absent or inactive in these syntactic contexts. Since there is nothing for the strong pronoun to Agree with, then, it follows that it does not have to Agree. Similarly, in fragment answers, doubling of a strong subject pronoun is grammatically suspended.

- (57) (*Nhu*³¹ *ye*¹ *yej*¹? ‘Who is going to go?’)
Lhe¹.
2SG
 ‘You.’ (Guiloxi: RM, GZYZ052, 1:02:58)

Here, too, it may be that a strong pronoun is tolerated without clitic doubling because the probe is missing. Fragment answers plausibly involve no more structure than what meets the eye (Stainton 1998, Ginzburg & Sag 2000, Jacobson 2013).¹⁸

In sum, the same repair — a strong pronoun — surfaces in non-verbal predications and fragments, as well as when the LDB/GCC is violated. This supports the claim that the reason that a strong pronoun is possible, when Agree cannot be satisfied, is that it does not require Agree. And this, in turn, supports our claims that the mechanism implicated in LDB/GCC violations is Agree, and that beyond the first round, another round of Agree is possible, but not required.

¹⁸ Alternatively, the entire structure is present, Agree is triggered by the probe, and everything except the fragment is subsequently deleted at PF (Giannakidou 2000, Merchant 2004, Weir 2014). In this case, absence of doubling in fragment answers is not directly relevant for the argument that the absence of doubling signals the absence of Agree.

4.3. Comparison with other approaches to overprobing

We can compare the probe activation model to two recent theories of Agree designed to enable overprobing: Deal’s (2015, to appear) “insatiable probing” and Coon & Keine’s (2021) “feature gluttony.” The latter does not countenance the possibility that Agree may apply freely after a first round, as the second hypothesis in (47ii) posits; and the former, while it adopts an intervention-based locality constraint, allows for the probe to interact *first with a lower goal*, in opposition to the first hypothesis in (47i). Neither enables a unified understanding of the LDB and GCC in terms of the Agree mechanism, confirming the necessity of both ingredients of the probe activation model.

4.3.1. Insatiable probing

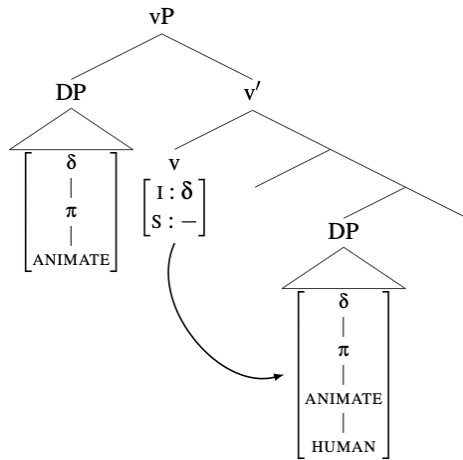
Deal (2015, to appear) systematically overhauls the Agree operation to allow for overprobing, while still taking the operation to apply cyclically, subject to Attract Closest. She takes probes to be specified separately for their *interaction* conditions (what they can match and be valued by) and their *satisfaction* conditions (what stops them from interacting further). Some probes are “insatiable” and have no satisfaction conditions, so they are capable of interacting with any goal in their domain. In addition, probes’ interaction conditions can be dynamically updated, so that once they are valued by a goal for some feature [F], they can only interact on subsequent rounds with goals that have [F]. In this framework, the restrictions on cliticization would follow from the possible Agree relations, just as in the probe activation model. What these are would be dictated by dynamic update of a probe’s interaction conditions in the course of the derivation.

This is able to derive the GCC, if the probe is located *between* the subject and object arguments. Under Deal’s account, once the argument closest to the probe is Agreed with, it can only interact with goals that are equally or more specified. This means that, to derive the specificational asymmetry inherent to the GCC, the probe must first find the object before it finds the subject. Since subjects asymmetrically c-command objects,¹⁹ one possibility that Deal mentions is for the probe to be located on *v*, looking first into its complement and then looking into its specifier, via cyclic expansion (Béjar & Rezac 2009).

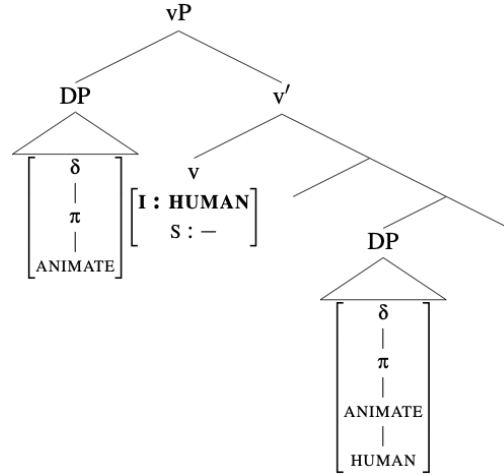
In a grammatical configuration like (49a), then, an insatiable probe that is able to find a less specified object will be able, after it has been dynamically updated, to go on to find a more specified subject. Conversely, the configuration in (50a) is ungrammatical because the probe, once it has been updated by the object, will no longer be able to interact with a less specified subject. After the probe Agrees with the object (Step 1), its interaction condition is updated with all the object’s features, including [HUMAN] (Step 2). Once this has happened, the probe can no longer interact with the subject, which lacks this feature.

¹⁹See Adler et al. (2018) for binding data which demonstrates this in Southeastern Sierra Zapotec.

(58) *3.AN > 3.HU
 Step 1: Agree with object



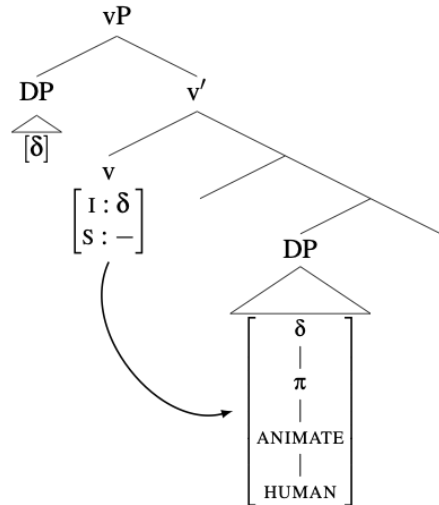
Step 2: Dynamic update



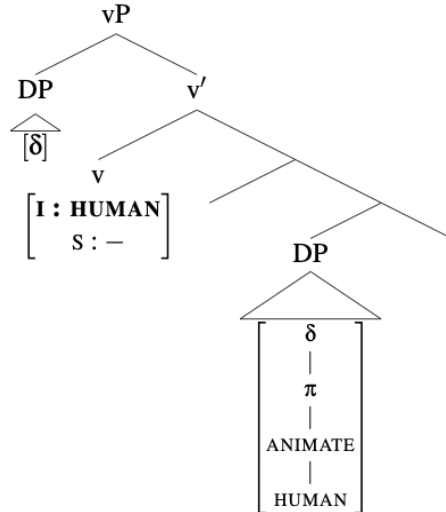
In other words, by the logic of dynamic interaction update, the probe must interact with arguments in the reverse order it does under the probe activation model: first with the object, and then with the subject.

While this reversal in the order of interaction yields an account of the GCC that is mostly equivalent, it does not allow for the LDB to be assimilated to the GCC. This is simply because lexical DP subjects do not move. In a derivation parallel to (58) with a lexical DP subject, the probe will still Agree first with the object. After its interaction conditions are dynamically updated, the probe will no longer be able to Agree with the subject, which lacks [HUMAN], as well as any other person features beyond [δ].

(59) *DP > 3.HU
 Step 1: Agree with object



Step 2: Dynamic update



Unlike (58), this derivation should encounter no difficulties due to the absence of Agree with the subject. It is a lexical DP, and so does not have to move. The object pronoun was Agreed with, and so can cliticize. And yet, this configuration is ungrammatical.

In sum, insatiable probing cannot assimilate the LDB and GCC, though its mechanism resembles probe activation in some ways. Dynamic update of the functional head's interaction conditions, which constrains how it can probe insatiably, mandates its location between subject and object goals. In this structural position, it is not able to Agree with the subject when it is featurally less specified than the object. While this derives the GCC, it cannot account for the LDB, since lexical DPs do not need to Agree. The probe's ability to Agree with an object must, instead, be determined *by the relation it first establishes with the higher argument*, as in the probe activation model.

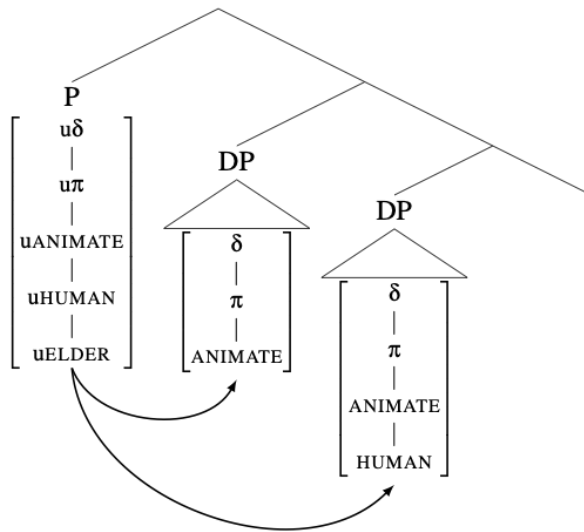
4.3.2. Feature gluttony

Coon & Keine (2021) take a different approach, extending the probe's abilities to Agree by adding more structure to it. While they maintain the first hypothesis in the probe activation model (47i), they do not allow for the free iteration of Agree after a first round posited by the second hypothesis (47ii). In particular, they allow (i) a probe's requirements to be *sequenced* into "subprobes," which can be satisfied through separate Agree relations (Taraldsen 1995, Anagnostopoulou 2003, Béjar & Rezac 2003, among others) and (ii) each subprobe is *articulated*, so it can be checked by more than one goal (Béjar 2003, Béjar & Rezac 2009).²⁰ When a probe Agrees with more than one goal on a single subprobe, this leads to what Coon & Keine call "feature gluttony." While this configuration is not inherently problematic, they take it to lead to a problem of derivational timing for pronominal cliticization: two pronouns cannot both move if they Agree on the same subprobe.

As Coon & Keine show, it is possible to develop an account of the GCC within this framework, if animacy features are sequenced with person features. Feature gluttony will then result whenever a subject pronoun has fewer animacy features than an object pronoun. In (60), for instance, the probe cannot check all the features in its first subprobe by Agreeing with the subject, and so it Agrees with the object on the same subprobe to check the remaining features. As a consequence, both pronouns are not able to cliticize.

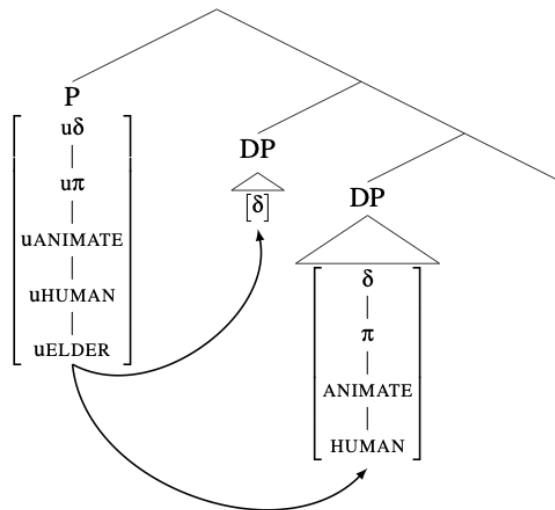
²⁰It would not be sufficient to adopt only articulated probes, as equal animacy clitic combinations are syntactically well-formed, as discussed in Section 2.1. At the same time, we do not deny the possibility that probes might be sequenced or articulated. We are arguing simply that this additional structure cannot be the sole means by which a probe is able to interact with more than one goal (see also footnote 14).

(60) *3.AN > 3.HU



This account cannot be extended to the LDB, however, for the simple reason that lexical DPs do not have to move. Consider the configuration in (61), in which the subject is a lexical DP.

(61) *DP > 3.HU



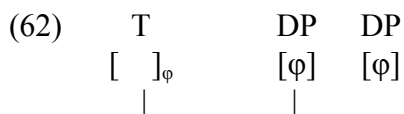
The probe again Agrees with both arguments using the same subprobe, since the subject does not check all Person and animacy features, and the result is feature gluttony. But unlike the derivation with two pronominal clitics, no problem should arise. Since the lexical DP does not move, the object pronoun should have no problem cliticizing on its own.

Feature gluttony and the articulated probes which underlie it cannot, then, be at the root of the LDB. While some probes may indeed be sequenced and articulated, and while feature gluttony may result in ill-formed derivations in other cases which Coon & Keine consider, these

considerations cannot unify the LDB with the GCC. The Agree mechanism must allow overprobing *when something other than the probe demands it*. By attributing overprobing entirely to the articulated probes which enable feature gluttony, Coon & Keine tie it entirely to the needs of probes. Under the probe activation model, by contrast, subsequent rounds of Agree can be motivated by other considerations.

5. Parameters of variation in the probe activation model

Our account of the LDB/GCC and its repair has led to a view of Agree in which it can iterate freely. Why, then, is overprobing not found in every probe-goal interaction? Generally speaking, economy considerations will militate against this possibility, so that Agree only occurs when needed. So even if overprobing is possible in principle, many syntactic configurations will only permit a one-to-one relation, as in the classical theory of Agree. In canonical subject-verb agreement in English, for instance, T will only agree with a single argument.



The language lacks clitic pronouns, and so only one Agree relation is motivated, by the probe’s own requirements. Beyond this first Agree relation, further rounds would have to be motivated by other requirements. At this point, it is an open question what other elements, beyond clitic pronouns, might come with a syntactic need necessitating Agree.²¹

That is not to say that agreement on a head, like a verb, adjective, or complementizer, can never be a result of probe activation. There are agreement phenomena which plausibly require a single head to Agree with more than one argument, including agreement displacement (Béjar & Rezac 2009) and Nez Perce-style complementizer agreement (Deal 2015). Since these are both hierarchy-sensitive patterns, they should find suitable accounts in the probe activation model, though we leave working out the details for the future. In motivating this approach to Agree, our strategy has been to start from pronominal cliticization, not agreement, because it reflects more transparently how Agree operates. Under the hypothesis that clitic movement is produced by a Merge operation triggered by Agree, each movement dependency we see in pronominal cliticization should correspond to an Agree relation. By contrast, how agreement is realized on a head might be shaped by varied morphological and phonological considerations, including the vocabulary items available in a language, and considerations of morphological economy and expressivity (Foley 2020). These non-syntactic factors create the possibility for a more opaque mapping between a particular realization of agreement and the syntactic derivation underlying it.

We now consider some of the parameters of variation available in the probe activation model, sticking with pronominal cliticization — or pronoun movement, more generally — as a guide for understanding the operations of Agree. We start by exploring how probe activation can be

²¹There is also the distinct question of whether the probe’s requirements themselves can be satisfied in separate derivational steps, as Coon & Keine (to appear) propose: see footnote 14 for discussion.

integrated with a theory of variation in a probe's featural relativization, to derive the cross-linguistic distribution of the GCC and LDB. We discuss how this system might underlie the typology of the PCC, though we do not attempt to provide a comprehensive theory of it here. We do show, however, how unifying the LDB and GCC provides a new perspective on the sources of cross-linguistic variation in the PCC. Finally, we consider whether the number and location of probes might also be subject to variation, and how this interacts with probe activation.

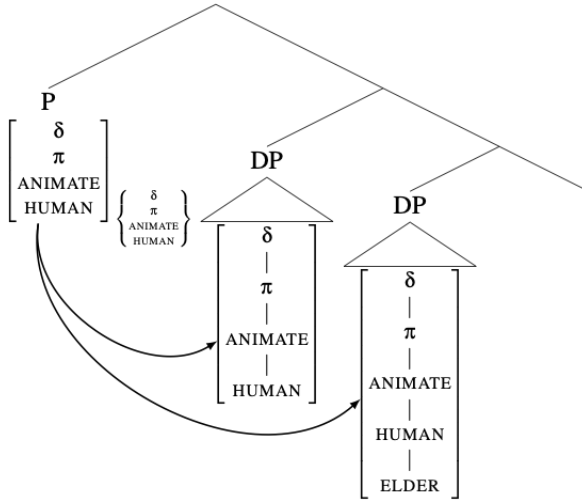
5.1. Probe relativization and the typology of the GCC and LDB

If a language does have clitic pronouns, the opportunities for overprobing may be further modulated by parametric features of the probe, enabling a greater or lesser degree of sensitivity to Person and animacy hierarchies. We see this with the GCC, which exhibits variation even within Southeastern Sierra Zapotec (Foley & Toosarvandani 2022). In Section 2, we described the Yalálag Zapotec variety, which enforces the full animacy hierarchy: 3.EL > 3.HU > 3.AN > 3.IN. But other varieties are only partially sensitive to this hierarchy. In the Laxopa variety, all humans are treated as a class, so that 3.EL > 3.HU and 3.HU > 3.EL are both grammatical clitic combinations, unlike in the Yalálag variety in (19). And, in the Zoogocho variety, all animates are grouped together, so that 3.HU > 3.AN and 3.AN > 3.HU also are both grammatical, again unlike in Yalálag Zapotec in (21).

Building on Nevins (2007, 2011), Foley & Toosarvandani show how this variation can be accounted for in terms of a probe's featural relativization. This is an independent property of probes related to, but separable from, the question of how the Agree mechanism works. It represents the sensitivity of a functional head to ϕ -features, much as some C heads are sensitive to wh-features. It triggers a search for a feature or features within the probe's domain, which ignores any other features not present in the relativization. The featural relativization also encodes variation in the particular features that a probe is sensitive to, as functional heads obviously do not all have the same relativization. This includes ϕ -features, so that a probe can be specified to search for fewer or more Person and animacy features.

The fewer animacy features a probe is relativized to, the less sensitivity to the animacy hierarchy there will be. Thus, in Laxopa Zapotec, whose GCC does not distinguish between elder and non-elder human pronouns, the probe is only relativized to [HUMAN] and [ANIMATE], alongside $[\pi]$ and $[\delta]$. A hierarchy-violating configuration like 3.HU > 3.EL ends up being grammatical, then, because the probe is not specified to look for [ELDER], and so is blind to its presence on goals. As shown in (63), after Agreeing with the higher goal in this configuration, the probe copies all the features it was looking for from this goal. According to the activation condition in (47ii), it is then able to Agree again with the lower goal, as this has exactly the same featural specification *for the features visible to the probe*, which does not include [ELDER].

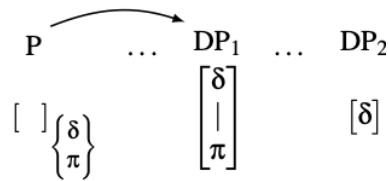
(63) 3.HU > 3.EL (*Laxopa*)



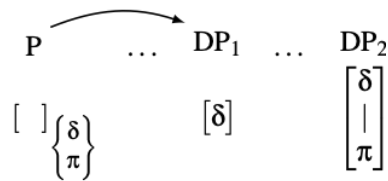
Similarly, in Zoogocho Zapotec, where the GCC only distinguishes animate from inanimate arguments, the probe is relativized to look only for one animacy feature, [ANIMATE], alongside Person features. If the probe is not relativized to any animacy features, it will not give rise to a GCC in the first place.

We can apply the same logic to variation in the LDB, continuing to assume that (i) for clitics to be licensed by Agree, they only have to Agree in at least one of their features, and (ii) a probe Agrees for all features it is relativized to simultaneously (in all rounds). As we discussed in Section 4.1, the LDB arises in any language where the probe is relativized to both $[\delta]$ and $[\pi]$, as in (64), potentially alongside other features. Object cliticization, then, is impossible if the higher argument is specified only for $[\delta]$, as DP_1 is in (64b). This is because the lower argument, DP_2 , bears features which were not copied onto the probe, namely $[\pi]$. According to the activation condition in (47ii), Agree is not possible with this object pronoun, and so it cannot cliticize.

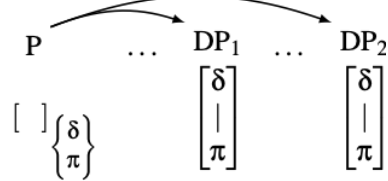
(64) a.



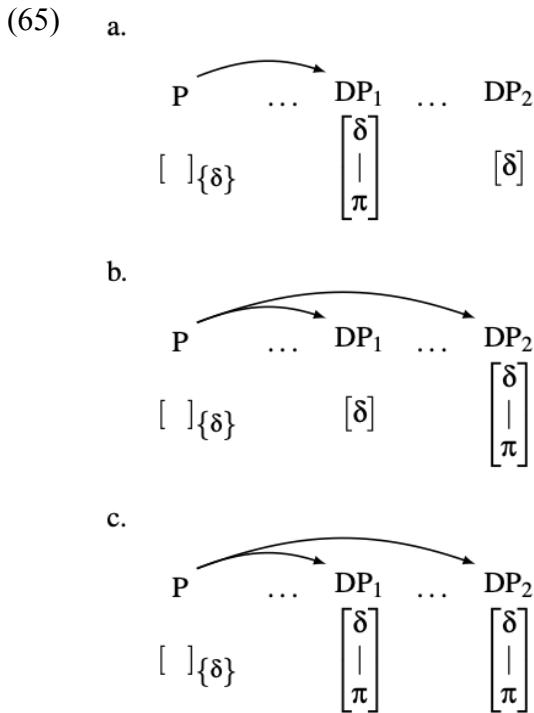
b.



c.

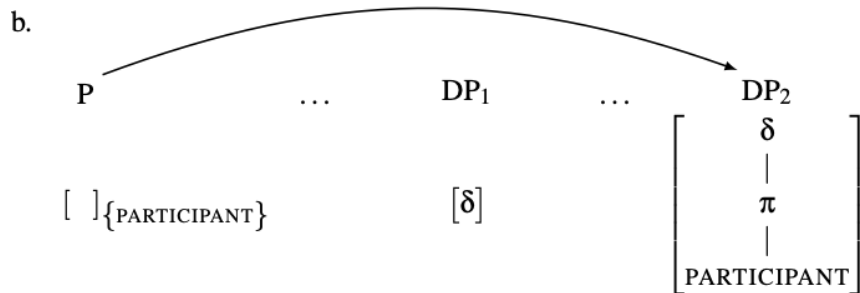
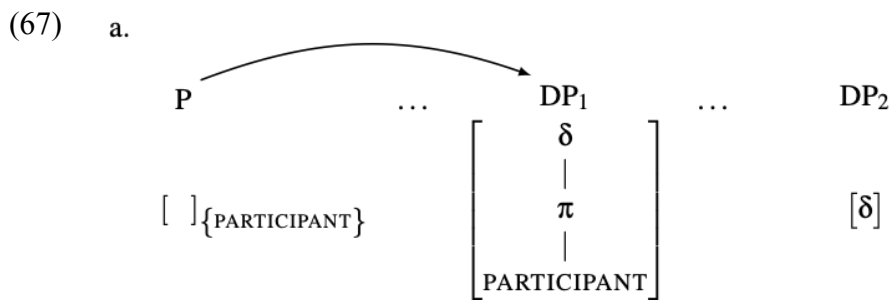
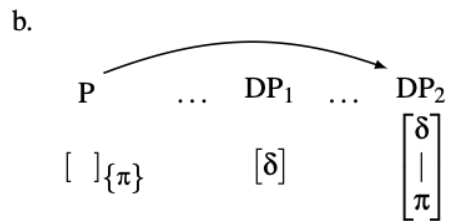
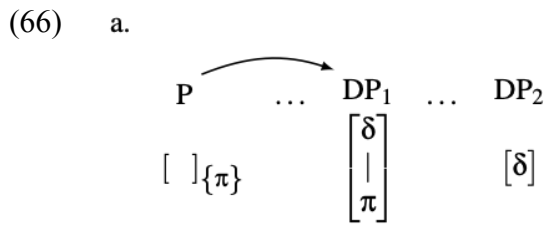


However, if a language has a probe relativized to $[\delta]$, but not $[\pi]$, it will not have the LDB, as in (65).

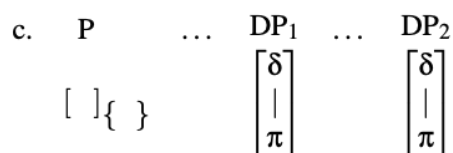
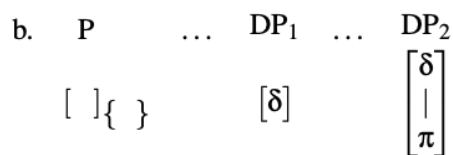
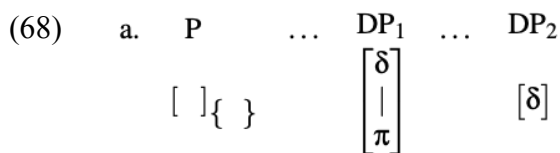


With this featural relativization, as with the one in (64), the probe finds $[\delta]$ on the higher argument, DP₁, regardless of whether it is a pronoun (65a) or a lexical DP (65b). When it is a pronoun in (65a), once it Agrees in $[\delta]$ with DP₁, there are no subsequent Agree relations — not because the probe is not activated, but because DP₂ is a lexical DP and need not Agree. In the reverse configuration in (65b), when DP₁ is a lexical DP, there is still an object clitic which needs to Agree. While it has a feature which was not copied onto the probe from DP₁, this is inconsequential, since the probe is not relativized to this feature. The $[\pi]$ feature on DP₂ is invisible for the purposes of the activation clause of Agree (47ii), and so object cliticization takes place across a lexical DP subject. If both probes above are not relativized to any additional Person or animacy features, then subject and object cliticization will not interact — there will also be no GCC or PCC — as in (64c) and (65c).

In principle, a probe could be relativized to some Person or animacy feature, but not to every feature it would entail on a goal (Coon & Keine 2021; see Béjar & Rezac 2009: 43–44 for a different view). Two such probes are shown in (66) and (67). They are relativized to either $[\pi]$ or $[\text{PARTICIPANT}]$, but to none of the other, less specific Person features, including $[\delta]$. Neither probe gives rise to the LDB. This is because lexical DPs — which only have $[\delta]$ — are simply skipped over by the probe, as in (66b) and (67b), a possibility that recalls “omnivorous” agreement (Béjar 2003, Preminger 2014).



Finally, with a functional head that is relativized to *no features*, pronominal cliticization is never possible, not even from subject position. Agree is not motivated by the probe's needs — since it is not looking for any features — and thus it is never activated.



Presumably, such a functional head could only exist in a language lacking clitic pronouns that require Agree.²²

The configurations in (64–68) demonstrate how the theory of probe activation in (47) can be integrated with a cross-linguistic theory of variation in probe relativizations. Only a language in which the probe is specified to look for animacy features will exhibit the GCC, and how many animacy features it is relativized to determine how sensitive the GCC is to the animacy hierarchy. Similarly, only languages in which the probe is sensitive to both $[\delta]$ and $[\pi]$ — possibly alongside other features — will exhibit the LDB. A language in which the probe is relativized only to $[\delta]$, as in (64), will not show the LDB. Nor will a language in which it is relativized to other features, but not $[\delta]$, as in (66–67).

The configurations above bear on the choice between the “obligatory operations” and “derivational time bomb” approaches to why Agree is, not merely possible, but necessary on the first round. As we discussed in Section 4.1, the probe activation model is compatible, in principle, with both. But the possible probes in (64–68) can differentiate between them empirically, depending on the outcome of certain derivations. To start, under a derivational time bomb approach, the probe’s requirement for Agree would have to be somewhat weak. Rather than requiring the probe to find every feature it is relativized to, it would have to be sufficient for it to find just one of its features on a goal. This is simply because probes relativized to $[\delta]$ plus one or more Person or animacy features do not always co-exist with a goal specified for all of these features. Take the probe in (64), which gives rise to the LDB and no other constraint on cliticization: in a derivation with no clitic pronouns — where both the subject and object are lexical DPs — it will never find $[\pi]$ on an available goal (though it does find $[\delta]$); yet this must yield a grammatical output. The same is true for probes which give rise to the GCC, like the ones in (49) and (63).

If the probes in (66–67) exist, the two approaches actually make different predictions about the outcome of derivations in which the probes find no matching goal, as Preminger (2014: 85–102) observes. These probes are relativized to a more specific feature, like $[\pi]$ or [PARTICIPANT], without being relativized to any of the less specific features it would entail on a goal. There are derivations, as a consequence, in which these probes do not find goals with *any* matching features. For instance, for the probe in (67), which is relativized only to [PARTICIPANT], there is a derivation which contains no local person pronouns. A derivational time bomb approach, even weakened in the way we consider above, predicts that such a derivation should crash, preventing a grammatical output. By contrast, the obligatory operations approach — in which Agree must only be initiated and need not result in successful valuation — predicts a well-formed output of some kind, even though Agree has “failed” in some sense.

Preminger argues that the probe in (67) does in fact exist in Kichean, using patterns of local person clitic doubling to argue in support of the obligatory operations view. In the Zapotec varieties we are concerned with, there is no way to distinguish this approach from its competitor, because the GCC always exists alongside the LDB. The probe is relativized to $[\delta]$ and $[\pi]$, as well as to some animacy features, depending on the flavor of the GCC. So there is never the

²² To the extent such a language had clitic pronouns, these would have to be merely phonological clitics, which would not require syntactic licensing.

opportunity for Agree to “fail” on the first round: if every derivation contains at least one argument, the probe is always guaranteed to find at least the $[\delta]$ feature. What would be required to differentiate the derivational time bomb and obligatory operations approaches is a language without the LDB, but with some other constraints on object cliticization.

5.2. Probe activation and the typology of the PCC

There is also significant variation attested for the PCC. Not all languages have the Weak PCC, described in (44), but a variant which rules out different combinations of arguments based on Person (see Nevins 2011 and Pancheva & Zubizarreta 2017 for comprehensive typological overviews). As we will show, the probe activation model opens up certain possibilities for understanding how these other PCCs might arise from the grammatical mechanism responsible for the Weak PCC (and the LDB/GCC). And importantly, it forecloses others.

To start, some languages have an Ultrastrong PCC, which enforces the entire Person hierarchy: $1 > 2 > 3$. Found in Classical Arabic (Fassi Fehri 1988), this prohibits object cliticization whenever it exceeds a higher argument on this hierarchy. It is thus a relative constraint like the Weak PCC, which solely distinguishes local vs. non-local arguments. Following Nevins (2007), all contemporary theories aim to derive this variation within relative PCCs from the probe’s featural relativization (Coon & Keine 2021: 677, Deal to appear, p. 35), much as we did above for variation with the GCC and LDB. In the probe activation model, the Ultrastrong PCC arises when the probe is specified to seek at least [SPEAKER], [PARTICIPANT], and $[\pi]$. The Weak PCC, by contrast, arises when the probe is relativized to fewer features — to [PARTICIPANT] and $[\pi]$, but not [SPEAKER] — so that it treats first and second person pronouns alike. Whether these probes are specified to search for other features in a given language depends on whether it has the LDB or GCC, alongside the PCC. The featural relativizations for the PCC combine in a strictly additive way with those discussed above. If a probe is relativized to [PARTICIPANT] and $[\pi]$, as well as to $[\delta]$, then it will give rise to both the Weak PCC and the LDB. Similarly, adding animacy features to these relativizations will produce some flavor of a GCC, plus the PCC.

The Weak and Ultrastrong PCC were originally taken to be marginal patterns, found in the speech of only some speakers of Catalan, Italian, and Spanish (Bonet 1991:180, Perlmutter 1971:62–63, Bianchi 2006:2028). Most speakers of these languages have the Strong PCC, an *absolute* constraint which prohibits all local person direct object pronouns from cliticizing, regardless of what the structurally higher argument is. So, it differs from both the Weak and Ultrastrong PCC in ruling out one *hierarchy-obeying* combination of arguments: $1 > 2$, in addition to $2 > 1$ (which is also ruled out by the Ultrastrong PCC).

(69) *Strong PCC*

A local person direct object pronoun cannot cliticize when there is a structurally higher argument (a subject or indirect object).

But the Weak PCC has been identified as a dominant pattern in Kashmiri (Nevins 2011:963), and the Ultrastrong in Classical Arabic. These, furthermore, exist alongside the various GCCs and

the LDB in Zapotec, suggesting that all of these relative constraints — sensitive to featural asymmetries across Person and animacy — fall under a single general mechanism keyed to these asymmetries. And this suggests that the Strong PCC — a specific constraint — should be fit into the grammatical signature of the more general family of relative constraints (the Weak PCC and its kin), rather than the other way around.²³

The probe activation model, and the Zapotec interaction of objects with subjects, limits our options here, since strategies for doing this available in other theories of overprobing are unavailable to us. Coon & Keine (2021: 674–678), for instance, take independent properties of goals to be crucial to giving rise to the Strong PCC. They argue it arises when the higher argument is an indirect object, which comes with additional structure obscuring its internal structure — and its [PARTICIPANT] feature — from the probe. All Southeastern Sierra Zapotec varieties, however, have a Strong PCC involving the subject (like both the GCC and LDB do).

- (70) a. $1 > 2$
 *Bi llre'=la'o'.
 NEG see.HAB=1SG=2SG
 Intended: 'I don't see you.'
- b. $2 > 1$
 *Bi llre'=lo'a'.
 NEG see.HAB=2SG=1SG
 Intended: 'You don't see me.' (Yalálag: Avelino Becerra 2004:31–32)

It seems implausible that the subject's features might be hidden from the probe in the same way as with a dative argument.

Probe activation similarly excludes Deal's (to appear) proposal for assimilating the Strong PCC to the relative constraints. It arises, she suggests, when a probe is not insatiable, but is instead specified for a [PARTICIPANT] satisfaction condition, so that it stops looking for goals once it finds one with this feature. We cannot adopt this approach since, in the probe activation model, Agree is always possible, as long as a goal's featural specification does not conflict with any features previously copied onto the probe. This means that Agree cannot be subject to an additional satisfaction condition.

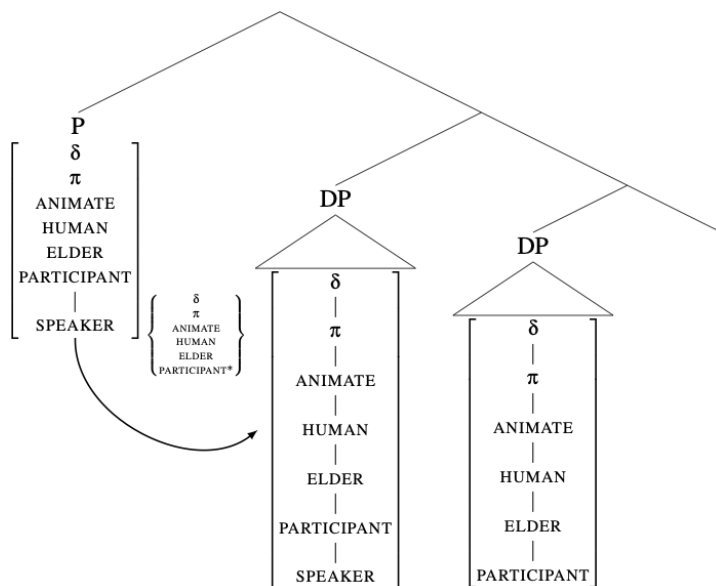
In order to fit the Strong PCC into the grammatical signature of other relative constraints, we propose instead to exploit properties of the valuation operation itself, which copies features from a goal onto the probe. In our discussion above, it has always been individual features that are transferred, even though these features are organized hierarchically in a feature geometry inside nominals. Following a proposal by Foley & Toosarvandani (2022), we propose that this structure can sometimes be preserved by the valuation procedure, such that a feature geometric structure is copied to the probe. That is, for a probe relativized to look for a feature [F], there are two

²³ There is also the Me First PCC, which can be characterized either as an absolute constraint (no first person object cliticization when there is a higher argument) or a relative one (no first person object cliticization when a higher argument is second or third person). It is amenable to analysis either along the lines of the Strong PCC or the Weak/Ultrastrong PCC.

parametric possibilities: (i) only [F] is copied, or (ii) *the feature geometric structure labeled with [F]* is copied from the goal.

It is precisely when a probe, relativized to look for [PARTICIPANT], copies a feature geometric structure that the Strong PCC arises. Consider the configuration which differentiates it from relative constraints like the Weak and Ultrastrong PCC, $1 > 2$ in (71). Instead of copying just the individual [PARTICIPANT] feature, the probe is valued by copying the entire feature geometric structure rooted in this feature, found on the first person pronoun. It copies, in other words, the feature structure in which [PARTICIPANT] dominates [SPEAKER]. (We represent this additional property of the probe, which allows it to copy more than a single feature, with an asterisk on the relevant feature in its relativization.)

(71) $*1 > 2$



As a result, the probe will not be able to Agree with the lower goal, and thus it will not be able to cliticize. This is because, according to (47ii), the second person pronoun must not bear any featural content beyond what the probe copied from the closest goal. Alongside individual animacy features, the probe copied a feature geometric structure in which [PARTICIPANT] dominates [SPEAKER]. As a result, the lower goal *does* have some featural content — namely, the feature [PARTICIPANT] — which was not copied onto the probe.²⁴ And so, Agree with this lower goal is impossible — due to the same specificational asymmetry that characterizes the relative constraints.

²⁴ An alternate formal representation makes this point more clearly. Let the elements copied onto the probe be members of a set P. After Agreeing with the closest goal G in (71), $P = \{\delta, \pi, \text{ANIMATE}, \text{HUMAN}, \text{ELDER}, \langle \text{PARTICIPANT}, \text{SPEAKER} \rangle\}$, where the feature geometric structure in which PARTICIPANT dominates SPEAKER is represented as an ordered list. The lower goal G' now has featural content not present on the probe: neither the individual feature [PARTICIPANT], nor the trivial structure containing just this feature ($\langle \text{PARTICIPANT} \rangle$) is a member of P.

If the variation between the Strong and Weak PCC is located in the valuation procedure in this way, then we expect to find “absolute” versions of the other constraints as well (see Foley & Toosarvandani 2022 for more detailed discussion). If a probe can copy a feature geometric structure rooted in [PARTICIPANT], then it should be able to do the same for any Person feature. If the probe was relativized to [δ^*], copying any feature geometric structure labeled by this feature, it would permit further Agree relations only with goals that are completely featurally identical to the closest goal (since only these would have no features beyond the copied structure). If the goals are pronouns, then this would likely permit only cliticization of a single argument, assuming that sequences of featurally identical clitic pronouns are ruled out for morphological reasons (Nevins 2011). If the probe copied feature geometric structures rooted in the animacy features, it would give rise to “Strong” GCCs. A probe specified for [HUMAN*], for instance, would never permit human pronouns in object position to cliticize (again assuming that identical clitic sequences are independently prohibited).²⁵

Encoding this variation entirely in the properties of the probe in this way predicts that all logically possible combinations of PCC, GCC, and LDB should be attested, all other things being equal. The Zapotec varieties we have considered all have the LDB, alongside a relative GCC and a Strong PCC. But are there languages with a relative GCC, which also have a Weak or Ultrastrong PCC? Or, are there languages with a GCC or PCC, but no LDB? Unless there are independent restrictions on the featural specifications of probes, no such dependencies are expected.

5.3. Other dimensions of variation: The location and number of probes

There is also variation in the arguments that are involved in these intervention effects. In Zapotec, it is always the subject and object that are involved in both the GCC and Strong PCC (as they are for the Weak PCC in Kashmiri). By contrast, in other languages, it is the indirect object which intervenes for object cliticization: e.g., the PCC in Romance and in Greek. By analogy to this variation, it does not seem so improbable that a language could exhibit the LDB for some arguments and not others. In Zapotec, it is again the subject and object that are involved in the LDB.

We take the consistency in the choice of interacting arguments to be non-accidental, and to require a general account, in terms of the location of a probe: if it c-commands the subject, then the subject will be implicated in these intervention effects; but if the probe only c-commands the indirect and direct objects, then only these arguments will be involved.

To make the analytical choices more clear, we can compare the LDB to the subcases of Holmberg’s Generalization in which a dative argument blocks object shift of an accusative pronoun in Swedish (see Section 2.2), since this effect is essentially the same as the LDB. In other words, why is the intervener in Zapotec a subject, but not an indirect object? And why is

²⁵ There are certainly languages which only allow cliticization of a single argument, but it is less clear whether there are absolute variants of the GCC. The Zapotec varieties we have considered all have relative animacy constraints. If it turns out that there is no “Strong” GCC, then we might reconsider the hypothesis that the Strong PCC can be derived entirely by manipulating the properties of the probe. As Coon & Kein propose, it may be that the properties of some goals (at least including indirect objects) matter, too.

the intervener in Swedish an indirect object, but not a subject? (It may turn out that this part of Holmberg’s Generalization is not derived from the LDB. But we assume here that it is, for the sake of identifying the possible locus of variation involved in this type of intervention.)

For the LDB to be active in both languages, they would each have to have a probe relativized to both $[\delta]$ and $[\pi]$. To derive the difference between them, there are multiple paths forward. It might be possible, for example, that the two languages locate the probe in distinct locations: in Zapotec, the probe is higher and takes the subject in its scope, whereas in Swedish, the probe is lower, so that only the indirect object is implicated. This could be because there is a single probe in each language and it has a variable position relative to the arguments. Or, it could be because there are multiple probes in each language, recalling the Chomskyan separation of Agr_S (or T) and Agr_O (v) for subject vs. object case and agreement, and the probe that is relativized to $[\delta]$ varies: a higher probe for Zapotec (T) and a lower probe for Swedish (v). While either path is consistent with our proposal for overprobing, we think that a more parsimonious account of this variation would exclude variation of this sort, and try instead to derive the difference from independent properties of the two languages.

We suggest, therefore, that the probe occupies a uniform position in T and that the variation in the subject’s intervention potential comes from variation in its position. In Swedish, the subject is preverbal and resides in specTP (Holmberg & Platzack 1995). We assume that the movement of a non-pronominal subject to this position is triggered by an EPP feature which takes effect independently of — and prior to — Agree. In Zapotec, on the other hand, the subject is postverbal, residing in a derived position higher than vP and lower than specTP (see Section 2.1). Then, if the probe is in T, its domain will include the subject in Zapotec, but not in Swedish, where the subject is located higher than the probe. Since it is the indirect object which is highest in the probe’s domain in Swedish, it intervenes for object shift instead.²⁶

This leaves us just with the last part of this cross-linguistic paradigm: Why does the indirect object not intervene for the direct object in Zapotec?

- (72) $\text{Bnhe}^{13}\text{lljw}=\text{a}'_1=\text{b}^3_2$ t_1 $\text{Be}^1\text{dw}=\text{'nh}^3$ t_2 .
 give.COMP=1SG=3.AN **Pedro=DEF**
 ‘I gave it (an animal) to Beto.’ (Laxopa: Foley & Toosarvandani 2019: 257)

²⁶ As a reviewer points out, in Icelandic, object shift is permitted across a quantificational subject in the transitive expletive construction, though the subject likely remains inside vP in this case (Bobaljik & Jonas 1996: 208 fn. 7, Alexiadou & Anagnostopoulou 2001: 199–200). However, it is not clear whether Icelandic has the LDB for dative arguments to begin with. In Swedish, object shift is permitted across a high subject. For us, this so-called “long” object shift would have to require a higher probe, in the C area; this may account for the additional restrictions on this movement (Vikner 2005: 431 fn. 8). A more challenging pattern arises a bit farther afield in Classical Arabic, a VSO language which exhibits indirect object intervention for the Ultrastrong PCC, without exhibiting subject intervention (Walkow 2013). This would be a problem for our general claim that the choice of intervener depends on the height of the subject relative to the probe, only if the subject is as low in Classical Arabic as it is in Zapotec. We leave this for future investigation.

There are at least two feasible possibilities: an absolute approach, rooted in properties of the indirect object, and a relative approach, capitalizing on the probe's activation after interacting with the subject.

First, for the absolute approach, the indirect object could be embedded under additional functional material, and hence is simply invisible for Agree (Preminger 2014: 137–140). Whether this functional material is present and is sufficient to enable the probe to skip past the DP inside it are factors plausibly subject to variation, so we would not necessarily expect all indirect objects to behave alike. Another account of this type might attribute the variable intervention behavior of indirect objects to a difference in the height of the direct object relative to the indirect object: the direct object is higher than the indirect object in Zapotec (but lower than it is in Swedish).

Turning to the relative approach, it might be possible to attribute the absence of indirect object intervention to the subject intervention inherent in the probe activation model. Once the probe Agrees first with the subject, subject to Attract Closest, it is activated and able to Agree with all available goals, again subject to Attract Closest, as long as they are not more featurally specified. This means that, in a ditransitive clause, the probe will next be able to interact with the indirect object. Though, if this is a lexical DP as in (72), economy will disfavor an Agree relation. The activated probe will then be able to interact with the direct object, which is a clitic pronoun in (72), and thus Agrees. In other words, probe activation gives the appearance that the indirect object can be ignored when it is a lexical DP, simply because, unlike a clitic, it does not need to Agree. Importantly, for such an account to go through, there must be a single probe, consistent with the account of subject intervention above.

While the details of these two approaches need to be worked out, we note in closing a difference in their predictions. The absolute approach leads us to expect the existence of languages with “double” intervention, in which both a subject and an indirect object function as interveners for the PCC/GCC. The relative approach, by contrast, forecloses this possibility: it predicts that, in a given language, the intervener must be either the subject or the indirect object, never both.

6. Conclusions and open questions

Hierarchical intervention effects offer a window into the physiology of Agree: how it interacts with the broader syntactic structure in which it is embedded, how it interacts with movement, the nature of the featural entities that it deals in, and whether and how Agree iterates. Our study of the LDB assimilates it to constraints like the GCC and the Weak PCC, and contributes to the consolidation of a subcategory of such hierarchical intervention effects, in which the constraint is relative. In all of these, subsequent rounds of Agree are possible as long as the features of the goal do not exceed the footprint left by the first round. This leads to a novel perspective on the interaction between movement and Agree as well as a novel understanding of the location of optionality in the system, as limited to non-initial round(s) and modulated by properties of goals.

The specificational asymmetry common to all three intervention effects, also suggests a particular understanding of what features are, and how they interact with syntactic operations. It supports an approach to the featural representation of traditional categories such as Person and

animacy as internally structured by asymmetrical entailment. This semantic asymmetry is the representational basis for the specificational asymmetries at the core of these constraints. We have suggested that while Person features (as well as animacy features) have a semantics, the contribution of their semantics to syntactic computation is minimal. There is no need to have actual denotations driving syntactic computation.

Our examination of the LDB has led to another novel conclusion. The Person domain stretches to include lexical DPs. In particular, there is a Person feature, [δ], which is maximally underspecified, shared by both pronominals and non-pronominals; in some languages, the presence of this feature makes lexical DPs interveners for pronominal cliticization. Combined with our conclusion about the optionality of Agree after the first round, this generates a new question regarding the source of obligatory cliticization, and how to formulate the preference for clitics over independent pronouns.

In Zapotec, specifically, we have seen that clitic pronouns obligatorily Agree (and move), which we have attributed to the preference for a clitic over a strong pronoun whenever possible, a requirement that may have a morphophonological source, rather than a syntactic one. Our analysis of nominals, in fact, makes a structural principle like Cardinaletti & Starke's (1999) Minimize Structure unlikely. Their economy principle would require that clitic pronouns contain less nominal functional structure than a lexical DP, despite their both possessing [δ]. While this is not inconsistent with the letter of our approach, it leaves very little substance to its spirit. It is more likely, given the distribution of [δ] on D that we propose, that all nominals possess the same external structure, so that there is no sense in which pronouns are externally smaller than other nominals. But Minimize Structure is not the only way to account for the difference between clitics and strong pronouns. It may be possible to develop an account within a realizational theory of morphology, such as Distributed Morphology, by linking clitic pronouns to the notion of a minimal pronoun (Kratzer 2009, Rooryck & Wyngaerd 2011, Safir 2014), with an optimizing calculus (Burzio 1998, Bresnan 2001), some other global calculation (Rezac 2011), or other economy and expressivity constraints on morphological exponence (Foley 2020). We leave this choice, and the nature of the clitic-strong pronoun alternation, for future exploration.

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