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The Person Case Constraint: Syntactic Approaches and Repair  
Mechanisms

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# Abstract

Some of the languages that use clitic pronouns in double object constructions show restrictions as to which clitic object pronouns may appear together. Generally speaking, the offending combinations are (some of) those where a direct object clitic is more highly specified in terms of syntactic features than an indirect object clitic, as well as the combination of a first person indirect object clitic with a second person direct object clitic. This has been called the Person Case Constraint (PCC) in the literature. While the phenomenon appears in a number of unrelated languages, it does not materialize in the same way in all of them. Languages differ in which combinations of object clitics they allow, which allows them to be grouped together into various PCC varieties. There are five major varieties that have been argued for in the literature: the strong, the weak, the ultra-strong, the super-strong and the *me*-first PCC. A natural consequence of this split is that any syntactic approach to the PCC needs to be able to account for every pattern attested. The influential approaches discussed in this thesis (Béjar & Rizac 2003; Anagnostopoulou 2003, 2005; Pancheva & Zubizarreta 2018; Yokoyama 2019a; Coon & Keine 2021) accomplish this task to varying degrees. Some of them require substantial additional syntactic machinery to account for the different PCC varieties. This subsequently also has an impact on the manner in which repair mechanisms for PCC grammars are approached. This thesis suggests that a reduction from five to three PCC varieties (strong, weak, intermediate) is feasible. It shows to what extent existing accounts would benefit from this reduction and what the ramifications for repair mechanisms might be.

# Zusammenfassung

Einige der Sprachen, die klitische Pronomina in Doppelobjektkonstruktionen verwenden, weisen bezüglich der Frage, welche klitischen Objektpronomina gemeinsam auftreten können, Beschränkungen auf. Im Allgemeinen handelt es sich dabei um (einige jener) Kombinationen, bei welchen ein direktes Objektklitikum in Hinsicht auf syntaktische Features stärker spezifiziert ist als ein indirektes Objektklitikum, sowie um die Kombination eines indirekten Objektklitikums der ersten Person mit einem direkten Objektklitikum der zweiten Person. Dies wird in der Literatur als Person Case Constraint (PCC) bezeichnet. Das Phänomen tritt in einer Reihe von Sprachen auf, welche nicht miteinander verwandt sind, präsentiert sich jedoch nicht in allen davon auf dieselbe Weise. Sprachen unterscheiden sich darin, welche Kombinationen von Objektklitika sie zulassen, wodurch sie in weiterer Folge verschiedenen Varianten des PCC zugeteilt werden können. In der Literatur wird zwischen fünf Hauptvarianten unterschieden: die starke, die schwache, die ultrastarke, die superstarke und die *me-first* Variante. Eine logische Konsequenz dieser Aufteilung ist, dass jeder syntaktische Erklärungsansatz für den PCC in der Lage sein muss, alle belegten Muster zu beschreiben. Die in dieser Arbeit diskutierten einflussreichen Ansätze (Béjar & Rizac 2003; Anagnostopoulou 2003, 2005; Pancheva & Zubizarreta 2018; Yokoyama 2019a; Coon & Keine 2021) bewältigen diese Aufgabe in unterschiedlichem Maße. Manche von ihnen erfordern beträchtliche zusätzliche syntaktische Maschinerie, um die verschiedenen PCC-Varianten zu erklären. Dies wirkt sich in weiterer Folge auch auf die Art und Weise aus, in welcher man sich mit Reparaturmechanismen für PCC-Grammatiken auseinandersetzt. In dieser Arbeit wird vorgeschlagen, dass eine Reduzierung von fünf auf drei PCC-Varianten (stark, schwach, mittel) möglich ist. Es wird gezeigt, inwieweit bestehende Erklärungsansätze von dieser Reduktion profitieren würden und welche Konsequenzen dies für Reparaturmechanismen mit sich bringen könnte.

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# Abbreviations

The abbreviations used in this thesis follow the Leipzig Glossing Rules (<https://www.eva.mpg.de/lingua/pdf/Glossing-Rules.pdf>). Certain additions have been made to fit the needs of this thesis. Glosses from original sources have sometimes been altered to guarantee consistent use of abbreviations throughout all examples.

## List of abbreviations

|        |                                    |
|--------|------------------------------------|
| ABS    | absolute                           |
| ACC    | accusative                         |
| ADR    | addressee                          |
| ANIM   | animate                            |
| ART    | article                            |
| AUX    | auxiliary                          |
| CL     | clitic                             |
| COMP   | complementizer                     |
| CONJ   | conjunctive                        |
| DAT    | dative                             |
| DEIC   | deictic                            |
| DET    | determiner                         |
| DO     | direct object                      |
| E/A    | ergative subject + unmarked object |
| EMPH   | emphatic                           |
| ERG    | ergative                           |
| F      | feminine                           |
| FOC    | focus                              |
| FUT    | future                             |
| GEN    | genitive                           |
| INANIM | inanimate                          |
| INH    | inherent                           |

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|        |                  |
|--------|------------------|
| IO     | indirect object  |
| IPFV   | imperfective     |
| LOC    | locative         |
| M      | masculine        |
| N      | neuter           |
| NMLZ   | nominalization   |
| NOM    | nominative       |
| OBJ    | object           |
| OBL    | oblique          |
| PART   | participant      |
| PERS   | person           |
| PL     | plural           |
| POSS   | possessive       |
| PRON   | (strong) pronoun |
| PRS    | present          |
| PST    | past             |
| REDUP  | reduplication    |
| REFL   | reflexive        |
| SBJ    | subject          |
| SG     | singular         |
| SPKR   | speaker          |
| STRONG | strong           |
| THEME  | theme            |
| TR     | transitive       |
| VAL    | valued           |
| WEAK   | weak             |
| 1      | first person     |
| 2      | second person    |
| 3      | third person     |
| π      | person           |
| #      | number           |

# 1 Introduction

There is a substantial number of unrelated languages that do not allow for certain clitic pronouns to occur together in the same clause. An example of this is given in (1) for Catalan, where the combination of a 2nd person dative clitic with a 3rd person accusative clitic yields a grammatical sentence (1a), but the reverse case, i.e., a 3rd person dative clitic together with a 2nd person accusative clitic, leads to ungrammaticality (1b).

(1) *Catalan*

- (a) *En Josep, te 'l va recomenar la Mireia.*  
the Josep 2DAT.CL 3ACC.CL recommended the Mireia  
'She (Mireia) recommended him (Josep) to you.'
- (b) \**A en Josep, te li va recomanar la Mireia.*  
to the Josep, 2ACC.CL 3DAT.CL recommended the Mireia  
'She (Mireia) recommended you to him (Josep).'
- (Bonet 1991: 178f)

The phenomenon that is illustrated in (1) is what has been called the Person Case Constraint (henceforth PCC) in the literature. What the example above illustrates is that two DPs are "compared" to each other in regard to their respective person features. Following this comparison, the DPs are then ranked relatively to each other. The ensuing order of the DPs is a direct predictor of grammaticality vs. ungrammaticality. For this reason, the PCC is said to be a hierarchy effect.

The DPs that are subject to comparison in (1) are clitics. The exact nature of those elements that lead to PCC effects has been much debated, though. One of the earliest accounts of the PCC was given by Perlmutter (1971), who suggested that the effect only applies to clitics. Some two decades later, Bonet (1991, 1994) was the first scholar to provide an extensive study of this phenomenon.<sup>1</sup> Bonet departed from the view that the PCC is caused exclusively by clitics. Instead, she argued that it applies to a broader range of elements, namely those that are "phonologically weak". This is where another

---

<sup>1</sup> Bonet (1991) called it the \**Me-lui*/I-II Constraint. It was only later that it got the name Person Case Constraint.

problem pops up: what exactly constitutes such a weak element? Section 3 will address this issue and introduce two accounts that both argue for splitting up the notion of "pronoun" into different syntactic categories. What is uncontroversial, however, is the fact that pronominal clitics trigger PCC effects. Moreover, rich agreement systems (e.g., Southern Tiwa (Bonet 2008)) and weakened pronouns (e.g., English (Bonet 2008)) also seem to trigger the PCC.

While Bonet (1991) claims that the judgements in (1) hold for all speakers of Catalan, she also highlights that in many PCC languages, there seems to be some variation with regard to native-speaker judgements. While some speakers of Spanish judge the sentences in (2) as grammatical (for both meanings), others do not.

(2) *Spanish*

- (a) *Te me recomendaron.*  
 2SG.DAT 1SG.ACC recommended.3PL  
 'They recommended me to you.'
- (b) *Te me recomendaron.*  
 2SG.ACC 1SG.DAT recommended.3PL  
 'They recommended you to me.'
- (Perlmutter 1971: 62)

Based on these findings, Bonet (1991) argues that the PCC cannot be analyzed under a one-size-fits-all account. Instead, she suggests that a distinction needs to be made between a "weak" and a "strong" variant of the PCC. Following Bonet, others have proposed an even finer distinction, which has lead to a total of at least five different flavours of the constraint. Chapter 2 gives an overview of what these are and how they differ from each other.

Irrespective of the unresolved issues that still exist around the PCC, there are some core characteristics about it that can be formulated (Bonet 1991, 1994; Anagnostopoulou 2003, 2005, 2017):

1. PCC effects are found within a variety of typologically unrelated languages. Bonet mentions Arabic, Greek, Romance, Basque, Georgian, English and Swiss German. However, more languages have since been discussed in the literature. See sections 2.1 through 2.5 for languages specific to each variety of the PCC. See Haspelmath 2004: 7 for an extensive list of additional languages.
2. PCC effects apply to clusters of "phonologically weak" elements. Chapter 3 will touch upon the nature of these elements in more detail.

3. PCC effects only arise for combinations of such "phonologically weak" elements. Chapter 5 will show how languages make use of this fact in order to circumvent PCC effects.
4. The PCC may also apply if the direct object clitic is reflexive (Bonet 1991; Herschensohn 1979; Kayne 1975), as shown in (3) for French. However, this is not the case for all languages. In some PCC languages, such as Italian (Monachesi 1996; Nicol 2005) and Spanish (Rivero 2004: 498, fn. 2), combinations of an indirect object with a reflexive direct object are not subject to any restrictions.

(3) *French*

\**Elle se lui est donnée entièrement.*  
 3SG.NOM 3SG.ACC.REFL 3SG.DAT is given.F entirely  
 'She gave herself to him entirely.'  
 (Anagnostopoulou 2005: 204) 3>3.REFL

5. PCC effects only surface if a construction has an external argument. This means that unaccusatives and passive constructions are exempt from PCC effects, as illustrated in (4) below. Both sentences in (4) have a dative argument together with a 1st resp. 2nd person absolutive argument and are grammatical. So, while a combination of a 3rd person dative clitic with a 1st person accusative clitic would not yield a grammatical sentence in a PCC language, the same person combination does not cause any problems when it appears as a dative-nominative/absolutive construction.

(4) *Basque*

- (a) *Hi niri ettori h-atzai-t.*  
 you.ABS me.DAT arrived 2.ABS-AUX-1.DAT  
 'You came to me.'  
 (Laka 1993: 27) 1.DAT>2.ABS
- (b) *Joni joan na-atzai-t.*  
 John.DAT go 1.ABS-AUX-3.DAT  
 'I went to John.'  
 (Anagnostopoulou 2005: 204) 3.DAT>1.ABS

The PCC has gotten a lot of attention over the decades, and rightfully so. It is an immensely complex topic that requires a nuanced analysis. What makes this phenomenon such an interesting area of research is that it appears in a great number of typologically

unrelated languages across the world. Moreover, it seems to occur in different syntactic constructions, such as certain unaccusatives, transitives or quirky-subject constructions<sup>2</sup>, though the present thesis only discusses double object constructions.<sup>3</sup> Naturally, the heterogeneity of the phenomenon has led to a variety of different accounts. While chapter 2 introduces the different PCC varieties that have been accounted for in the literature and chapter 3 discusses the nature of pronouns, chapter 4 discusses a select few syntactic accounts to the PCC. Furthermore, I argue in this chapter that a reduction of the proposed PCC varieties from five to three varieties is possible. I discuss how this three-fold split fits into the approaches that are discussed in this thesis and show that it results in the need for less syntactic machinery in order to account for PCC effects. Chapter 5 deals with certain repair mechanisms that languages with the PCC may use to evade PCC effects. Lastly, chapter 6 provides a summary.

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<sup>2</sup> Anagnostopoulou (2003, 2005), Béjar & Rezac (2003), Boeckx (2000), Richards (2008), and Walkow (2012), amongst others, have linked the PCC to restrictions between 1st/2nd person nominative objects and dative ("quirky") subjects in Icelandic, one of the first discussions of which came from Taraldsen (1994, 1995).

<sup>3</sup> See Yokoyama 2019a: 17 for an overview of the different constructions and an extensive list of references for each of them.

## 2 The PCC varieties

It is not an easy task to make out a precise number for the amount of patterns that the PCC shows. This is due to the fact that the constraint is not quite as clean-cut as it might seem at first glance. There are (at least) five different varieties that have been attested in the literature, and in what follows, their respective patterns will be introduced. Specifically, the varieties that this thesis discusses are the strong PCC (2.1), the weak PCC (2.2), the *me*-first PCC (2.3), the ultra-strong PCC (2.4) and the super-strong PCC (2.5). Section 2.6 then summarizes these five varieties and their patterns.

### 2.1 The strong PCC

The strong PCC is arguably the most widespread variant cross-linguistically and one that has thus received a lot of attention. It appears in languages such as Greek (Anagnostopoulou 2003, 2005), Kiowa (Adger & Harbour 2007), some varieties of Catalan and Spanish (Bonet 1991; Nicol 2005) and Basque (Bonet 1991; Laka 1993). The term was first proposed by Bonet (1991) for languages where, in the case of a double object construction, the direct object clitic *has* to be 3rd person. Since then, the existence of this variety has also been suggested by a number of other authors, such as Adger & Harbour (2007), Anagnostopoulou (2003), Baker (2008), Béjar & Rezac (2003), Boeckx (2000), Desouvrey (2005), Haspelmath (2004), and Ormazabal & Romero (2007). The Greek sentences in (5) show that combinations of a 1st or 2nd person indirect object with a 3rd person direct object are allowed in this variety, while combinations where the direct object is 1st or 2nd person are not.<sup>4</sup>

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4 Unless stated otherwise, combinations of two objects are generally abbreviated as IO>DO, i.e., indirect object > direct object, from here on. This is partly due to the fact that not all languages which show PCC effects use the same case for IOs and DOs. Romance and Basque, for example, have dative IOs, while Greek uses genitive for them – though genitive has historically supplanted dative in Greek, as has been kindly pointed out to me by my supervisor, Dr. Dalina Kallulli. DOs are accusative in Romance and Greek, but absolutive in Basque and Georgian (Anagnostopoulou 2005). Furthermore, the IO can also be accusative or have no morphology at all in some languages (Haspelmath 2004; Ormazabal & Romero 2007). Throughout this thesis, it will sometimes be necessary to show other

(5) *Greek*

- (a) *Tha mu to stilune.*  
 FUT 1SG.GEN.CL 3SG.ACC.N.CL send.PL  
 'They will send it to me.' 1>3
- (b) *Tha su ton stilune.*  
 FUT 2SG.GEN.CL 3SG.ACC.M.CL send.PL  
 'They will send him to you.' 2>3
- (c) \**Tha su me sistisune.*  
 FUT 2SG.GEN.CL 1SG.ACC.CL introduce.3PL  
 'They will introduce me to you.' 2>1
- (d) \**Tha tu se stilune.*  
 FUT 3SG.GEN.M.CL 2SG.ACC.CL send.3PL  
 'They will send you to him.' 3>2  
 (Anagnostopoulou 2017: 3f)

The pattern that the strong PCC shows can thus be summarized as in (6), where an asterisk indicates that a given combination is illicit, while a blank indicates a licit combination. As becomes apparent when having a look at the table in (6), the strong PCC only allows clusters of clitics if the DO is 3rd person.

(6) *Strong PCC*

| 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
|-----|-----|-----|-----|-----|-----|-----|
| *   |     | *   |     | *   | *   |     |

## 2.2 The weak PCC

As has been established, the PCC does not materialize in the exact same way in all languages. While speakers with a strong PCC grammar do not allow combinations of 1st and 2nd person clitics under any circumstances, there are languages in which speakers do accept these kinds of combinations. Those languages include certain varieties of Spanish (Perlmutter 1971) and Catalan (Bonet 1991, 1994), French (Nicol 2005), Italian (Bianchi 2006; Nicol 2005) and Old and Modern Occitan (Anagnostopoulou 2005). These weak PCC grammars are, in a sense, less strict, hence the name of this variety. There is no definite agreement on the question of whether the weak PCC constitutes its own variety. Authors that have advocated *for* such a view include Anagnostopoulou

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patterns, such as a clitic appearing together with a strong pronoun, or the reverse order (i.e., DO>IO). All of these are marked to be identifiable as such. Please refer to the list of abbreviations above in case of any uncertainties.

(2005), Bianchi (2006), Haspelmath (2004), Murasugi (1994), Nevins (2007), and Nicol (2005).

An example illustrating the weak PCC is given in (7) for Catalan. Bonet (1994) notes that a certain degree of speaker variation can be observed with regard to the judgement of the ambiguous sentence in (7). While some speakers easily accept both possible meanings (i.e.,  $1>2$  and  $2>1$ ), others accept a  $2>1$  reading only when the sentence is embedded in a specific context. Still others do not accept the  $2>1$  interpretation at all. This stands in stark contrast to the strong PCC, for which this kind of variation between speakers has not been reported (Bonet 1991, 1994).

(7) *Catalan*

*Te m' ha venut el mercader més important.*

2SG 1SG has sold the merchant most important

'The most important merchant has sold you to me.' or

$1>2$

'The most important merchant has sold me to you.'

$\%2>1$

(Bonet 1994: 41)

For those speakers that accept both  $1>2$  and  $2>1$  combinations, a weak PCC variety thus may be presumed. In some Romance languages (specifically Spanish, Italian and Catalan (Nicol 2005)), these 1st/2nd person combinations seem to be allowed quite frequently. However, we do see notable variation between languages that show the weak PCC. While the two Italian sentences in (8) are perceived as equally fine by speakers of Italian, the same sentences are judged differently in Spanish. There seems to be a preference for interpreting the DO as reflexive (9b) as opposed to interpreting it as a pronoun (9a).

(8) *Italian*

(a) *Mi ti presentano.*

1SG.DO 2SG.IO introduce.3PL

'They introduce me to you.'

$2>1$

(b) *Mi ti presento.*

1SG.DO 2SG.IO introduce.1SG

'I introduce myself to you.'

$2>1$ .REFL

(Anagnostopoulou 2005: 219)

(9) *Spanish*

- (a) ?*Te me presentó.*  
 2SG.IO 1SG.DO presented.3SG  
 'He presented me to you.' ?2>1
- (b) *Te me presentas.*  
 2SG.DO 1SG.IO presented.2SG  
 'You presented yourself to me.' 1>2.REFL
- (Anagnostopoulou 2005: 219)

Anagnostopoulou (2008) argues that the weak PCC is moreover present in German (and possibly Dutch) iff the pronouns occur right before the subject and in the Wackernagel position.<sup>5</sup> Anagnostopoulou (2017) notes that this restriction only holds for some German speakers, namely for those that only allow for a DO>IO order in the Wackernagel position. These speakers will readily accept combinations of 1st and 2nd person, but not 3>1/2 combinations. This is illustrated in (10), where the IO pronoun *ihr* yields a grammatical subordinate clause if it occurs in the Wackernagel position (10a), but not if it surfaces in the position left of the DO (10b).

(10) *German*

- (a) *dass ihr der Fritz gestern ein Buch geschenkt hat*  
 that 3SG.F.DAT the Fritz.NOM yesterday a book.ACC gifted has  
 'that Fritz has gifted her a book yesterday' IO.PRON>SUBJ
- (b) \**dass der Fritz gestern ihr ein Buch geschenkt hat*  
 that the Fritz yesterday 3SG.F.DAT a book.ACC gifted has  
 'that Fritz has gifted her a book yesterday' \*SUBJ>IO.PRON
- (Müller 2001: 209)

At this point, it must be noted that it is Müller's goal to show that there are different types of pronouns and that these demonstrate different behaviour in terms of movement to the Wackernagel position in German. Specifically, he claims that unstressed (10) (as well as weak and reduced) pronouns always have to undergo movement to the Wackernagel position. Strong pronouns, on the other hand, cannot move to this position (11a). They can, however, undergo scrambling. Interestingly, some of Müller's grammaticality judgements do not hold for the author of this thesis. This may be due to the pluricentric nature of the German language, however, it still needs to be taken

<sup>5</sup> The Wackernagel position is located at the left periphery, following C (Haftka 1981; Haider & Rosengren 1998; Hoberg 1997; Lenerz 1977, 1992; Müller 2001; Thiersch 1978). Pronouns may move to this position, where they obligatorily precede all elements within a clause except for the subject.

into account if a general statement about German is to be made. In particular, I would reverse the grammaticality judgements in (11). Müller notes that (11a) might not be totally ill-formed, which I concur with. The example sentence in (11b), on the other hand, is ungrammatical (or very marginal at best) to me. It thus seems that the claim that strong pronouns cannot move to the Wackernagel position in German does not hold for all speakers.

(11) *German*

- (a) ?\**dass IHR der Fritz gestern ein Buch geschenkt hat*  
 that 3SG.F.DAT the Fritz yesterday a book.ACC gifted has  
 ‘that Fritz has gifted HER a book yesterday’
- (b) *dass der Fritz gestern IHR ein Buch geschenkt hat*  
 that the Fritz yesterday 3SG.F.DAT a book.ACC gifted has  
 ‘that Fritz has gifted HER a book yesterday’
- (Müller 2001: 209)

Putting aside these intricacies and potential issues, the pattern that arises for the weak PCC variety can be schematized as in (12). It differs from that of the strong PCC in that it additionally allows 1>2 and 2>1 combinations.

(12) *Weak PCC*

|     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|
| 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
|     |     |     |     | *   | *   |     |

### 2.3 The *me*-first PCC

Another PCC variety that has been proposed in the literature resembles the weak variety in that it also does not allow for 3>1 combinations (13b). It resembles the strong PCC as well, though, in that it does not allow 2>1 combinations (13d). It was first introduced by Nevins (2007), who also gave it its name. Languages for which this variety has been attested are Romanian (Nevins 2007) and Bulgarian (Pancheva & Zubizarreta 2018).<sup>6</sup> The *me*-first PCC is somewhat unusual as it is the only variety that allows 3>2 combinations (13a). To put it differently, the only combinations that are illicit are those where the DO is 1st person. If a 1st person pronoun is included in the clitic cluster of a *me*-first PCC grammar, it *has* to be the IO (13c)–(13d).

<sup>6</sup> Nevins (2007) notes that the *me*-first PCC is significantly less common than the weak PCC, but he does not provide any tangible numbers for this claim.

(13) *Romanian*

- (a) *Maria i- te- a prezentat*  
 Maria 3SG.DAT 2SG.ACC has introduced  
 'Maria has introduced you to her.' 3>2
- (b) \**Maria i- m- a prezentat*  
 Maria 3SG.DAT 1SG.ACC has introduced  
 'Maria has introduced me to her.' 3>1
- (c) *Maria me- te- a prezentat*  
 Maria 1SG.DAT 2SG.DAT has introduced  
 'Maria has introduced you to me.' 1>2
- (d) \**Maria tie- m- a prezentat*  
 Maria 2SG.DAT 1SG.ACC has introduced  
 'Maria has introduced me to you.' 2>1
- (Nevins 2007: 297)

The pattern for this variety is shown in (14). Combinations without a 1st person object are always allowed, but if there is a *me*-pronoun (1st person) in the clitic cluster, it *must* come first.

(14) *Me-First PCC*

|     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|
| 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
|     |     | *   |     | *   |     |     |

## 2.4 The ultra-strong PCC

Besides the *me*-first PCC, Nevins (2007) also describes the ultra-strong PCC, which shows some resemblance to the *me*-first PCC in that it does not allow 2>1 and 3>1 combinations either. However, 3>2 combinations are disallowed under the ultra-strong PCC (recall that the *me*-first PCC is the only variety that *does* allow this combination). As a result of this behavior, Nevins (2007) describes this variety as a mix of the weak PCC (\*3>1, \*3>2) and the *me*-first PCC (\*2>1, \*3>1). One language that displays the ultra-strong PCC is Classical Arabic (Bonet 1991; Fassi-Fehri 1988; Nevins 2007), as shown in (15). We can see that \*2>1 and \*3>1/2 configurations are ungrammatical, while all other combinations are well-formed.

(15) *Classical Arabic*

- (a) *ʔaʕta- ni:- ka*  
 gave.3.SBJ- 1.DAT- 2.ACC  
 'He gave you to me.' 1>2

- (b)  $\text{ʔa}^{\text{c}}\text{ʔay- ta- ni:- hi:}$   
 gave- 2.SBJ- 1.DAT- 3.ACC  
 'You gave him to me.' 1>3
- (c)  $*\text{ʔa}^{\text{c}}\text{ʔa:- ka- ni:}$   
 gave.3.SBJ- 2.DAT- 1.ACC  
 'He gave me to you.' \*2>1
- (d)  $\text{ʔa}^{\text{c}}\text{ʔay- tu- ka- hi:}$   
 gave- 1.SBJ- 2.DAT- 3.ACC  
 'I gave him to you.' 2>3
- (e)  $*\text{ʔa}^{\text{c}}\text{ʔay- ta- hu:- ni:}$   
 gave- 2.SBJ- 3.DAT- 1.ACC  
 'You gave me to him.' \*3>1
- (f)  $*\text{ʔa}^{\text{c}}\text{ʔay- tu- hu:- ka:-}$   
 gave- 1.SBJ- 3.DAT- 2.ACC  
 'I gave you to him.' \*3>2
- (Starred examples from Fassi-Fehri (1988: 116), unstarred from Nevins (2007: 298))

According to Bonet (1991, 1994) and Nevins (2007), some speakers of Catalan also show the ultra-strong PCC instead of the usually posited weak PCC. This means that all speakers of Catalan freely accept 1>2 combinations, but only some – namely those with the weak variety – also allow for 2>1 combinations. Walkow (2012) also describes an ultra-strong PCC pattern in Barceloní Catalan. The pattern that arises for this variety in the languages mentioned is given in (16).

- (16) *Ultra-strong PCC*
- |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|
| 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
|     |     | *   |     | *   | *   |     |

## 2.5 The super-strong PCC

Finally, one more variety is discussed in the literature, namely the so-called "super-strong" PCC. It is the most restrictive PCC variety of the five mentioned and, according to Pancheva & Zubizarreta (2018), it is the least well-known one. The only combinations that it allows are 1/2>3. The super-strong PCC has been documented for Kambara, a Malayo-Polynesian language (Klamer 1997, 1998), as shown in (17).

(17) *Kambera*

- (a) \*Na-        *wua -ngga -nggau.*  
               3SG.NOM- give -1SG.DAT.IO -2SG.DAT.DO  
               ‘He gives you to me.’ \*1>2
- (b) Na-        *wua -ngga -nya.*  
               3SG.NOM- give -1SG.DAT.IO -3SG.DAT.DO  
               ‘He gives it to me.’ 1>3
- (c) Na-        *wua -nggau -nja.*  
               3SG.NOM- give -2SG.DAT.IO -3PL.DAT.DO  
               ‘He gives them to you.’ 2>3
- (d) \*Na-        *wua -nya -ngga*  
               3SG.NOM- give -3SG.DAT.IO -1SG.DAT.DO  
               ‘He gives me to him.’ \*3>1
- (e) \*Na-        *wua -nja -nya.*  
               3SG.NOM- give -3PL.DAT.IO -3SG.DAT.DO  
               ‘He gives it to them.’ \*3>3
- (Klamer 1997: 903f)

What is interesting to note here is that Klamer (1997) does not provide any data for \*2>1 and \*3>2. However, Klamer (1998: 64) argues that both of these combinations are ungrammatical in Kambera. The pattern that thus arises for the super-strong PCC is the one in (18).

(18) *Super-Strong PCC*

|     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|
| 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
| *   |     | *   |     | *   | *   | *   |

## 2.6 Interim summary

It has been shown that the patterns of the PCC throughout (and even within) different languages are rather complex. As a result, there is substantial disagreement in the literature as to what constitutes its own variety and what does not. Anagnostopoulou (2005, 2008), for example, proposes only a two-way split for the PCC: strong (Greek and French) vs. weak (Italian, Spanish, Catalan). Others, such as Nevins (2007), argue for a more fine-grained distinction. What every approach seems to be able to agree on is that the strong PCC (✓: 1/2/3>3, ✗: \*2/3>1, \*1/3>2) is by far the most common PCC variant cross-linguistically. It is also widely accepted that the weak PCC (✓: 1/2/3>3, 1/2>1/2, ✗: \*3>1/2) needs to be stated as its own variety that may only

be operative in a sub-group of speakers within a certain language. For the even less common ultra-strong ( $\checkmark$ :  $1/2/3 > 3$ ,  $1 > 2$ ,  $\times$ :  $*2 > 1$ ,  $*3 > 1/2$ ) and super-strong PCC ( $\checkmark$ :  $1/2 > 3$ ,  $\times$ :  $*1/2 > 2/1$ ,  $*3 > 1/2/3$ ), while there is some evidence that supports the existence of these varieties, things are less clear. The *me*-first PCC ( $\checkmark$ :  $1/3 > 2$ ,  $1/2/3 > 3$ ,  $\times$ :  $*2/3 > 1$ ) is arguably the most controversial variety of the five. Yokoyama (2019a), for example, argues that the *me*-first PCC is merely a restriction on the ordering of the clitics involved. This is discussed in more detail in section 4.5. For now, suffice it to say that it is – to a certain degree – possible to make out (at least) five different patterns that have lead to the postulation of the five varieties as described in this section. The patterns are summarized in (19) below.

(19) *Overview of the different PCC varieties*

|              | 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
|--------------|-----|-----|-----|-----|-----|-----|-----|
| Strong       | *   |     | *   |     | *   | *   |     |
| Weak         |     |     |     |     | *   | *   |     |
| Ultra-Strong |     |     | *   |     | *   | *   |     |
| Super-Strong | *   |     | *   |     | *   | *   | *   |
| Me-First     |     |     | *   |     | *   |     |     |

Having introduced the different PCC varieties that are attested for in the literature and their patterns, in the next chapter, I turn to the question of which elements participate in PCC effects and how they differ from seemingly similar elements.

### 3 Pronouns and clitics

There is a certain amount of disagreement in the literature not only with regard to the PCC varieties, but also as to which elements can trigger PCC effects. While it is relatively clear that the PCC applies to clitics and agreement markers, the status of "weak pronouns" in languages without clitics is less clear (Anagnostopoulou 2008). Following Abney (1987) and Postal (1969), some past approaches have lumped together all sorts of pronouns under the label of DPs. Cardinaletti (1994), Noguchi (1997), and Ritter (1995), among others, have proposed that different pronouns have different internal syntactic structure, which explains the difference in their distribution. In what follows, analyses by Cardinaletti & Starke (1999) and Déchaine & Wiltschko (2002) are introduced. Both of them aim to gain a more detailed understanding of pronouns and pronoun types, the main argument being that pronouns cannot be grouped together under a single DP category. The present chapter is intended to give a better understanding of those pronouns that participate in PCC effects as well as their respective syntax. Section 3.1 introduces the approach by Cardinaletti & Starke who argue that not only do pronouns belong to one of two classes (3.1.1), but that they can further be teased apart into three distinct pronoun types, namely strong pronouns, weak pronoun and clitics (3.1.2, 3.1.3). Section 3.1.4 touches upon an adaptation of the approach by Stegovec (2020). Section 3.2 introduces Déchaine & Wiltschko's suggestion that pronouns split into pro-DPs (3.2.1), pro- $\phi$ Ps (3.2.2) and pro-Nps (3.2.3). Lastly, section 3.3 summarizes the two approaches.

#### 3.1 Cardinaletti & Starke (1999): structural deficiency

##### 3.1.1 Step 1: a two-way split

Broadly speaking, Cardinaletti & Starke (1999) argue that a single pronoun, with only one function and semantics, may fan out into different classes. They point out that the French third person plural feminine pronoun, *elles*, for example, shows some differences in terms of coordination and reference. While the adjective *grandes* in the sentence in

(20a) may refer to human or non-human entities (and therefore take on the meaning of either *tall* or *high*), this is not true for the coordinated sentence in (20b). Here, *grandes* may only refer to a human entity. The same behavior can be observed in Italian, though there the pronouns are phonetically distinct (*esse* and *loro*, respectively), as well as in German (*sie*), Slovak (*ich*), Hungarian (*öket*), Hebrew (*hi*) or Gun (*yélè*).

(20) *French*

(a) *Elles sont trop grandes.*

3PL.F.NOM are too big  
'They are too tall/high.'

(b) *Elles et celles d'à côté sont trop grandes.*

3PL.F.NOM and those besides are too big  
'They and those next to them are too tall.'

(adapted from Cardinaletti & Starke (1999: 145))

This behavior leads Cardinaletti & Starke (1999) to the conclusion that there must be some sort of link between coordination and interpretation. In order to further explore this relation, they posit two classes of pronouns: class 1 and class 2. Class 1 pronouns are of the type found in (20b). They may occur in coordination, but can only refer to human entities. Class 2 are pronouns such as the one in (20a), which can refer to human or non-human entities, but may not be coordinated. Cardinaletti & Starke (1999) make a case for labeling class 1 elements as "strong" and class 2 elements as "deficient". They further argue that this split pertains to all relevant word classes, as quantifiers, adverbs and adjectives also display the class 1 vs. class 2 distinction. However, Cardinaletti & Starke's work only deals with pronouns and their inherent differences.

It is important to note at this point that one substantial difference between class 1 and class 2 is that of their respective distribution. While class 1 elements (strong pronouns) share the distributional characteristics of full NPs, the distribution for Class 2 elements (deficient pronouns) is somewhat more complex. There are three positions in which they may *not* occur (while strong pronouns/full NPs can do so):  $\emptyset$ -/base positions (21), peripheral positions such as clefts and right or left dislocation (22), and c-modification (23). The latter refers to the fact that deficient pronouns cannot be modified by modifiers within the NP (23b), while strong pronouns can be modified by adverbs that modify the entire NP (so-called c-modifiers (23a)).

(21) *Italian*

- (a) \**Forse l'ha fatto **essa**<sub>DEFICIENT</sub> da sola.*  
 maybe it.has done 3SG.F as alone  
 'Maybe she did it alone.'
- (b) *Forse l'ha fatto **lei**<sub>STRONG</sub> da sola.*  
 maybe it.has done 3SG.F as alone  
 'Maybe she did it alone.'
- (c) *Forse l'ha fatto **Maria** da sola.*  
 maybe it.has done Maria as alone  
 'Maybe Maria did it alone.'
- (Cardinaletti & Starke 1999: 150f)

(22) *Italian*

- (a) \****Essa**<sub>DEFICIENT</sub>, lei è bella.*  
 3SG.F she is pretty  
 'Her, she is pretty.'
- (b) ***Lei**<sub>STRONG</sub>, lei è bella*  
 3SG.F she is pretty  
 'Her, she is pretty.'
- (c) *Maria, lei è bella.*  
 Maria she is pretty  
 'Maria, she is pretty.'
- (Cardinaletti & Starke 1999: 151)

(23) *French*

- (a) *vraiment / seulement **lui**<sub>STRONG</sub>*  
 really / only 3SG  
 'really/only him'
- (b) \**vraiment / seulement **il**<sub>DEFICIENT</sub>*  
 really / only 3SG.M  
 'really/only him'
- (Cardinaletti & Starke 1999: 151)

Besides the fact that a deficient pronoun cannot be coordinated, that it can only appear in a specific position, and that it cannot be c-modified, deficient pronouns also differ from strong pronouns in terms of their semantics. While deficient pronouns do not necessarily have a semantic range, strong pronouns have to have a range. Furthermore, phonologically, deficient pronouns may restructure. That is, they may combine with an adjacent element to yield a single prosodic unit (as in the French liaison), and they may be reduced (e.g., "I saw **ya**"), which strong pronouns cannot do.

### 3.1.2 Step 2: a three-way split

Cardinaletti & Starke (1999) argue that deficient pronouns fall into two distinct classes: weak pronouns and clitics.<sup>7</sup> Together, the three pronoun classes can be ranked as follows:

- (24) *Pronoun types from least deficient to most deficient*  
 strong pronouns < weak pronouns < clitics

Whenever there is a choice between a deficient and a strong form, the deficient form is always prioritized. This means that between a weak pronoun and a clitic, the clitic is prioritized, and between a strong pronoun and a weak pronoun, the weak pronoun is prioritized. The latter case is illustrated in (25) below, where the weak 3rd person singular form *le* is required over the strong pronoun *lui*. However, this is only the case if *lui* resp. *le* refers to a prominent (i.e., old) discourse referent. If the pronoun refers to a non-prominent discourse referent, only the strong *lui* yields a grammatical sentence. It is argued that this is because deficient pronouns are not able to refer to non-prominent discourse referents. Importantly, the authors also argue that PCC effects only arise in the context of deficient pronouns and within these only for combinations of clitics, not for those of two weak pronouns or combinations of a clitic and a weak pronoun.<sup>8</sup>

- (25) *French*
- (a) \**Pierre voit lui*.  
 Pierre sees 3SG.STRONG  
 Pierre sees him. (where 'him' refers to a prominent discourse referent)
  - (b) *Pierre le voit*.  
 Pierre 3SG.M.WEAK sees  
 Pierre sees him. (where 'him' refers to a prominent discourse referent)

### 3.1.3 The syntax of the three pronoun types

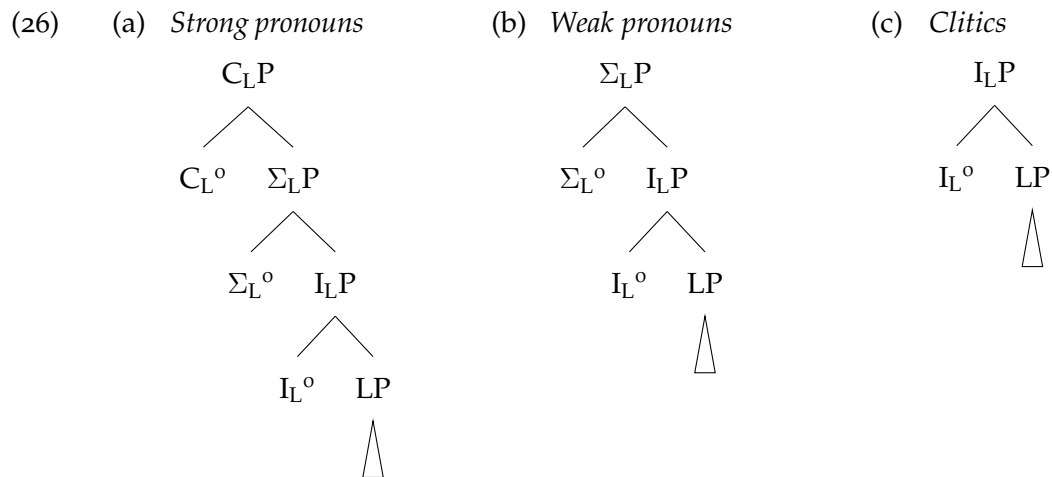
Structurally, clitics are taken to be heads (26c), while weak pronouns are maximal projections (26b). Both are, however, underlyingly deficient phrases. Clitics realise less

<sup>7</sup> Cardinaletti & Starke (1999) note that elsewhere in the literature, "weak" has often been used as a term to describe the equivalents to Romance clitics in the Germanic languages, or even just generally as a synonym for "clitic". Their use of the word differs from these previous ones.

<sup>8</sup> Anagnostopoulou (2005) argues that the PCC pertains to clitics as well as weak pronouns. However, it is not made sufficiently clear what exactly the latter term encompasses. Anagnostopoulou simply uses the umbrella term "phonologically weak elements" to group clitics, weak pronouns and agreement affixes together.

syntactic heads (because they contain fewer projections) and are thus also morphologically lighter.<sup>9</sup> What both deficient elements have in common, however, is that they lack a CP layer. According to Cardinaletti & Starke, this is what is responsible for the differences between deficient and strong elements as noted above. Given the syntactic structures in (26)<sup>10</sup>, the preference for using the most deficient pronoun is reformulated with an eye on economy: there seems to be a requirement for always using the pronoun with the least structure – if possible.

Criticism on this view is passed by Rezac (2011), who believes that simply stating the requirement as "use the least syntactically complex pronoun" (Minimize Structure, Cardinaletti & Starke 1999) is too general. Under this assumption, we would expect the outcome of a strong pronoun replacing a clitic in *every* syntactic environment where cliticization fails. In the case of adjectival modifiers, causatives and coordinate structures in French, for example, cliticization is not possible. However, strong object pronouns are not available either.<sup>11</sup> Rezac thus argues that the Minimize Structure requirement needs to be restricted.



(Cardinaletti & Starke 1999: 214)

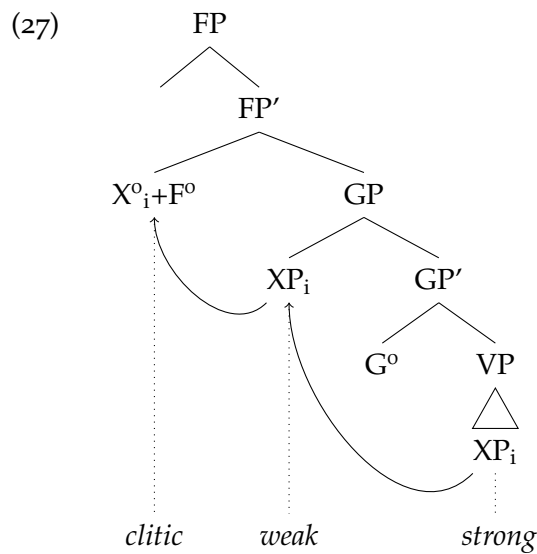
Cardinaletti & Starke (1999) argue that, since clitics – unlike weak and strong pronouns – do not include  $\Sigma^o$ , they need to occur in a position that is c-commanded by a  $\Sigma^o$ . They furthermore require a Spec,AgrP position due to their lack of functional

<sup>9</sup> Cardinaletti & Starke argue that opaque morphology is the reason for this not always being apparent on the surface.

<sup>10</sup> The subscript "L" is used as a placeholder for any lexical category. " $\Sigma P$ " indicates a pronominal projection.

<sup>11</sup> The interested reader is referred to Rezac 2011: 142 for a detailed discussion of the topic.

case features. In order for a clitic to be associated with both  $\Sigma^0$  and  $\text{Agr}_0$ , Cardinaletti & Starke posit the derivation in (27), which has also been independently suggested by Sportiche (1998). It aims to illustrate the assumption that only strong elements are base-generated. Deficient elements are the result of the deletion of part of these strong elements. This syntactic difference is also what is taken to be the basis for the distinction between class 1 (strong) and class 2 (deficient) pronouns, as mentioned above. Specifically, class 2 elements constitute a structural subset of class 1 elements and arise through deletion. Cardinaletti & Starke (1999) argue that, as a result, the class 1 vs. class 2 distinction should be uniform throughout languages, as opposed to lexical classes, which can differ greatly.



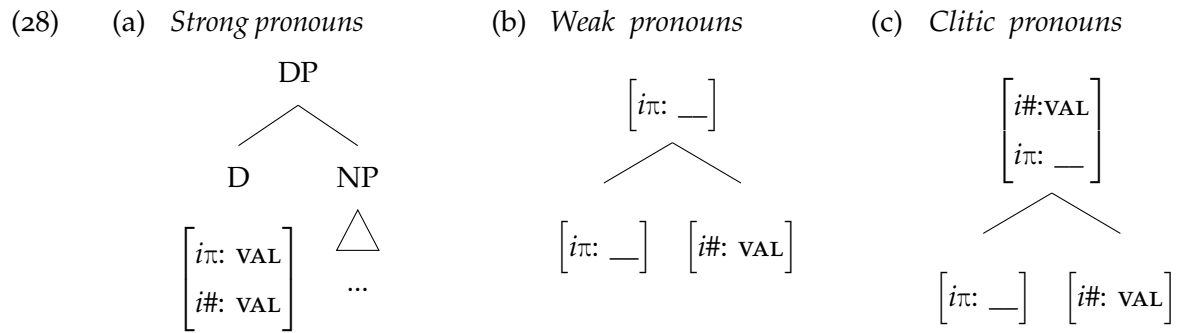
(Cardinaletti & Starke 1999: 196)

### 3.1.4 A variation of Cardinaletti & Starke (1999): Stegovec (2020)

Like Cardinaletti & Starke, Stegovec (2020) assumes a three-way split for pronouns. However, he construes deficient pronouns as having unvalued interpretable person features, which leads to referential deficiency. That is, in contrast to strong pronouns (which have valued interpretable person features), deficient pronouns are either expletive or require a discourse-prominent antecedent. This falls in line with Cardinaletti & Starke's claims that weak pronouns can only introduce old discourse referents, while new discourse referents need to be introduced via a strong pronoun, as discussed in section 3.1.2 above.

Structure-wise, Stegovec assumes that strong pronouns are DPs with a valued person feature (28a). This valuation is the result of D's referential status. Because of this valued feature, strong pronouns do not need to be validated externally and thus do not participate in PCC effects.

Both reduced types of pronouns lack a D head. For these, all  $\varphi$ -features enter the derivation as heads. In the case of weak pronouns (28b), the pronoun's head is determined by only the person feature. For clitic pronouns (28c), both person and number  $\varphi$ -features project to form a feature bundle that functions as a head. How exactly this structural difference is relevant will be discussed in section 5.4 below. For now, suffice it to say that Stegovec (2020) agrees with Cardinaletti & Starke (1999) in that pronouns split up into three subtypes and that the existence of the PCC in a certain grammar is linked directly to which pronoun type(s) it employs.



(Stegovec 2020: 290)

### 3.2 Déchaine & Wiltschko (2002)

Another analysis that approaches the issue in a somewhat similar vein is the one in Déchaine & Wiltschko (2002). They also make do without a DP shell that encapsulates all pronouns and advocate for three different types of pronouns. Instead of positing that one pronoun, with a single function and semantics, fans out into different classes, they suggest different types of pronouns for different persons in different languages. Déchaine & Wiltschko (2002) argue that it is unclear how the syntax could be able to detect distinct internal structures for pronouns if they are all simply labeled as DPs. Instead, they argue that pronouns belong to different categories. Specifically, Déchaine & Wiltschko propose three subtypes for the big group of pronouns. Each of these subtypes has its own syntactic structure as well as its own semantics. What ties the

different subtypes together is a morphological relation, in that the syntactic structure of one pronoun may include that of another.

### 3.2.1 Pro-DPs

As a starting point for their pronominal undertaking, Déchaine & Wiltschko look at Halkomelem, a Salish language. Halkomelem has affixes and pronominal clitics as well as independent pronouns. The latter are used emphatically and they have the properties of full DPs. This means that they have the same syntax as DPs (29), that they can only appear in an argument position, and that they behave like R-expressions with regard to binding, i.e., they are subject to Condition C (31).

- (29) *Halkomelem pronouns have the syntax of a DP*

*Tl'ó-cha-l-su qwemcíwe-t [thú-tl'ò q'amí]<sub>[ARG]</sub>.*  
 then-FUT-1SG-SO hug-TR DET.F-3SG girl  
 'Then I'm going to hug that girl.'  
 (Galloway 1993: 174)

- (30) *Halkomelem pronouns cannot appear in predicate position*

(a) *[Lám]<sub>[PRED]</sub> [thú-tl'ò]<sub>[ARG]</sub>.*  
 go DET-3SG  
 'He goes.'  
 (b) *\*[Thú-tl'ò]<sub>[PRED]</sub>-cha te Bill kw'e may-th-óme.*  
 DET-3SG-FUT DET Bill COMP help-TR-2SG.OBJ  
 'It will be Bill that helps you.'  
 (Galloway 1993: 173)

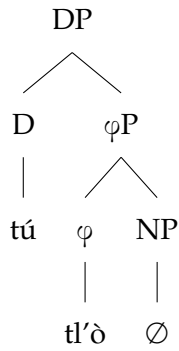
- (31) *Halkomelem pronouns are subject to Condition C*

*\*Súq'-t-es [te swíyeqe]<sub>i</sub> te kopú-s [thú-tl'ò]<sub>i</sub>.*  
 search-TR-3.SBJ DET.PL man DET coat-3.POSS DET-3SG  
 'The man<sub>i</sub> was looking for his<sub>i</sub> coat.'  
 (Wiltschko 1998: 444)

As can be seen in (29), the 3rd person singular feminine pronoun *thú-tl'ò* can take on the role of a determiner. Example (30) shows that the pronoun *tú-tl'ò*, which is grammatical in an argument position (30a), cannot appear in a predicate position (30b). And because these independent pronouns are furthermore subject to Condition C (31), Déchaine & Wiltschko (2002) conclude that independent pronouns in Halkomelem must be pro-DPs with the structure in (32), as a result of which they always contain a

pro- $\phi$ P and an NP. *Tútl'ò* is the 3rd person singular form (not specified for gender) and Déchaine & Wiltschko argue that it may be decomposed into different parts. Specifically, it consists of a determiner (*tú*) and of a pro- $\phi$ P (*tl'ò*), which provides information about the respective person and number features.

(32) *pro-DP*



(Déchaine & Wiltschko 2002: 412)

### 3.2.2 Pro- $\phi$ Ps

Shuswap, another Salish language, functions similarly to Halkomelem in that it also uses independent emphatic pronouns. However, these work differently in Shuswap than they do in Halkomelem. As for their syntactic properties, Déchaine & Wiltschko (2002) argue that Shuswap pronouns display neither D syntax (33) nor N syntax (34), that they can occur in either predicate or argument position (35)<sup>12</sup>, and that, with regard to binding, they are subject to Condition B, i.e., they can function as variables (36).

(33) *Shuswap independent pronoun and full NP preceded by the same determiner ("re")*

- (a) *[Wì.w.k-t-∅-en]<sub>PRED</sub>                      [re n-tséts-we7]<sub>ARG</sub>.*  
 see.(REDUP)-TR-3SG.OBJ-1SG.SBJ DET 1SG-EMPH-DEIC  
 'I saw him.'  
 (Lai 1998: 28)
- (b) *[Wík-t-∅-s]<sub>PRED</sub>                      [re John]<sub>ARG</sub>.*  
 see-TR-3SG.OBJ-3SG.SBJ DET John  
 'She/He saw John.'  
 (Lai 1998: 11)

<sup>12</sup> Following Longobardi (1994), Déchaine & Wiltschko (2002) argue that DPs are always arguments and that NPs are always predicates, but that  $\phi$ Ps may be either.

(34) *Shuswap independent pronouns cannot appear in N position*

- (a) Yirí7 te [sqélemcw]<sub>N</sub> l wí.w.k-t-sem-s.  
 DEIC OBL man COMP see(REDUP)-TR-1SG.OBJ-3SG.SBJ  
 ‘That’s the man that saw me.’
- (b) \*Yirí7 te [newí7-s] wí.w.k-t-sem-s.  
 DEIC OBL EMPH-3 see(REDUP)-TR-1SG.OBJ-3SG.SBJ  
 ‘That’s HIM that saw me.’  
 (Lai 1998: 41)

(35) *Shuswap independent pronouns may be predicates or arguments*

- (a) [Newí7-s]<sub>PRED</sub> [re wík-t-Ø-m-es]<sub>ARG</sub>.  
 EMPH-3 DET see-TR-3SG.OBJ-PST-3SG.CONJ  
 ‘It is HIM that saw her/him.’
- (b) [Newí7-s]<sub>ARG</sub> [wik-t-Ø-s]<sub>PRED</sub> [re Mary]<sub>ARG</sub>.  
 EMPH-3 see-TR-3SG.OBJ-3SG.SBJ DET Mary  
 ‘HE saw Mary.’  
 (Lai 1998: 28)

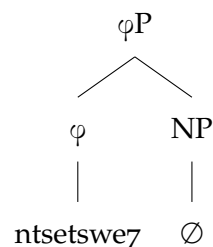
(36) *Shuswap independent pronouns can be bound outside of their local domain*

- (a) Tsut-Ø<sub>i</sub> m qwetséts-Ø<sub>i</sub> [newí7-s]<sub>i</sub>.  
 say-3SG.SBJ PST leave-3SG.SBJ EMPH-3  
 ‘He<sub>i</sub> said that HE<sub>i</sub> left.’  
 (Lai 1998: 31)

A determiner preceding a pronoun in (33a) would be unexpected if the pronoun were a determiner (and would thus have D syntax) itself. Also, Shuswap pronouns may appear in a predicate position (35a), which would not be possible if they were DPs. It is therefore clear that they cannot be DPs. If they were NPs, we would not expect to see that they cannot appear in the same position as a non-pronominal NP (34). This means they are not NPs either. As a result, Déchaine & Wiltschko (2002) argue that Shuswap independent pronouns must be  $\varphi$ Ps. This explains why they can appear both in a predicate and an argument position (35). Moreover, the fact that Shuswap pronouns can be bound outside of their local domain and function as bound variables (36), while Halkomelem pronouns cannot, is indicative of their different status. Déchaine & Wiltschko further argue that pro- $\varphi$ Ps are void of any inherent semantics. Their only job is to spell out the pronoun’s  $\varphi$ -features. The structure that the authors therefore assume for Shuswap pronouns is given in (37). Note that the pro- $\varphi$ P has less structure than the pro-DP in (32) above, but more structure than a pro-NP would have. This reflects the fact that the Shuswap pronoun in question does not fall in line with either D or N

syntax. Rather, we seem to be dealing with a sort of in-between case, represented by the  $\varphi$ P-level.

(37) *pro- $\varphi$ P*



(Déchaine & Wiltschko 2002: 415)

Looking at the behavior of English personal pronouns, Déchaine & Wiltschko take up an idea originally put forth by Postal (1969), whereby some pronouns can be used as determiners in Standard American English. Specifically, 1st and 2nd person plural pronouns can precede nouns, as shown in (38).

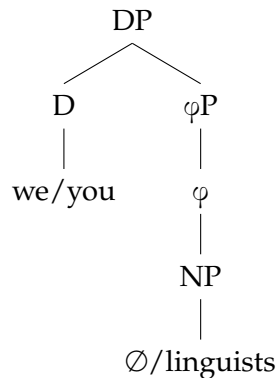
- (38) (a) **we** linguists – **us** linguists  
 (b) **you** linguists – **you** linguists  
 (c) \***they** linguists – \***them** linguists

(Déchaine & Wiltschko 2002: 421)

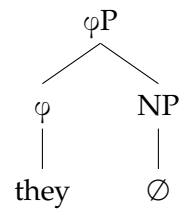
In order to account for this observation syntactically, Déchaine & Wiltschko (2002) suggest that English personal pronouns belong to different syntactic categories: while 1st and 2nd person (plural) pronouns are DPs, 3rd person (plural) pronouns are  $\varphi$ Ps. This means that they also have different structures attached to them (39), parallel to the ones introduced for *pro*-DPs in section 3.2.1 and for *pro- $\varphi$ P*s in the present section. Besides the fact that (39a) has a DP layer, while (39b) does not, they also differ insofar as (39a) allows for an overt NP, but (39b) does not.<sup>13</sup>

<sup>13</sup> Déchaine & Wiltschko (2002) note that some speakers of SAE also allow for *them* (but not *they*) to precede a noun (e.g., *them linguists*). To account for this pattern, Déchaine & Wiltschko argue that *them* can be decomposed into a [D- $\varphi$ ] structure. *Th-* is believed to be a bound D-morpheme, and *'em* is analyzed as a clitic  $\varphi$ -morpheme. Independent evidence for such an analysis comes from the fact that *them* has a reduced clitic form (e.g., *I know 'em*), which is analysed as a *pro- $\varphi$*  by Déchaine & Wiltschko (2002). Furthermore, *th-* appears in the demonstrative determiners *th-is*, *th-at*, *th-ese* and *th-ose*, all of which may be seen as an instantiation of [<sub>D</sub> *th-* [ <sub>$\varphi$</sub>  *is/at/ese/ose*]]. In the case of *they*, however, *'ey* is not a reduced form that is available in English and thus not available as a  $\varphi$ -constituent. Hence *they's* ungrammaticality as a determiner in both variants of SAE.

(39) (a) 1st/2nd person



(b) 3rd person

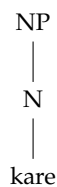


(Déchaine &amp; Wiltschko 2002: 521)

In sum, the inventory for English personal pronouns includes pro-DPs (1st and 2nd person pronouns) and pro-φPs (3rd person pronouns). The impersonal pronoun *one* can be argued to belong to the last of the three pronoun categories – pro-NP – which is discussed in the following section.

### 3.2.3 Pro-NPs

As a third and last category, Déchaine & Wiltschko (2002) propose an even more reduced structure than that of pro-φPs, as shown in (40). The pronoun in this example is the Japanese *kare*. Déchaine & Wiltschko argue that pronouns of this form have N syntax, occupying a predicate position. They believe that this is true in the case of *kare*, as it can follow an adjective (41a) as well as a possessive (41b) or a demonstrative pronoun (41c). Pro-NPs are not defined in regard to binding theory in the way that pro-DPs and pro-φPs are. Rather, their binding behavior is argued to be contingent on their inherent semantics (42). In the case of *kare*, Déchaine & Wiltschko (2002) argue that its ability for coreference in (42) stems from the fact that it carries with it the inherent properties [MALE] and [MARRIAGEABLE AGE] (Sugamoto 1989).

(40) *pro-NP*

(Déchaine &amp; Wiltschko 2002: 417)

(41) *Japanese*

- (a) *tiisai kare*  
small he  
'he who is small'
- (b) *watasi-no kare*  
I-GEN he  
'my boyfriend'
- (c) *kono kare*  
this he  
'this guy here'

(Kuroda 1965: 105) and (Noguchi 1997: 777)

(42) *Japanese "kare" cannot function as a bound variable, but supports coreference*

- (a) \**Daremo<sub>i</sub>-ga kare<sub>i</sub>-no hahaoya-o aisite-iru.*  
everyone-NOM he-GEN mother-ACC love-PRS  
'Everyone<sub>i</sub> loves his<sub>i</sub> mother.'
- (b) *John<sub>i</sub>-ga kare<sub>i</sub>-no hahaoya-o aisite-iru.*  
John-NOM he-GEN mother-ACC love-PRS  
'John<sub>i</sub> loves his<sub>i</sub> mother.'

(Noguchi 1997: 770)

Déchaine & Wiltschko (2002) suggest that another example for a pro-NP is English *one* when it is used anaphorically (as opposed to numerically). It behaves mostly like Japanese *kare*, the two differing only in their referential properties. Specifically, unlike *kare*, English *one* does not support coreference:

(43) \**Mary<sub>i</sub> loves one<sub>i</sub>'s mother.*

## 3.2.4 Additional evidence for the pronoun split: French proclitics

As has been established, Déchaine & Wiltschko (2002) argue that English personal pronouns are either pro-DPs or pro- $\phi$ Ps. They furthermore suggest that Romance clitic pronouns are also subject to such a split. This specific split, however, is located between pro- $\phi$ Ps and pro-NPs. Déchaine & Wiltschko use evidence from French to back up this claim. Specifically, the French clitic *en* is argued to have N syntax, as suggested by Kayne (1975), Pollock (1998), and Postal (1994).<sup>14</sup> It can take the place of a lexical noun

<sup>14</sup> Déchaine & Wiltschko (2002) note that this is not the case for all occurrences of *en*, but only for some. They only discuss the quantitative use of *en*, though it may also be used adverbially and nominally (Pollock 1998).

(44), and it is unable to function as a bound variable (45a) or support coreference (45b), just like the English pro-NP *one*.

(44) *French*

- (a) *J'ai vu trois livres.*  
1SG.PST saw three books  
'I have seen three books.'
  - (b) *J'en ai vu trois.*  
1SG.CL have seen three  
'I have seen three of them.'
- (Déchaine & Wiltschko 2002: 427)

(45) *French*

- (a) *\*[Chacun]<sub>i</sub> pense que Jean [en]<sub>i</sub> a vu.*  
each.one thinks that Jean CL has seen  
'Everyone thinks that Jean has seen them.'
  - (b) *\*[Marie]<sub>i</sub> pense que Jean [en]<sub>i</sub> a vu.*  
Marie thinks that Jean CL has seen  
'Marie thinks that Jean has seen her.'
- (Déchaine & Wiltschko 2002: 428)

French 1st, 2nd and 3rd person clitics are argued to be pro- $\phi$ Ps. 3rd person clitics can be either pro-arguments, which inflect for gender (46a), or pro-predicates, which do not inflect for gender (46b). This aligns with the claim that  $\phi$ Ps can be either predicates or arguments, as illustrated in section 3.2.2, example (35), above. Furthermore, French 3rd person clitics can function as bound variables (47), which is expected if they are  $\phi$ Ps.

(46) *French*

- (a) *Jeanne la/le voit.*  
Jeanne her/him sees  
'Jeanne sees her/him.'
  - (b) *Marie est une avocate, et Jeanne le/\*la sera aussi.*  
Marie is a lawyer.F and Jeanne it will.be too  
'Marie is a lawyer and Jeanne will be one too.'
- (Déchaine & Wiltschko 2002: 428)

(47) *French*

[*Chaque homme*]<sub>i</sub> *pense que Marie* [*Il*]<sub>i</sub> 'a vu.  
 each man thinks that Marie him has seen  
 'Each man<sub>i</sub> thinks that Marie has seen him<sub>i</sub>.'  
 (Déchaine & Wiltschko 2002: 429)

1st and 2nd person clitics can also function as bound variables (48), though Déchaine & Wiltschko note that such an interpretation is not accepted by all speakers of French. This stands in stark contrast to English, which does not allow for 1st or 2nd person clitics to be interpreted as a bound variable. This behavior is a result of English 1st and 2nd person pronouns being pro-DPs, as stated in section 3.2.2.

(48) *French*

<sup>&</sup>[*Je*]<sub>i</sub> *pense que la police* [*m*]<sub>i</sub> 'a vu, et Marie *le* *pense aussi*.  
 I think that the police me have seen and Marie it thinks also  
 'I think that the police saw me, and Marie thinks so too.'  
 ambiguous between 'that the police saw **me**' and 'that the police saw **her**'  
 (Déchaine & Wiltschko 2002: 431)

Finally, French 1st and 2nd person clitics can be a part of word formation (49), which English 1st and 2nd person clitics, once again, cannot. All of these behaviors point to the fact that French 1st and 2nd person clitics are indeed pro-φPs.

- (49) (a) *tutoy-er* ('you-ing', i.e., the act of addressing someone with informal pronouns)  
 (b) *tutoie-ment* ('you-ment')  
 (Déchaine & Wiltschko 2002: 431)

### 3.3 Interim summary

Both Cardinaletti & Starke (1999) and Déchaine & Wiltschko (2002) argue that pronouns do not constitute a singular, uniform class. Instead, both approaches suggest that the general notion of "pronoun" can be split up into three distinct classes. Cardinaletti & Starke (1999) argue that, broadly, pronouns are either strong or deficient. Within the class of deficient pronouns, there exist two more sub-types: weak pronouns and clitics. Evidence for the more general strong vs. deficient distinction comes, among other things, from the distribution of elements belonging to the two classes. Strong

pronouns behave like NPs in terms of distribution. Deficient pronouns, however, can only appear in a specific position. In terms of structure, Cardinaletti & Starke share the view of Déchaine & Wiltschko that clitics are less complex than other pronoun types and that there is a structural relation between strong, weak and clitic pronouns in that the structurally lighter elements are included in the structurally heavier ones.

Déchaine & Wiltschko (2002) propose a three-way split for pronouns into pro-DPs, pro- $\varphi$ Ps and pro-NPs. Pro-DPs are thought to have the same syntax as DPs, to be able to appear only in an argument position, and to be subject to Condition C. Pro- $\varphi$ Ps do not have a uniquely D or N syntax, they may occupy a predicate or an argument position, and they are subject to Condition B. Pro-NPs have N syntax and can only appear in a predicate position. Déchaine & Wiltschko suggest that English personal pronouns are either DPs (1st and 2nd person) or  $\varphi$ Ps (3rd person). French clitics, on the other hand, are either  $\varphi$ Ps (1st, 2nd and 3rd person) or NPs (clitic *en*). Structurally,  $\varphi$ Ps are included in pro-DPs, and pro-NPs are included in  $\varphi$ Ps. The authors believe that a parallel can be drawn to the way the verbal domain is organized. They argue that the fact that we presume a CP, TP and VP split yields an argument for assuming a similar split in the nominal domain.

## 4 Syntactic approaches to the PCC

Due to the large amount of attention the phenomenon has received over the decades, a wide variety of syntactic approaches to the PCC has emerged. Although they differ in their details, many of them are similar enough in their basic structure to be subsumed under the general term of "Failed Agree". That is to say, a vital Agree relation fails to be established. However, not all approaches can be grouped under this label. One recent account, for example, reverses this trend; it argues that the PCC is actually not the result of too little Agree, but that of too much Agree. The aim of this chapter is to introduce some of the most influential approaches to the PCC, to highlight their similarities as well as their differences, their strengths and their potential shortcomings. Section 4.1 provides a general overview of the concept of Failed Agree. Section 4.2 then goes on to present the approach of Béjar & Rezac (2003) which operates within this framework. Section 4.3 introduces another Failed Agree approach, developed by Anagnostopoulou (2003, 2005), which is an extension of Béjar & Rezac's account. The approach by Pancheva & Zubizarreta (2018), introduced in section 4.4, partially pivots away from the syntax-only Failed Agree towards an account that is rooted at the interface of syntax and semantics. Section 4.5 describes an account by Yokoyama (2019a) that, ultimately, turns its back on the notion of Failed Agree. However, it does not go as far yet as the approach put forth by Coon & Keine (2021), introduced in section 4.6, which is solely based on the idea of an overapplication of Agree. Some thoughts regarding Coon & Keine's approach as well as a tentative suggestion for reducing the PCC to only three varieties are supplied in section 4.7. Finally, section 4.8 summarizes the above.

### 4.1 The basics of Failed Agree

Before delving into the depths of any specific approach, some basic notions that are inherent to all Failed Agree accounts need to be established. The underlying idea of these kinds of accounts is that two accessible DPs share a domain with a single probe,

as outlined in (50).<sup>15</sup> In such a constellation, the higher DP<sub>1</sub> may intervene between the lower DP<sub>2</sub> and the probe P. The result is ungrammatical because DP<sub>2</sub> is left unlicensed.

(50) [P [... DP<sub>1</sub> ... [... DP<sub>2</sub> ... ]]]

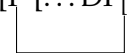
Importantly, Failed Agree accounts commonly support the idea that 1st and 2nd person DPs are somehow different from 3rd Person DPs when it comes to licensing through  $\varphi$ -Agree. Let us see how this notion materializes in the case of a \*<sub>3</sub>><sub>1</sub> configuration, as illustrated in (51). Because the higher DP in that configuration (which is 3rd person) intervenes between the lower DP (which is 1st person) and the probe, the probe cannot agree with the lower DP, resulting in an unlicensed DP and therefore ungrammaticality.

(51) [P [... DP<sub>[3SG]</sub> [... DP<sub>[1SG]</sub> ]]] ✗



In the reverse case, i.e., a <sub>1</sub>><sub>3</sub> configuration (52), the lower DP does not need to be licensed through  $\varphi$ -Agree because of the fact that it is 3rd person. As a result, once the probe agrees with the higher (1st person) DP, all Agree requirements are met and grammaticality ensues.

(52) [P [... DP<sub>[1SG]</sub> [... DP<sub>[3SG]</sub> ]]] ✓



## 4.2 Split $\varphi$ -feature checking via Cyclic Agreement (Béjar & Rezac 2003)

One influential Failed Agree account comes from Béjar & Rezac (2003). At its core, it orients itself by Chomsky (2000) and similar work. However, Béjar & Rezac diverges from previous approaches in that it argues that  $\varphi$ -features are organized in separate subparts, including [PERSON] ( $\pi$ ) and [NUMBER] (#).<sup>16</sup> As a result of this split, the different subparts are able to probe and agree independently of each other. The order of this probing is fixed, though, in that person always has to probe before number.

<sup>15</sup> The objective of the probe is to find the closest DP with matching (interpretable)  $\varphi$ -features. Subsequently, Agree may take place if the goal has not already been assigned case to license its interpretable  $\varphi$ -features (Béjar & Rezac 2003; Chomsky 2000; Rezac 2011).

<sup>16</sup> The evidence for this split is taken to come from work on eccentric agreement phenomena (Béjar 2000; Rezac 2003). Eccentric agreement refers to "verbal agreement with an argument that does not canonically control agreement" (Keine 2010: 69).

This means that the first DP a probe encounters will always agree with it for person, while the second DP that it encounters will agree with it for number. As stated above, 1st and 2nd person DPs are treated differently from 3rd person DPs. As advocates of this view, Béjar & Rezac (2003) argue that a 1st or 2nd person DP *needs* to be licensed in any case. This is dubbed the *Person Licensing Condition* (PLC). However, in certain configurations – namely, those where the structurally lower DP is 1st or 2nd person – satisfying the PLC will not be possible due to the intervention of the higher DP. It is in these configurations that PCC effects arise.

Let us have a look at this approach with the aid of the French example sentences in (53), showing a 3>3 and a \*3>2 configuration, respectively.

(53) *French*

- (a) *Je le leur ai présenté*  
 I 3SG.ACC 3PL.DAT have introduced  
 'I introduced him to them.' 3>3
- (b) \**Je te leur ai présenté*  
 I 2SG.ACC 3PL.DAT have introduced  
 'I introduced you to them.' \*3>2
- (Béjar & Rezac 2003: 53)

In either case, the *v* head first probes for  $\pi$  and matches the value of the IO, as that is the first DP that it encounters (54a). Agree does, however, not take place because the IO had previously been assigned inherent case (via a null preposition selected by the verb), which rendered it inactive.<sup>17</sup> According to Béjar & Rezac (2003), the dative then displaces to a position higher than  $v^0$  – i.e., it undergoes cliticization – and leaves behind an inactive trace (54b). As a next step, # probes and, because the IO has displaced and its trace is not visible for any further probing (Anagnostopoulou 2003; Bošković 2011; Chomsky 2000), it matches the DO (54c). Subsequently, *v*'s # subfeature agrees with the DO and assigns it accusative case, making it possible for the DP to cliticize. Because *v*'s  $\pi$  probe never agrees with the DO, it is left unvalued and receives default value. This process poses a problem if the DO is 1st or 2nd person, as this would require it to be licensed through  $\varphi$ -Agree, per the PLC. The result of these cases is the emergence of PCC effects.

<sup>17</sup> This is the result of the assumption that only goals that have not already been assigned case can enter into an Agree relation with the probe (Chomsky 2000).

- (54) (a)  $[v_{[\pi]} [\dots IO_{[3]} [\dots DO_{[3/2]}]]]$   
           └──────────┘  
       (b)  $[IO_{[3]} \dots v_{[\pi]} [\dots t_{IO} [\dots DO_{[3/2]}]]]$   
           └──────────┘  
       (c)  $[IO_{[SG]} \dots v_{[\#]} [\dots t_{IO} [\dots DO_{[PL]}]]]$   
                                   └──────────┘
- (Béjar & Rezac 2003; Coon & Keine 2021)

The grave caveat of Béjar & Rezac's approach is that it can only account for the strong PCC. The weak PCC, which allows for combinations of 1st and 2nd person DPs, cannot be explained via the assumptions made in this approach as the structurally higher IO always represents an intervener in combinations of 1st and 2nd person arguments, making it impossible for the DO to be licensed.

### 4.3 Multiple Agree (Anagnostopoulou 2003, 2005)

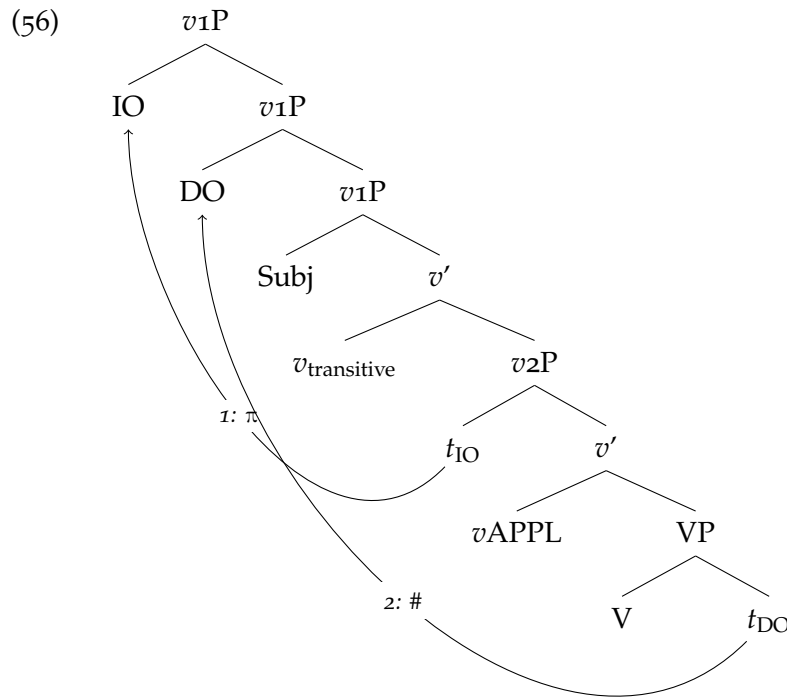
In order to deal with the fact that the approach by Béjar & Rezac (2003) outlined above is able to account only for the strong PCC, Anagnostopoulou (2003, 2005) proposes an extension to it. Specifically, Anagnostopoulou assumes the following person specifications:

- (55) (a) 1st person: [+PERSON]  
       (b) 2nd person: [+PERSON]  
       (c) 3rd person IO: [-PERSON]  
       (d) 3rd person DO:  $\emptyset$

In accordance with Béjar & Rezac (2003), Anagnostopoulou argues that the [+PERSON] feature of a pronoun always has to be checked against that of a functional head. However, this is taken to only apply to DPs with structural case (i.e., DOs). At its core, this approach strongly resembles that of Béjar & Rezac (2003): in a first step, the probe's person feature checks against that of the IO. The DO can then only check the probe's number feature. If the DO is [+PERSON] (i.e., 1st or 2nd person), the feature is left unchecked, which leads to a crash in the derivation. This is due to the assumption

that an unchecked feature prevents case checking for structural case, i.e. the case of the DO would remain unchecked.<sup>18</sup>

The structure that Anagnostopoulou envisions for her version of the PCC via split  $\varphi$ -feature checking is given in (56). The IO is introduced by an Appl head, the DO is introduced by  $v$ . Only  $v$  is able to probe for person and number, as Anagnostopoulou assumes that Appl does not contain any  $\varphi$ -features. In a first step, the IO checks  $v$ 's person feature and moves above it. Next, the DO checks  $v$ 's number feature and tucks in between the IO and the subject.



(Anagnostopoulou 2003: 289)

Up to this point, Anagnostopoulou's approach too is only able to explain the strong PCC. In order to account for the weak PCC variety, Anagnostopoulou adds Multiple Agree (MA) to the equation. MA makes it possible for  $\pi$  on the  $v$  head to enter into two separate Agree relations – one with the IO and one with the DO – at the same time.

<sup>18</sup> Cf. Chomsky (2000, 2001), who argues that DPs need to enter an Agree relation with a functional head that bears uninterpretable  $\varphi$ -features and value these features, as a result of which they can then check structural case.

However, Anagnostopoulou notes that this only applies if the two DPs in question do not have conflicting feature specifications. This means that combinations of a 1st and a 2nd person object are allowed because both are [+PERSON], but a combination of a 3rd person IO and a 1st/2nd person DO is not because [-PERSON] and [+PERSON] would lead to a clash. Combinations of a 1st/2nd/3rd person IO with a 3rd person DO are thought to work in the same way as described for the strong PCC. Because the 3rd person DO does not require to be checked against *v*, no conflict arises. The person feature of *v* is checked by the IO, and the DO checks *v*'s number feature. 1/2/3>3 configurations are thus licit as a result of standard split  $\varphi$ -feature checking rather than MA.

Anagnostopoulou (2003, 2005) further assumes that languages with a strong PCC grammar simply do not have the option for MA, i.e., MA is parametrized. Anagnostopoulou (2005) argues that Catalan, Italian, German and Samba, amongst others, have got a positive parameter for MA.

Another interesting aspect that MA may be able to explain is the fact that languages in which PCC effects arise via agreement markers always have the strong PCC, while PCC languages with clitics may have the strong PCC or the weak PCC (Bonet 1994). Anagnostopoulou (2017) argues that some clitic languages can be analyzed as having incomplete probes, meaning they are only specified for [+/-PARTICIPANT]. As a result, the probe cannot detect whether a [+PARTICIPANT] DP is 1st or 2nd person, just that it must be one of the two. If a language has such an "incomplete" probe, it can have MA. Anagnostopoulou suggests that PCC languages with object agreement, on the other hand, always have fully specified probes, i.e., they are also sensitive to [+/-SPEAKER], whereby the feature specifications for both [PARTICIPANT] and [SPEAKER] will be taken into account. In the case of 1st and 2nd person combinations, the [+/-SPEAKER] feature will always be conflicting, therefore not leaving the option for MA, and yielding strong PCC effects. To sum up: languages with clitics (or weak pronouns, as Anagnostopoulou believes) may have unspecified  $\varphi$ -probes (MA ✓) or fully specified  $\varphi$ -probes (MA ✗). Languages with object agreement affixes always have fully specified  $\varphi$ -probes (MA ✗).

#### 4.4 Pancheva & Zubizarreta (2018)

The two Failed Agree accounts mentioned so far are both based on the notion of an intervention effect. As such, they localize PCC effects to an uninterpretable person feature which triggers Agree. Under these accounts, the PCC is reduced to Agree and thus a phenomenon of narrow syntax. The approach put forth by Pancheva &

Zubizarreta (2018), however, locates the PCC at the syntax-semantics interface. It further diverges from previous accounts in that it suggests that PCC effects are triggered by an *interpretable*, rather than an *uninterpretable*, person feature on an Applicative head. This Appl head plays an important role as it is associated with the encoding of perspective and triggers a Person Constraint (P-Constraint).

These differences aside, Pancheva & Zubizarreta's account also shares some characteristics with earlier accounts. For one, they too assume that PCC effects are the result of  $\pi$ -agreement that happens when two pronouns are within the same domain as a single head (e.g., Anagnostopoulou 2005; Béjar & Rezac 2003, 2009; Nevins 2007, 2011). Furthermore, Pancheva & Zubizarreta also believe that PCC varieties are the result of parametric variation (Anagnostopoulou 2005; Nevins 2007) and that all varieties may be derived using the same mechanism (Nevins 2007). Lastly, Pancheva & Zubizarreta agree with the suggestion that PCC effects and direct/inverse alignment are essentially the same phenomenon (Anagnostopoulou 2005; Béjar & Rezac 2003, 2009; Nevins 2011).

In order to set up the system proposed by the authors, two stipulations are put into place: one regarding person feature values and one regarding a hierarchical relation. First, Pancheva & Zubizarreta (2018) adopt the person feature specifications proposed by Nevins (2007), with the addition of a [PROXIMATE] feature, as shown in (57). The type of proximity that Pancheva & Zubizarreta envision is, however, not understood in terms of spatial closeness. Rather, it should be thought of in terms of perspective. Specifically, proximate arguments are thought to be arguments that can constitute a perspectival center.

(57) *Person Feature Values*

- (a) 1st person: [+PROXIMATE], [+PARTICIPANT], [+AUTHOR]
- (b) 2nd person: [+PROXIMATE], [+PARTICIPANT], [−AUTHOR]
- (c) 3rd person PROXIMATE: [+PROXIMATE], [−PARTICIPANT], [−AUTHOR]
- (d) 3rd person OBVIATIVE: [−PROXIMATE], [−PARTICIPANT], [−AUTHOR]

Second, Pancheva & Zubizarreta (2018) argue that the PCC can be described in terms of a Person Hierarchy (P-Hierarchy), as shown in (58).

(58) *P-Hierarchy*

- (a) 1/2 > 3
- (b) 1 > 2
- (c) 3 PROXIMATE > 3 OBVIATIVE

That these hierarchical relations hold can be demonstrated for each of the three clauses. (59) shows strong PCC effects in French, which does not allow for configurations other than those described by (58a).

(59) *French*

- (a) *Elle te / me le présentera.*  
 she 2SG / 1SG 3SG.M.ACC will.introduce  
 'She will introduce him to you/me.'  
 $1>3 / 2>3$
- (b) *\*Elle te / me lui présentera.*  
 she 2SG / 1SG 3SG.DAT will.introduce  
 'She will introduce you/me to him.'  
 $*3>2 / *3>1$   
 (Pancheva & Zubizarreta 2018: 1294)

Some speakers of Spanish show the ultra-strong PCC, which allows for  $1>2$  and  $1/2/3>3$  combinations, meaning  $*2>1$  and  $*3>1/2$  combinations are illicit. This is covered by (58a) in combination with (58b). The relevance of the latter of these two clauses is demonstrated via the Spanish example in (60), where only a  $1>2$  reading is available, not a  $*2>1$  reading (even though the 1st and 2nd person pronouns *te* and *me* are syncretic for dative and accusative case in Spanish).

(60) *Spanish*

- El te me recomendó (a mí)*  
 he 2SG 1SG recommend (to me)  
 'He recommended you to me.'  
 not: 'He recommended me to you.'  
 (Pancheva & Zubizarreta 2018: 1295)  $1>2 / *2>1$

Lastly, the necessity for clause (58c) becomes obvious if we take a look at a Leísta dialect of Spanish (61). It is assumed that languages may equate animacy with proximate-marking and inanimacy with obviative-marking, which requires the distinction between 3rd person proximate and 3rd person obviative arguments as stated in (58c). The Leísta dialect in (61) shows that the same  $2>3$  combination may be licit in case of an inanimate (or obviative) 3rd person argument (61a), while being illicit if it involves an animate (or proximate) 3rd person argument (61b).

(61) *A Leísta Spanish dialect*

- (a) *Te lo di.*  
 2SG 3SG.INANIM.ACC gave  
 'I gave it/him to you.'  
 $2>3$ .INANIMATE

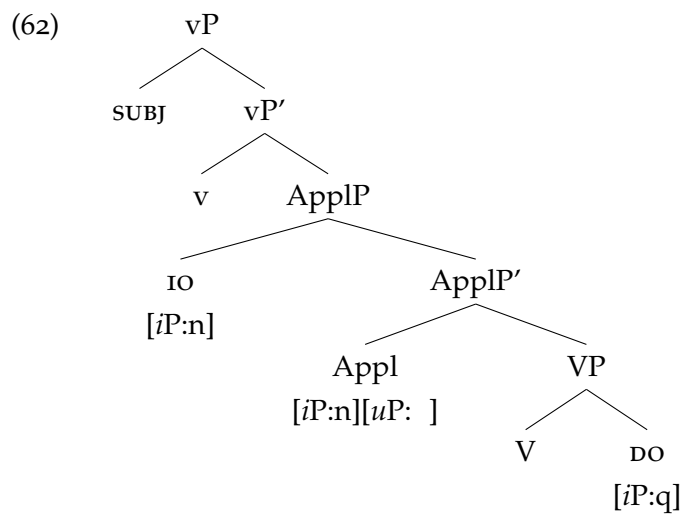
- (b) \**Te le di.*  
 2SG 3SG.ANIM.ACC gave  
 'I gave him to you.'

(Pancheva & Zubizarreta 2018: 1295f)

\*<sub>2>3</sub>.ANIMATE

#### 4.4.1 The Applicative domain and its person constraint

In contrast to many other approaches, for Pancheva & Zubizarreta (2018), the relevant head for PCC effects is Appl, not *v*.<sup>19</sup> Appl takes the VP as a complement and introduces the IO in its specifier. It is a complement to agentive *v*, which introduces the external argument, as illustrated in (62).



(Pancheva & Zubizarreta 2018: 1302)

In a PCC grammar, Appl carries an interpretable and valued person feature ([iP:n]), which has two roles. First, it defines ApplP as a phase. Second, it triggers the P-Constraint (Zubizarreta & Pancheva 2017), which is responsible for the alignment of arguments within that phase. Furthermore, in connection with the P-Constraint, it identifies a perspectival center, namely the DP that agrees with the interpretable person feature on Appl.

<sup>19</sup> Note that Anagnostopoulou (2003) suggests that the IO is introduced by an applicative *v* head and that the subject is introduced by a higher transitive *v*, as shown in section 4.3. However, under her account, both objects check their features against transitive *v*. Rezac (2011) argues that the applicative construction may not be vital for clitics and the PCC. He suggests that languages differ in how strongly cliticization is tied to applicativity. Dative clitics therefore *can* be introduced in the applicative domain, but they do not *have* to be. They may also originate in a PP below the accusative DP.

The P-Constraint is composed as shown in (63). Let us take a closer look at what the different clauses express. (63a) simply states that, within the default setting, all Appl heads bear an interpretable person feature in addition to an uninterpretable person feature (which shall receive its value from the DO). (63b) constrains the possible person values that the Appl head, and thus the IO, may take on. The clause is always active and its default value is [+PROXIMATE]. The two marked values that it can alternatively take on are [+PARTICIPANT] (in which case the IO would be 1st or 2nd person) or [+AUTHOR] (as a result of which the IO would be 1st person). Whether P-Prominence is set to one of these marked values depends on the kind of PCC variety that a language shows. When P-Uniqueness (63c) is active, it ensures that the IO is featurally distinct from the DO. This means that the two objects' person feature values on Appl cannot be identical. I.e., if one is [+PROXIMATE], the other has to be [−PROXIMATE]. The default setting is for P-Uniqueness to be active. P-Primacy (63d) is responsible for more fine-grained distinctions between participants in 1st/2nd person combinations. It derives that 1>2 (i.e., first person is valued "higher" than second person). P-Primacy is contingent on P-Uniqueness and as a default, it is not active.

(63) *The Person Constraint*

- (a) **Domain of application:** The interpretable person feature is present on all heads of a certain functional category (default), unless restricted.
- (b) **P-Prominence:** There must be an  $n$ -valued D located at the edge of  $\alpha$  that enters into an agreement relation with the  $n$ -valued interpretable person feature on the head of  $\alpha$ .  $n$  is [+PROXIMATE] (default) or restricted to [+PARTICIPANT] or [+AUTHOR].
- (c) **P-Uniqueness:** There can be at most one DP in  $\alpha$  eligible to agree with the interpretable p-feature on the head of  $\alpha$ .
- (d) **P-Primacy:** If there is more than one DP that can agree with the interpretable p-feature on the head of  $\alpha$ , the DP marked [+AUTHOR] is the one that agrees.

(Pancheva & Zubizarreta 2018: 1300)

Based on these four parameters, Pancheva & Zubizarreta (2018) argue that each PCC variety is a unique combination of different settings. They can be summarized as follows:

(64) *Parameter settings for the different PCC varieties*

|              | Domain of Application | P-Prominence   | P-Uniqueness | P-Primacy  |
|--------------|-----------------------|----------------|--------------|------------|
| Strong       | all ApplPs            | [+PROXIMATE]   | active       | not active |
| Weak         | all ApplPs            | [+PROXIMATE]   | N/A          | N/A        |
| Ultra-Strong | all ApplPs            | [+PROXIMATE]   | active       | active     |
| Super-Strong | all ApplPs            | [+PARTICIPANT] | active       | N/A        |
| Me-First     | restricted            | [+AUTHOR]      | active       | not active |

It is assumed that the settings for the strong PCC in (64) represent the default settings for all four parameters. Because P-Prominence is set to [+PROXIMATE] (65b), the IO may be 1st, 2nd or 3rd.PROX person, yielding 1/2/3.PROX>DO combinations.<sup>20</sup> Because P-Uniqueness is set to active (65c) and the IO is [+PROXIMATE], the DO cannot be [+PROXIMATE]. This rules out combinations of 1st and 2nd person. The result is the strong PCC pattern: 1/2/3.PROX>3. (65) shows a summary of the parameter settings for the strong PCC, while (66) shows which of the clauses of the P-Constraint in (63) is pivotal for a given combination being licit or illicit.<sup>21</sup>

(65) *Strong PCC parameter settings*

- (a) Domain of Application: all ApplPs
- (b) P-Prominence: [+PROXIMATE]
- (c) P-Uniqueness: active
- (d) P-Primacy: not active

|                      | 1>2      | 1>3    | 2>1      | 2>3    | 3>1    | 3>2    | 3>3    |
|----------------------|----------|--------|----------|--------|--------|--------|--------|
| (66) <i>Allowed</i>  | *        |        | *        |        | *      | *      |        |
| <i>Determined by</i> | P-Unique | P-Prom | P-Unique | P-Prom | fn. 20 | fn. 20 | P-Prom |

In order to derive the weak PCC, the parameter for P-Uniqueness (67b) needs to be changed. A [+PROXIMATE] P-Prominence setting, again, makes 1/2/3.PROX>DO combinations available. Because P-Uniqueness is absent (67c) (and P-Primacy too (67d), since it depends on P-Uniqueness), combinations of 1st and 2nd person arguments as well as the combination of two 3rd person arguments are allowed.<sup>22</sup> Interestingly,

<sup>20</sup> Importantly, according to Pancheva & Zubizarreta (2018), 3rd person arguments may be marked as proximate only in the presence of another 3rd person argument. This automatically rules out 3>1 and 3>2 combinations.

<sup>21</sup> For reasons of space, the clauses have been abbreviated to *P-Unique* for P-Uniqueness, *P-Prom* for P-Prominence and *fn. 20* for the explanation regarding 3>1 and 3>2 combinations supplied by that specific footnote.

<sup>22</sup> The reason for \*3>1 and \*3>2 configurations being disallowed is the same as for the strong PCC:

Pancheva & Zubizarreta (2018) argue that having a non-standard setting for the P-Uniqueness clause renders the weak PCC a highly marked variety. They even go so far as to suggest that the weak PCC might be an idiolect rather than a dialect as its markedness would make idiolectal variation more likely. (67) summarizes the parameter settings for the weak PCC variety and (68) shows which P-Constraint clause is primarily responsible for the (un)availability of a given combination.

(67) *Weak PCC parameter settings*

- (a) Domain of Application: all ApplPs
- (b) P-Prominence: [+PROXIMATE]
- (c) P-Uniqueness: N/A
- (d) P-Primacy: N/A

|                      | 1>2      | 1>3    | 2>1      | 2>3    | 3>1    | 3>2    | 3>3      |
|----------------------|----------|--------|----------|--------|--------|--------|----------|
| (68) <i>Allowed</i>  |          |        |          |        | *      | *      |          |
| <i>Determined by</i> | P-Unique | P-Prom | P-Unique | P-Prom | P-Prom | P-Prom | P-Unique |

All other PCC varieties and the combinations they allow and do not allow can be derived in the same fashion. For reasons of space, these are not described here. The interested reader is referred to Pancheva & Zubizarreta (2018: 1305ff) for a detailed discussion of the topic. What is noteworthy, though, is that Pancheva & Zubizarreta manage to introduce a single mechanism that is able to derive all observed PCC varieties. The fact that they propose to link the frequency of a given variety with how many of its P-Constraint clauses correspond to the default settings is a nice extra.

## 4.5 Incremental Valuation (Yokoyama 2019a)

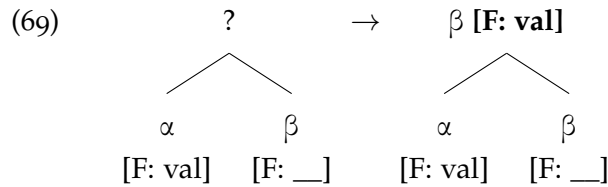
Another approach that functions gradually, but differs somewhat from those already laid out comes from Yokoyama (2019a) who has dubbed his mechanism "Incremental Valuation". Incremental Valuation does not truly fall under Failed Agree – as will become clear in the course of this section – and is made up of two parts: a constrained version of Merge and articulated person features.

Under this approach, Merge is not free in the sense of allowing for syntactic elements to undergo Merge in any order followed by a filtering operation at the interface (as

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3rd person DPs can only be marked [+PROXIMATE] in the presence of another 3rd person argument. Because that is not the case for these two combinations, a violation of P-Prominence arises.

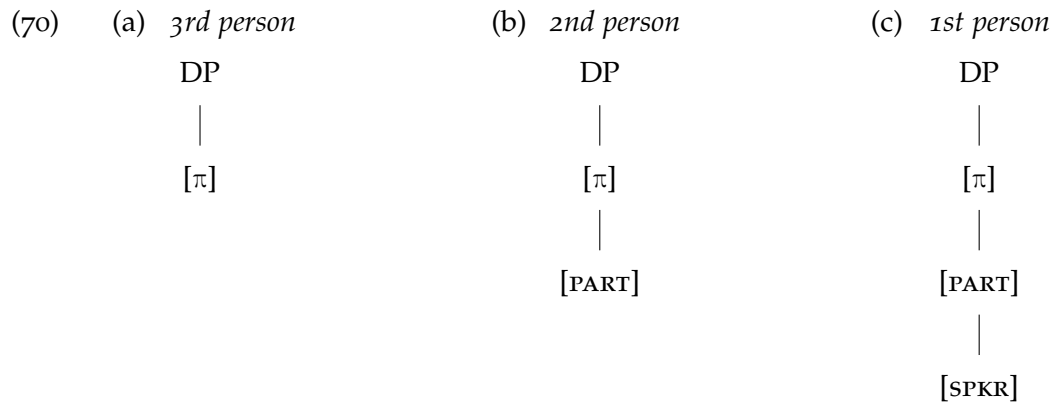
proposed by Chomsky 2000). Rather, it is featurally constrained (as proposed by Wurmbrand 2014). Specifically, the two elements of any Merge operation need to be featurally asymmetrical, in that they both bear the same feature, but one is valued ([F: val]) and one is unvalued ([F: \_\_\_\_]). The feature value from one syntactic object can then be transferred to the other (unvalued) one, which triggers Merge. After the valuation of the feature and, consequently, Merge, Yokoyama (2019b) follows Adger (2003) in the assumption that the valued syntactic object and all of its features project. The constrained version of Merge proposed thus looks like the one schematized in (69) below. In this structure,  $\alpha$  and  $\beta$  only undergo Merge because  $\alpha$  has a valued feature that can value the same feature on  $\beta$ . After valuation, the valued feature on  $\beta$  (and any other features it may possess) then projects.



(Yokoyama 2019b: 739)

As far as person features go, Yokoyama follows Béjar (2003), Béjar & Rezac (2009), and Harley & Ritter (2002) in assuming that these are articulated. This means that they are construed to consist of different subparts between which there is an entailment relation. That is, the person features of one person (e.g., 1st person) entail those of another (e.g., 2nd person). Thus, 3rd person may only include the feature  $[\pi]$  (70a), while 2nd person consists of  $[\pi]$  and  $[\text{PARTICIPANT}]$  (70b), and 1st person is the most highly articulated person, consisting of  $[\pi]$ ,  $[\text{PARTICIPANT}]$  and  $[\text{SPEAKER}]$  (70c).<sup>23</sup>

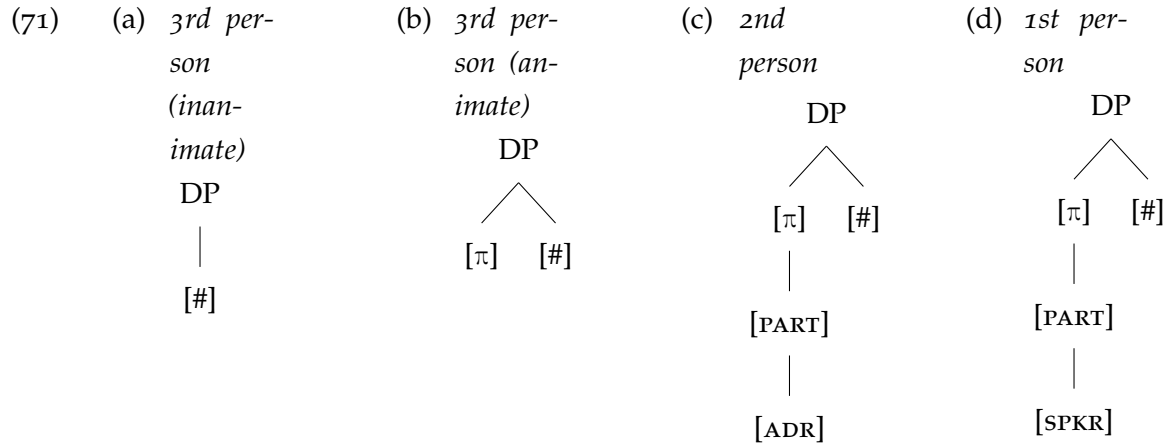
<sup>23</sup> Instead of 1st person, Harley & Ritter (2002) posit 2nd person as the most articulated person with the featural structure  $[\text{DP} - [\pi] - [\text{PART}] - \text{ADR}]$ . Arguments can be made for either approach. For the aim of the present thesis it is not necessary to go into the details of these two different approaches. See Yokoyama 2019a: 48 for some more information on the distinction, though.



(Béjar 2003; Harley & Ritter 2002; Yokoyama 2019a)

To this system, Yokoyama (2019b) adds a distinction between animate and inanimate for 3rd person (following Adger & Harbour 2007; Ormazabal & Romero 2007; Pancheva & Zubizarreta 2018; Richards 2008), whereby a  $\pi$ -feature is allotted only to an animate 3rd person argument. Inanimate 3rd person arguments are thought to consist only of a number feature. The basis for this distinction are languages such as English which display a morphological difference between animate (*he/she*) and inanimate (*it*) 3rd person arguments. Yokoyama (2019a) extends this morphological manifestation to languages in which there exists no morphological difference for the two. The resulting feature system is illustrated in (71) below. Ultimately, no matter what exact mark-up is used, the purpose of these articulated person features is to allow for one probe to enter into Agree with two distinct goals at once, as will become clear during the remainder of this section.<sup>24</sup>

<sup>24</sup> I was pondering the usage of the word "purpose" here, as it points towards arbitrary creation of syntactic machinery, and that is not what I want to express or put emphasis on. Of course, the question of how many mechanisms and stipulations one may want to allow keeps coming up when working with any topic. However, the discussion of this with regard to the PCC could probably fill a thesis of its own. For the sake of staying within the scope of this thesis' topic, please read "purpose" in the sense of "it is able to account for this particular thing nicely".

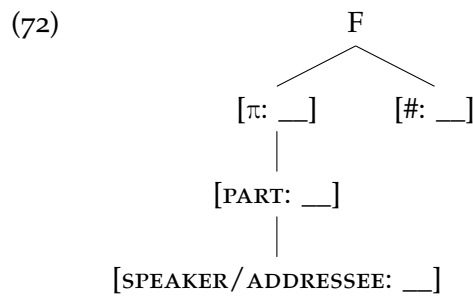


(Yokoyama 2019a: 51)

With these two parts in place, we can now move on to the mechanism of Incremental Valuation itself. Yokoyama (2019b) takes Cyclic Agree (Béjar & Rezac 2009) as his starting point, to which he adds valuation-based Merge, as sketched out above. He proposes an unvalued articulated  $\varphi$ -feature as in (72) below.<sup>25</sup> Due to Cyclic Agree, the different subparts of (72) may be valued by different arguments. This mechanism takes effect whenever the closest argument is featurally less specified than the probe, and thus cannot satisfy all of its composite parts. The general process of Incremental Valuation is much the same as the one described for Cyclic Agree in section 4.2 above. The fact that Yokoyama makes use of *unvalued* rather than *uninterpretable* features, however, distinguishes his approach from many others. Building on valuedness allows for features to pass the interfaces of the derivation without causing a crash (which is thought to happen due to an uninterpretable feature otherwise).<sup>26</sup>

<sup>25</sup> Yokoyama (2019b) differentiates between [SPEAKER] (for 1st person) and [ADDRESSEE] (for 2nd person), as opposed to Harley & Ritter (2002), for example, compare (70) above.

<sup>26</sup> The ideas of Yokoyama (2019a,b) are developed within the framework of "crash-proof" syntax. Crash-proof syntax assumes that *all* derivations are well-formed with filters (such as the case filter, for example) applying at the interfaces, rather than within the derivational system itself (Frampton & Gutmann 2002).



(Yokoyama 2019b: 740)

For clitic combinations that are licit in a strong PCC grammar, such as  $1>3$  (73), the relevant features are supposed to look as shown in (74) below. Yokoyama assumes that a 3rd person DO is interpreted as inanimate by default, as a result of which it only carries a number feature (cf. (71a)). It can thus only value the number feature of the structure in (74). The person features are valued by the 1st person IO, which is specified for  $[\pi]$ ,  $[PART]$  and  $[SPKR]$  (cf. (71d)). Yokoyama suggests that, for a derivation to be successful, both arguments of a given configuration need to take part in the valuation of the probe's features in some way. This is thought to happen in an incremental fashion, thus supplying the name for the mechanism. Since both arguments have contributed to the valuation of the features in (74), the derivation converges.<sup>27</sup>

(73) *French*

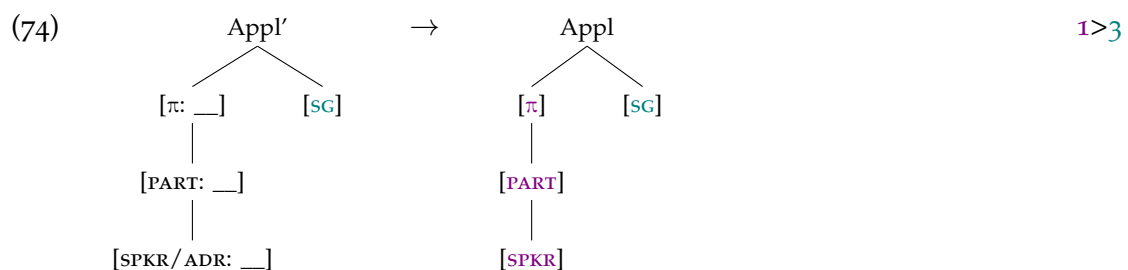
*Elle nous le présentera.*

she 1PL.DAT 3SG.ACC will.introduce

'She will introduce him to us.'

$1>3$

(Yokoyama 2019b: 732)



(Yokoyama 2019b: 745)

In the case of an illicit combination, such as  $*3>1$  (75), the fully specified DO (71d)

<sup>27</sup> Features that are valued by the DO are shown in teal, features that are valued by the IO are shown in violet.

saturates all parts of the  $\varphi$ -feature in (76). As a result, the IO cannot value any features and valuation-based Merge is not possible (i.e., the IO cannot be merged into the structure).

(75) *French*

\**Lucille nous leur présentera.*

Lucille 1PL.ACC 3PL.DAT will.introduce

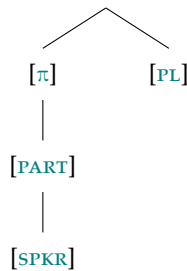
'Lucille will introduce us to them.'

\*<sub>3>1</sub>

(Rezac 2011: 93)

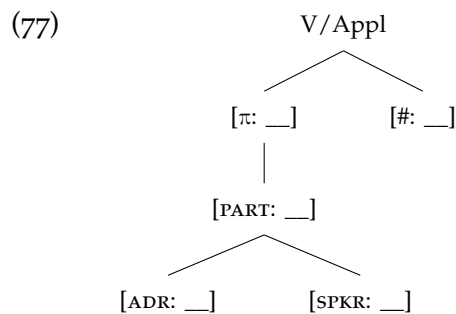
(76) Appl'  $\nrightarrow$

\*<sub>3>1</sub>



(Yokoyama 2019b: 746)

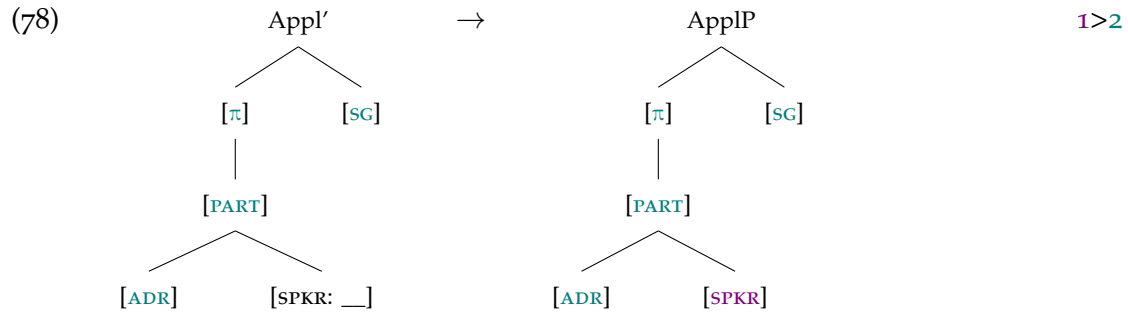
To account for the different PCC varieties, Yokoyama (2019a) assumes a slightly altered probe for each. In the case of the weak PCC, Yokoyama suggests a probe that has distinct features for [SPEAKER] and [ADDRESSEE], i.e. both need to be valued (not just one or the other, as is the case for the strong PCC, such as in (74) above). The probe structure for the weak PCC is illustrated in (77). As a result of this probe structure, 1>2 and 2>1 combinations become available.<sup>28</sup>



(Yokoyama 2019b: 749)

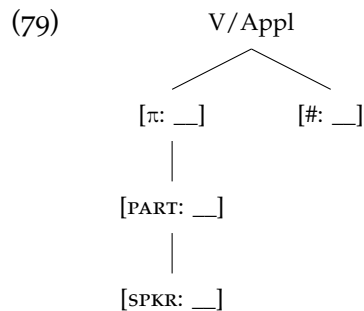
<sup>28</sup> Yokoyama points out that this feature structure is also applied by Harley & Ritter (2002) for first person inclusive in languages that show an inclusive/exclusive distinction.

(78) illustrates the valuation process for a  $1>2$  constellation in a weak PCC grammar. Here, the 2nd person DO values all features except [SPEAKER], which receives its value by the first person IO in a subsequent step. Once again, because both objects have contributed to the valuation, the derivation converges.



(Yokoyama 2019b: 750)

For the ultra-strong PCC, Yokoyama (2019a) assumes a probe that cannot be valued for [ADDRESSEE], as shown in (79). As a result of this structure,  $1>2$  is allowed, but  $*2>1$  is ruled out.



(Yokoyama 2019a: 140)

For the super-strong PCC, the probe is imagined to look the same as for the strong PCC (74). What distinguishes this variety from the strong PCC is that the super-strong PCC does not differentiate between animate and inanimate for third person.<sup>29</sup> The person specification for any third person DP is construed to look like the one for third person animate in the strong PCC, i.e, it carries features for both  $\pi$  and  $\#$ . This ensures

<sup>29</sup> Yokoyama (2019a) notes that such languages can nonetheless maintain this distinction in their syntax. Kambera, for example, does so via case.

that 3>3 combinations are not allowed within this variety, as the DO (the first 3rd person argument the probe encounters) will be able to value all subparts on the probe.

Yokoyama's approach runs into problems in the case of the *me*-first PCC. However, he argues that this specific variety constitutes something different than all the others. Specifically, it is thought to be a clitic ordering restriction in so far as the 1st person clitic cannot be the second clitic in a clitic cluster. Looking at Romanian and Bulgarian, which both exhibit a *me*-first PCC pattern, the surface order of clitics for these two languages is IO before DO. When these two restrictions – no IO>1 and only IO>DO – are combined<sup>30</sup>, the resulting structure is one where a first person DO will not be allowed.

#### 4.6 Too much Agree (Coon & Keine 2021)

An approach that developed out of, but diverges strongly from those that can be subsumed under Failed Agree is that of Coon & Keine (2021). One of the major differences between the Failed Agree accounts by Béjar & Rezac (2003) (4.2) or Anagnostopoulou (2003, 2005) (4.3) vs. that of Coon & Keine regards the PLC. While proponents of Failed Agree approaches argue that *all* 1st and 2nd person DPs have to be licensed through  $\varphi$ -Agree, Coon & Keine believe that this is not the case. Rather, whether a 1st/2nd person DP needs to be licensed is seen as dependant on the syntactic context that it appears in. The motivation for this assumption stems from an effect that can be observed in Basque, namely, PCC effects often disappear in Basque nonfinite (i.e., probeless) environments. That is, configurations which do not require agreement or cliticization seem to not trigger the PCC. This observation is illustrated in (80) below. While the classic \*3>1 combination in (80a) yields PCC effects and is thus ungrammatical, (80b) and (80c) paint a different picture. They too use a 3>1 combination. They differ from (80a), however, in that this specific configuration appears in a nonfinite clause rather than a finite clause. Specifically, we are seeing a case-marked infinitival clause (80b) and an adpositional clause (80c). For both of these, the IO and the DO are not clitic-doubled or agreed with as the nonfinite clauses do not contain  $\varphi$ -agreement.<sup>31</sup> Coon & Keine (2021) argue that *if* PCC effects were the result of Failed Agree, this pattern would not

<sup>30</sup> See Yokoyama 2019a: 141f for an explanation regarding the underlying syntactic conditions for both.

<sup>31</sup> Béjar & Rezac (2003) and Bonet (1991) describe such behavior, whereby hierarchy effects disappear in a syntactic context that lacks  $\varphi$ -agreement, also for Georgian nominalized clauses. Previous reports for Basque come from Laka (1993, 1996). There are also reports of the same phenomenon in Icelandic nonfinite clauses (Preminger 2011; Sigurðsson & Holmberg 2008) and in German (Keine et al. 2019).

be expected.<sup>32</sup> To salvage the situation, they propose a different reason underlying PCC effects – one that is based on the concept of too much Agree, rather than too little.

(80) *Basque*

- (a) \**Zu-k harakina-ri ni saldu n-(a)i-o-zu.*  
 you-ERG butcher-DAT me.ABS sold 1.ABS-AUX-3.DAT-2.ERG  
 ‘You have sold me to the butcher.’ \*3>1
- (b) *Gaizki iruditzen Ø-zai-t [zu-k harakina-ri ni*  
 wrong look.IPFV 3.ABS-AUX-1.DAT you-ERG butcher-DAT me.ABS  
*sal-tze-a.]*  
 sell-NMLZ-ART.ABS  
 ‘It seems wrong to me for you to sell me to the butcher.’ 3>1
- (c) *Zu-k [harakina-ri ni sal-tze-n] probatu d-u-zu.*  
 you-ERG butcher-DAT me.ABS sell-NMLZ-LOC attempted 3.ABS-AUX-2.ERG  
 ‘You have attempted to sell me to the butcher.’ 3>1
- (Coon & Keine 2021: 10f)

The basic notion that 1st and 2nd person DPs always have to be licensed through  $\varphi$ -Agree – which is what Failed Agree approaches assume – is able to explain the appearance of PCC effects for (80a) as the DO *ni* cannot be agreed with in that sentence. However, the DO is not agreed with in (80b) and (80c) either. Yet, no licensing failure arises. Coon & Keine (2021) therefore propose a revised hypothesis, first put forth by Preminger (2019): only those 1st and 2nd person DPs that are in the same clause as a person  $\varphi$ -probe need to be agreed with by that probe. This means that Preminger and Coon & Keine argue against a universal licensing requirement for 1st and 2nd person DPs. Instead, the syntactic context which they appear in determines whether they require to be licensed. Since the DOs in (80b) and (80c) do not have a clausemate  $\varphi$ -probe, the PCC is not triggered. Additional evidence for this assumption comes from the fact that there are no hierarchy effects in languages which do not have agreement or clitics (Preminger 2019).

The new analysis that Coon & Keine (2021) propose, based on this observation, is that PCC effects are the result of a problem created by the  $\varphi$ -probe because it enters into more than one valuation relation. This leads to an overapplication of Agree, or *Feature Gluttony*, as Coon & Keine call it. A natural outcome of this hypothesis is that we would not expect any hierarchy effects in configurations without agreement, as in (80b) and (80c).

<sup>32</sup> Note that the approach brought forth by Pancheva & Zubizarreta (2018) (4.4) does not run into this problem, as the P-Constraint is thought to only target agreeing DPs.

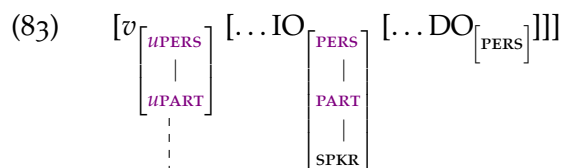
Like many others before it, this approach builds on the notion of feature geometries (Béjar 2003; Harley & Ritter 2002). Specifically, Coon & Keine (2021) assume the person specifications in (81). Furthermore, they argue that probes consist of hierarchically organized segments, as a result of which they differ in which features can fully satisfy them. The underlying idea is that Agree can be triggered by only a segment of the probe and that different segments agree with a goal independently of each other. This means that the probe shown in (82a) will be satisfied by any DP bearing a person feature (i.e., any of the options in (81)). By contrast, the probe in (82b) is more restricted and can only be satisfied by a DP that carries both a person and a participant feature (i.e., 2nd person (81b) or 1st person (81c)). Lastly, the probe in (82c) is the most highly restricted one and will only be fully satisfied by a DP that bears a person feature, a participant feature and a speaker feature (i.e., 1st person (81c)).

- (81) (a) 3rd person: [PERS]  
 (b) 2nd person: [PERS[PART]]  
 (c) 1st person: [PERS[PART[SPKR]]]

- (82) (a)  $\left[ \begin{array}{c} uPERS \end{array} \right]$                       (b)  $\left[ \begin{array}{c} uPERS \\ | \\ uPART \end{array} \right]$                       (c)  $\left[ \begin{array}{c} uPERS \\ | \\ uPART \\ | \\ uSPKR \end{array} \right]$

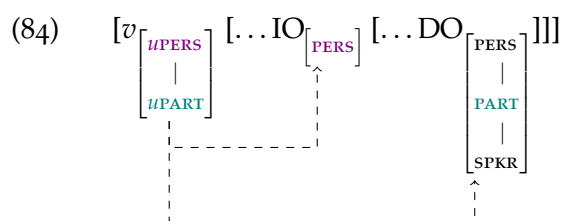
(Coon & Keine 2021: 665)

Now, let us see how this system works in a configuration such as  $1>3$ , i.e., one where the structurally higher DP has more person-feature segments than the structurally lower DP. As (83) shows, both the probe's  $[uPERS]$  and its  $[uPART]$  segment can agree with the corresponding segments of the higher DP, which for the purposes of this thesis, is the IO. They are thus fully satisfied and the derivation converges. Importantly, the probe has only agreed with one of the two DPs in this case.



(Coon & Keine 2021: 666)

The structure in (84) shows the reverse scenario, i.e.,  $3 > 1$ , where the structurally higher DP is featurally less specified than the structurally lower DP.<sup>33</sup> The probe agrees with the IO for [ $\mu$ PERS] since it is the closest matching DP for that segment. Because the IO does not carry a [PART] feature, the probe continues searching and agrees with the next DP it finds that does have this feature, which is the DO.<sup>34</sup> The resulting scenario is a probe that has agreed with both DPs, albeit for different person-feature segments. This is what Coon & Keine (2021) call *gluttonous* and perceive to be responsible for PCC effects by causing conflicting requirements for later operations.<sup>35</sup>



(Coon & Keine 2021: 666)

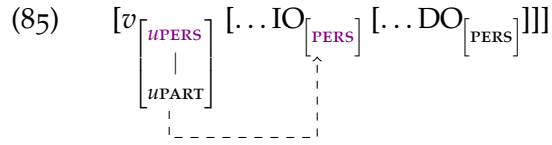
A third case is that of a constellation of two DPs that are equally specified, such as  $3 > 3$ . Here, the probe agrees with the IO for [ $\mu$ PERS] and with neither DP for [ $\mu$ PART]. Since the probe has only agreed with one goal, no issue arises.<sup>36</sup>

33 Segments that have agreed with the IO are shown in **violet**. Segments that have agreed with the DO are shown in **teal**.

34 It must be noted at this point that Coon & Keine (2021) conceptualize this to happen in a simultaneous fashion, and not in the way that Multiple Agree, as mentioned in section 4.3, is set up, i.e., not in a literal step-by-step way.

35 Specifically, it is the cliticization of the affected DPs that Coon & Keine (2021) consider problematic. They assume that each segment of a probe that has agreed with a DP requires that that DP be clitic-doubled. In the case of a gluttonous probe, i.e., one that has agreed with multiple DPs, this causes a conflict. Coon & Keine propose four options and state why none of them work. First, clitic-doubling neither of the agreed-with DPs clearly violates the requirement of cliticization after agreement. Second, clitic-doubling only one of them still poses a violation of that requirement. Third, clitic-doubling one after the other would present at least a temporal violation of the cliticization requirement. Fourth, simultaneous clitic-doubling is the only option that would not violate the requirement for cliticization. However, it would make it necessary for both D-heads to move to *v* (under the assumption that this is what happens during cliticization) at the same time. This is not compatible with the standard theory of Merge as a binary operation.

36 Following Preminger (2014), Coon & Keine (2021) assume that an unsatisfied probe segment due to a lack of a matching segment on a goal does not pose a problem.



(Coon & Keine 2021: 667)

Circling back to the Basque examples in (80) above, Coon & Keine (2021) argue that the lack of PCC effects in non-finite environments is to be expected under a feature gluttony account. This is due to the fact that it is the probe that causes an issue for the derivation because it is gluttonous. If there is no agreeing probe (as in a Basque non-finite clause), then it is not possible for gluttony to arise and cause problems for subsequent operations. This obviates the need to rework the PLC in a way such that it disregards DPs without a clausemate  $\varphi$ -probe.

Importantly, the probe in examples (83) through (85) is equal to the one shown in (82b) and is argued to be active both in the case of a weak and a strong PCC grammar. To derive the strong PCC, Coon & Keine (2021) stipulate that, in terms of syntax, 1st or 2nd person IOs behave as 3rd person in a strong PCC grammar. I.e. only their [PART] feature is visible to the probe, irrespective of their actual feature geometry.<sup>37</sup> Because of this, any combination of clitics will look like a 3>1/2/3 configuration to the syntax. The probe can then only agree for [uPERS] with the IO and must satisfy its [uPART]

<sup>37</sup> Coon & Keine (2021) point to dative-absolutive constructions in Basque to underpin this claim. In (ia), the dative DP c-commands the absolutive DP and we can observe hierarchy effects that are reminiscent of classic PCC effects in a Basque double object construction, such as the ungrammatical sentence in (ii). In (ib), though, the reverse is the case: the absolutive DP c-commands the dative DP, but no hierarchy effects arise. This behavior is accounted for under the assumption that all dative DPs behave as 3rd person DPs in Basque. This would mean that the configuration in (ib) looks like a (non-violating) 3>3 configuration to the syntax. The pattern in (i) can thus be explained if we assume that 3rd person dative DPs behave as 3rd person DPs in a strong PCC grammar.

(i) *Basque*

- (a) \**Ni Itxaso-ri gustatzen n-atzai-o.*

me.ABS Itxaso-DAT like.IPFV 1.ABS-AUX-3.DAT  
'Itxaso likes me.'

\*3.DAT>1.ABS

- (b) *Itxaso ni-ri etortzen Ø-zai-t.*

Itxaso.ABS me-DAT come.IPFV 3.ABS-AUX-1.DAT  
'Itxaso comes to me.'

3.ABS>1.DAT

(Coon & Keine 2021: 675)

(ii) *Basque*

- \**Zu-k harakina-ri ni saldu n-(a)i-o-zu.*

you-ERG butcher-DAT me.ABS sold 1.ABS-AUX-3.DAT-2.ERG  
'You have sold me to the butcher.'

\*3.DAT>1.ABS

(Coon & Keine 2021: 656)

feature with the matching feature on the DO (if the DO is 1st or 2nd person), leading to gluttony for  $1/2 > 1/2$  combinations. For speakers with a weak PCC grammar, on the other hand, the [PART] features of 1st and 2nd person IOs are visible to the syntax, making  $1/2$  combinations possible.

While the strong and the weak PCC are thought to use the same probe, Coon & Keine (2021) assume a slightly altered probe in order to derive other PCC variants, much like Yokoyama (2019a) does. The probe for deriving the ultra-strong PCC is more articulated (86a), while the probe for the *me*-first PCC is missing the [*u*PART] segment (86b). Coon & Keine do note that the latter circumstance could potentially be problematic under an entailment approach to feature geometry, but argue that omitting [*u*PART] might be tolerable as the segments are not interpreted semantically on the probe itself. However, they also point to Yokoyama (2018) and his idea that the *me*-first PCC is not on a par with the other variants in terms of its underlying mechanism, but rather the result of a clitic ordering restriction, as pointed out in section 4.5. As for the super-strong PCC, Coon & Keine argue that this variety may be accounted for morphophonologically or prosodically rather than syntactically, and they therefore do not discuss it.<sup>38</sup>

- (86) (a) *Ultra-strong probe* (b) *Me-first probe*
- |                                                                  |                                                    |
|------------------------------------------------------------------|----------------------------------------------------|
| $\begin{array}{c} uPERS \\   \\ uPART \\   \\ uSPKR \end{array}$ | $\begin{array}{c} uPERS \\   \\ uSPKR \end{array}$ |
|------------------------------------------------------------------|----------------------------------------------------|

(Coon & Keine 2021: 677)

## 4.7 Some thoughts

Overall, the approach put forth by Coon & Keine (2021) is able to capture PCC effects in a very elegant way. However, two aspects of it need to be discussed further.

<sup>38</sup> Coon & Keine point to Kambara, a language that shows the super-strong PCC pattern. In Kambara, the IO and DO clitics appear directly next to each other and have the same case. That a  $*_3 >_3$  combination is not allowed in this language may thus be the result of a constraint on object clitics with the same case *and* person that is detached from the PCC.

First, the stipulation that, in a strong PCC grammar, 1st and 2nd person IOs are read as 3rd person is a grave one. While the data from Basque dative-absolutive constructions do support this claim, it seems unexpected that the variety which is by far the most common one cross-linguistically would be ‘marked’ in such a way. Leaning on Pancheva & Zubizarreta’s approach, which ties a variety’s frequency to the amount of default parameter settings it exhibits, we certainly would not want to assume that invisible [PART] features represent the default.

Second, the missing [PART] probe segment for the *me*-first variety poses a problem. Coon & Keine admit this themselves, but give a very weak explanation for why it may still be okay to have this very unusual probe structure. I believe that Yokoyama (2018, 2019a) is right in assuming that the *me*-first PCC is actually an ordering constraint, not its own PCC variety. As a result of this, I would like to make a case for excluding the *me*-first and its – arguably – unviable probe structure from the Feature Gluttony account. This is mentioned by the authors as a possible option, but it is not implemented. The problem that arises with this stipulation is the question of why it would only be the *me*-first PCC which may have a missing probe segment. It is unclear what would prevent the ultra-strong PCC from losing its [uPART] segment (leading to a *me*-first PCC pattern).

Moreover, and more generally, *if* the super-strong PCC (which has only been documented for Kambara up to this point, as far as I am aware<sup>39</sup>) is indeed an ordering constraint, as Coon & Keine (2021) suggest, and the *me*-first PCC is so too, this leaves us with only the strong, the weak and the ultra-strong PCC, as shown in (87). Through this reduced table it becomes obvious that the ultra-strong PCC lies between the strong and the weak PCC in terms of strength. An argument could thus be made for renaming this variety to the *intermediate* PCC. However, for the sake of consistency, the term ultra-strong will be used for the remainder of this thesis.

(87) *Reduced PCC varieties*

|              | 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
|--------------|-----|-----|-----|-----|-----|-----|-----|
| Strong       | *   |     | *   |     | *   | *   |     |
| Ultra-strong |     |     | *   |     | *   | *   |     |
| Weak         |     |     |     |     | *   | *   |     |

Though it is to be determined whether the ultra-strong PCC warrants its own variety

<sup>39</sup> Pancheva & Zubizarreta (2018) mention that the restrictions that hold in the super-strong PCC have also been described by O’Hagan (2018) for Matsigenka, an Arawak language, though without ascribing to it the label of a super-strong grammar.

or whether it might actually be the weak PCC with an additional constraint on  $*2>1$  combinations that is not rooted in the PCC, we shall treat the PCC as splitting up into these three varieties for now. Returning to the different approaches to the PCC discussed in this section, we can observe the following. Béjar & Rezac's approach (4.2) is still only able to account for the strong PCC and is thus not relevant for this tripartite PCC system. The account by Anagnostopoulou (2003, 2005) (4.3) can explain the strong PCC (via split  $\varphi$ -feature checking) and the weak PCC (via MA). In order to account for the super-strong PCC, however, an additional caveat would need to be made. Since MA always allows combinations of DPs with non-conflicting person features (i.e., [+PERSON] in the case of 1st/2nd person), it is not able to allow  $1>2$ , while disallowing  $*2>1$  in the current set-up. As far as the mechanism proposed by Pancheva & Zubizarreta (2018) goes, certain changes might be implemented. First, the parameter for the domain of application could be removed from the system, positing that the constraint applies to all ApplPs, which would eliminate the *me*-first PCC from it.<sup>40</sup> Second, the active/not active parameter for P-Primacy could be dropped. If P-Primacy was either not active or not applicable, the ultra-strong PCC would disappear.<sup>41</sup> We would be left with the following varieties and settings:

(88) *Parameter settings for the different PCC varieties*

|              | P-Prominence   | P-Uniqueness | P-Primacy  |
|--------------|----------------|--------------|------------|
| Strong       | [+PROXIMATE]   | active       | not active |
| Super-Strong | [+PARTICIPANT] | active       | N/A        |
| Weak         | [+PROXIMATE]   | N/A          | N/A        |

The major differences between the varieties would thus be a [+PARTICIPANT] setting for the super-strong PCC and non-applicability in terms of P-Uniqueness for the weak PCC. However, Pancheva & Zubizarreta (2018) argue that the setting for the P-Uniqueness clause weighs heavier than that for P-Prominence, rendering the weak PCC more marked than the super-strong PCC. They argue that this ought to explain why we see substantial variation among speakers of a weak PCC language. It may be argued, though, that there is more variation in terms of the weak PCC than in terms of the super-strong PCC because the former is still significantly more common than the latter. Under a reduced tripartite system for PCC varieties it would also need to be reevaluated

<sup>40</sup> Pancheva & Zubizarreta (2018) argue that, in the case of the *me*-first PCC, the domain of application is restricted to ApplPs with at least one [+AUTHOR] argument. This immediately allows  $2>3$ ,  $3>2$  and  $3>3$  combinations. Because P-Prominence is set to [+AUTHOR] (i.e., the IO has to be 1st person),  $*2/3>1$  is ruled out.

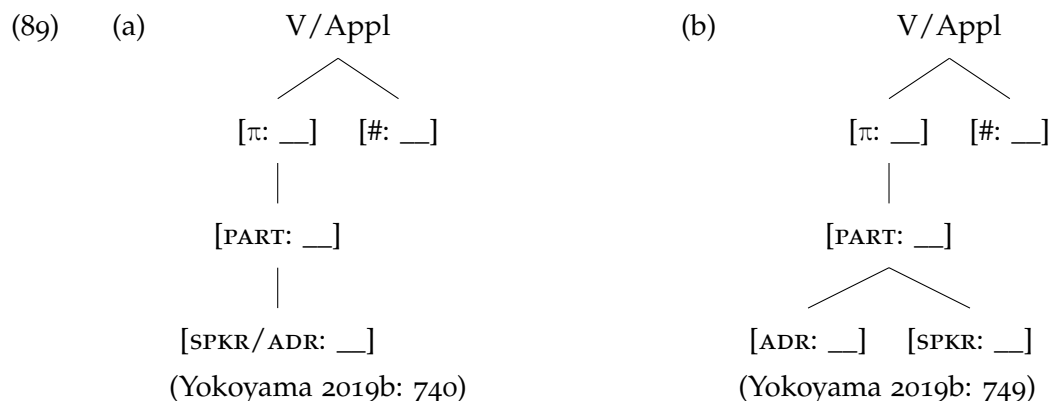
<sup>41</sup> Recall that P-Primacy derives that  $1>2$ , whereby it makes the ultra-strong pattern of  $1>2$ ,  $*2>1$  possible.

whether P-Prominence is truly the more central clause. If it were not, this could explain why the weak PCC is encountered more frequently than the super-strong variety.

Yokoyama (2019a: 124) argues that Pancheva & Zubizarreta's account for the ultra-strong PCC is faulty in certain respects. The following should be noted in response:

1. "P-Uniqueness is required for ruling out 3.PROX>2": Pancheva & Zubizarreta (2018) mention that a 3rd person argument can only be marked as proximate if it appears together with another 3rd person argument, which automatically rules out 3.PROX>2 combinations.
2. "P-Uniqueness would wrongly rule out 1>2 in the ultra-strong PCC": Remember that the ultra-strong PCC allows 1>2 combinations, but not \*2>1 combinations. From what I understand, P-Uniqueness does rule out these combinations, but P-Primacy is responsible for allowing 1>2 (but not \*2>1) per the second clause of the P-Hierarchy (58), which states that 1>2. Pancheva & Zubizarreta (2018) argue that P-Primacy weakens P-Uniqueness in that two [+PARTICIPANT] DPs will be allowed, being marked as distinct via P-Primacy, rather than P-Uniqueness.
3. "The premise of P-Primacy contradicts P-Uniqueness": Yokoyama argues that it is nonsensical to have a clause that only concerns [+PARTICIPANT] DPs (P-Primacy), but which is dependent on a clause that prevents DPs that are both [+PARTICIPANT] from appearing together. To that, I give the same answer as in 2. above.
4. "If only P-Primacy, not P-Uniqueness, was active for the ultra-strong PCC, 3.PROX>2 would be possible": Because P-Primacy and P-Uniqueness allegedly contradict each other, Yokoyama suggests that P-Primacy is N/A if P-Uniqueness is active and vice versa. That an active P-Primacy clause does not lead to the inclusion of 3.PROX>2 combinations is, again, covered by the stipulation about proximate-marking, as noted in 1. above.

Lastly, looking at Incremental Valuation, the probe structure in (79), which can only be valued for [SPEAKER], not for [ADDRESSEE] would need to be dropped. Since Yokoyama (2019a) already assumes that the *me*-first PCC does not actually constitute its own variety, we are left with the probe for the strong PCC (89a), repeated from (72), which also covers the super-strong PCC (with the difference between the two being the distinction in animacy) and the probe for the weak PCC, as shown in (89b), repeated from (77). With this set-up it may seem more natural to argue for only a strong vs. weak split – characterized by the two different probes – with the \*2>1 constraint for the super-strong PCC possibly laying outside the domain of syntax.



At this point, these musings are merely vague outlines of a more reduced system of PCC varieties than has often been argued for in the literature of the last (roughly) 20 years. There is most definitely more to be said about all of this, but it is not my objective to do that. For now, my aim is only to point out the possibility of rethinking those – in my opinion – strong approaches to the PCC in order to reduce the amount of machinery and stipulations needed for accounting for the different varieties.

## 4.8 Interim summary

This chapter has provided a glimpse into the manifold syntactic approaches to the PCC. We have seen the basic idea behind Failed Agree accounts of an intervention effect from a higher DP between a lower DP and a probe. This intervention leads to a problem if the lower DP is 1st or 2nd person as such a DP requires licensing (per the PLC), which is blocked if a higher DP intervenes.

Béjar & Rezac (2003) assume that Agree happens in a cyclical and split fashion.  $\pi$  always probes first, followed by  $\#$ . As a result of this split, the two are able to agree with different DPs. When  $v$  probes for  $\pi$ , it will thus always match the structurally higher IO.  $\#$  then matches the DO and agrees with it. In this system, the  $\pi$  probe does not agree with the DO, whereby it can only receive default value (i.e., 3rd person). If the DO, which is left unvalued, is 1st or 2nd person, PCC effects are the result. This approach can, however, only account for the strong PCC. The fact that the weak PCC allows 1/2 combinations cannot be explained, as we would still expect the 1st/2nd person IO to intervene between the probe and the DO.

Anagnostopoulou (2003, 2005) proposes the mechanism of Multiple Agree as an add-on to the proposal put forth by Béjar & Rezac (2003). MA allows for a probe to enter into two Agree relations for its  $\pi$  feature: one with the IO, one with the DO. The

caveat for this assumption is that MA can only take place if the two DPs that are agreed with do not have conflicting person features (within the system of [+/-PERSON] or no person feature). The weak PCC is thus made possible through MA as 1st and 2nd person DPs are both [+PERSON]. Anagnostopoulou argues that MA is parametrized. Languages (or speakers) with a strong PCC grammar have a negative setting for MA, while those with a weak PCC grammar have it set to positive.

Pancheva & Zubizarreta (2018) locate the relevant probe for the PCC on Appl rather than *v* and introduce the P-Constraint, which is able to account for all five PCC patterns via four simple clauses. The domain of application states whether all Appl heads have both an interpretable person feature and an uninterpretable person feature or not. P-Prominence restricts the person value of the IO. P-Uniqueness restricts the person value of the DO based on that of the IO. P-Primacy is responsible for distinctions in combinations of 1st and 2nd person DPs. In section 4.7 I argued that these clauses could potentially be reduced if we only assume three PCC varieties.

Yokoyama (2019a) suggests that Merge is featurally constrained and, together with the notion of Cyclic Agree, works to give us the mechanism of Incremental Valuation. The valuation of probe-subparts works much the same as in other approaches. The major difference is that a derivation can only be successful if both object DPs have taken part in the valuation of the probe's features. This valuation happens incrementally – hence the mechanism's name. Different PCC varieties are accounted for by Yokoyama (2019a) by postulating different probes. When it comes to the *me*-first PCC, though, he argues that the pattern it shows is merely the result of a clitic ordering restriction, and that the *me*-first PCC actually does not deserve a spot within the list of PCC varieties.

Coon & Keine (2021) take a completely different road. Their approach, Feature Gluttony, builds on the notion of an overapplication of Agree. This means that anytime a probe enters into more than one valuation relation, it creates problems for subsequent operations, yielding an illicit syntactic structure. Like Yokoyama (2019a), Coon & Keine (2021) assume differently structured probes for different PCC varieties.

## 5 Repair mechanisms for illicit PCC combinations

The skilled reader might pose the question of whether languages in which the PCC blocks certain constructions are simply unable to express, for example, a 3>1 combination, but they can rest assured that these languages have found a way to circumvent this issue. There are various strategies that languages may use to obviate PCC effects. All of these can be subsumed under the term "repairs" or "rescue mechanisms". That these repairs exist poses an interesting fact for the syntax of the PCC. Rezac (2011) points out that it is not common for illicit syntactic structures to have their very own repair mechanisms. In the case of *wh*-islands, for example, there is no otherwise available rescue strategy that one could employ. The only solution is to apply some sort of (non-regulated, so to speak) paraphrase. The PCC repairs thus posit a remarkable phenomenon that is worth investigating. In what follows, different mechanisms for circumventing PCC effects are introduced. Section 5.1 shows the possibility of one argument not agreeing with the verb, i.e., there is no agreement affix. Section 5.2 discusses the repair mechanism of switching out one argument for its strong pronoun counterpart and encasing it in a PP. Section 5.3 shows two strategies that are both a camouflage of an offending clitic. Section 5.4 introduces Stegovéc (2020), who argues that there is a so-called "reverse" PCC. Lastly, section 5.5 summarizes the discussion.

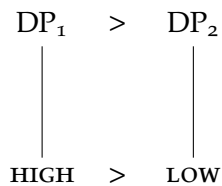
### 5.1 Lack of agreement with the verb

#### 5.1.1 "Direct" orders

Generally speaking, direct/inverse systems are based on a relative ranking for features and a rule against structurally lower arguments outranking structurally higher arguments with regard to that feature in a transitive construction (i.e., an object cannot have a higher-ranked person feature than a subject). The topic of direct vs. inverse alignment thus has one crucial characteristic that ties it to the PCC: it too is a hierarchy effect. Pancheva & Zubizarreta (2018) make use of this circumstance and argue that

grammatical examples from PCC grammars are the counterpart of direct orders in languages that have direct/inverse alignment. In both cases, the head hosting the interpretable person feature (*v* in the case of languages with direct/inverse alignment, Appl in the case of languages that show PCC effects, according to Pancheva & Zubizarreta (2018)) introduces an argument which is an affected goal, an experiencer or an agent. By default, that argument agrees with the interpretable person feature, leading to grammatical structures conforming to the PCC and to direct orders, respectively. This means that in direct orders *and* PCC conforming configurations, it is always the case that a structurally higher DP needs to be ranked higher than a structurally lower DP on a grammatical hierarchy. I.e., if we posit a  $1 > 2 > 3$  hierarchy for person, a direct configuration in a direct/inverse language or a grammatical configuration in a PCC grammar arises if the structurally higher  $DP_1$  has a person value that is higher on that hierarchy than that of the structurally lower  $DP_2$ , such as  $1 > 3$ . This scenario is schematized in (90).

(90) *Direct order*

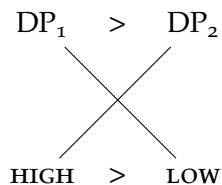


(Coon & Keine 2021: 656)

### 5.1.2 "Inverse" orders

Inverse orders are the opposite of direct orders: in the case of a  $1 > 2 > 3$  person hierarchy, an inverse configuration arises if a structurally higher  $DP_1$  has a lower person value than a structurally lower  $DP_2$ , as shown in (91). If a language has the PCC, such an inverse constellation will not yield a grammatical sentence – unless some sort of rescue mechanism is applied.

(91) *Inverse order*



(Coon & Keine 2021: 656)

Even though the effects for direct/inverse languages and PCC languages may look very similar on the surface, they might not necessarily have the exact same origin. While the person features that Anagnostopoulou (2005) proposes for languages with a direct/inverse system generally align with those of the PCC (noted in section 4.3), she argues that the main difference between the two lies in the functional head hosting the person probe. Anagnostopoulou argues that it is T in the case of direct/inverse languages, but *v* in the case of the PCC. What connects the two is that the basic mechanism of two DPs checking their person features against the same head (either T or *v*) is the same for both.

Pancheva & Zubizarreta (2018), on the other hand, argue for a slightly different kind of connection between the PCC and direct/inverse systems. They look at a specific type of PCC repair strategy characterized by a lack of agreement with the verb and argue that this instantiates the PCC counterpart to inverse alignment. In what follows, this repair is introduced both for the DO and for the IO.

### Lack of agreement with the DO

In cases where the internal argument is higher than the external argument on the P-Hierarchy, the internal argument can fail to agree with the verb in a language with a direct/inverse split. (92) shows this. While the direct 1>2 configuration in (92a), where both arguments agree with the verb, is fine, the indirect 2>1 configuration in (92b) is rescued by the 1st person internal argument not agreeing with the verb.

(92) *Kashmiri*

- (a) *bi chu-s-ath tsi parina:va:n.*  
 I.NOM be.M.SG-1SG.NOM-2SG.E/A you.NOM teaching  
 'I am teaching you.' 1.EA>2.IA
- (b) *tsipari chu-kh me parina:va:n.*  
 you.NOM be.M.SG-2SG.NOM I.DAT teaching  
 'You are teaching me.'  
 (Béjar & Rezac 2009: 65) 2.EA>Ø

The same mechanism is thought to apply in the case of PCC grammars. That is, in head-marking languages, the clitic that cross-references the DO can be omitted iff its person features will trigger a PCC violation, as shown in (93). Sentence (93a) demonstrates that a 3>3 combination is illicit in Kambara, which is due to the fact that it has the super-strong PCC (the only variety that does not allow 3>3 combinations). If, however,

the clitic that refers back to the DO (*-nya*) is left out, a grammatical sentence is the result (93b).

(93) *Kambera*

- (a) \**I ama na- wua -nja -nya; [na heu na njara]*.  
 ART father 3SG.NOM- give 3PL.DAT.IO 3SG.DAT.DO ART one.CL ART horse  
 ‘Father gives them one horse.’ \*3>3
- (b) *I ama na- wua -nja [na heu na njara]*.  
 ART father 3SG.NOM- give 3PL.DAT.IO ART one.CL ART horse  
 ‘Father gives them one horse.’ (Klamer 1998: 64) 3> ∅

### Lack of agreement with the IO

Not only is it possible that a language avoids agreement with the DO to circumvent PCC effects – the same strategy has also been observed for the IO. Pancheva & Zubizarreta (2018) argue that an Applicative structure (where we would normally expect agreement with the IO to happen) may lack agreement with the IO. This is shown in (94), where, to rescue an illicit \*3>1 combination, the IO is expressed as a locative phrase and not cross-referenced with a clitic on the verb in (94b).

(94) *Kambera*

- (a) \**Ngàndi -nya -ngga i ngguru.*  
 take -3SG.DAT.IO -1SG.DAT.DO ART teacher  
 ‘Take me to the teacher.’ \*3>1
- (b) *Ngàndi -ngga lai ngguru.*  
 take -1SG.DAT.THEME LOC teacher  
 ‘Take me to the teacher.’  
 (Klamer 1998: 221) ∅>1

## 5.2 Adpositional phrases and strong pronouns

While a lack of agreement with the verb in languages with agreement suffixes is possible, it is unclear how common this rescue mechanism truly is. The strategy that is, however, without doubt the most frequently documented one for avoiding PCC effects across languages is one where the violating DO pronoun is encased in a PP. One of the many languages that show this behaviour is Kiowa. Kiowa has a verbal agreement prefix that may encode the subject, the IO and the DO, with PCC restrictions holding in terms of the IO and the DO. To avoid an illicit combination, a postpositional

phrase, which doesn't trigger agreement, may be used instead of encoding an argument within the verbal prefix. That Kiowa generally allows this is shown in (95) for a subject-object-constellation. The two sentences in (95) have the same meaning, but one uses a free-standing DP (*nó-*) that agrees with the verb for both arguments (95a), while in the other, the 3rd person agreement prefix (*e-*) is the complement of a postposition (*ęi*) that does not trigger agreement with the verb (95b).

(95) *Kiowa*

- (a) *Thalyòp nó- xán.*  
 boys to.me.them- arrived  
 'The boys came to me.' 3>1
- (b) *Thalyóp nó- ęi e- xán.*  
 boys I- LOC they- arrived  
 'The boys came to me.' 3>1.POSTP  
 (Adger & Harbour 2007: 4)

The same mechanism may also be applied in the case of double object constructions. In (96a), the 3rd person IO is expressed as a postpositional phrase (*ęi*), that does not agree with the verb, just as in (95b) above, in order to avoid the otherwise illicit \*3>2 configuration. A licit combination, such as 3>3, is free to be encoded in the verbal agreement prefix, as in (96b), where *gyá* holds information of the  $\varphi$ -features for both the IO and the DO.

(96) *Kiowa*

- (a) *Hegó k!yátáik!ii- ęi em- pɔɔbóótɔɔ.*  
 now chief- LOC I.you.sg- bring.FUT  
 'I'll bring you to the chief.' 3.POSTP > 2
- (b) *Hegó k!yátáik!ii gyá- pɔɔbóótɔɔ.*  
 now chief I.to.him.him- bring.FUT  
 'I'll bring him to the chief.' 3>3  
 (Adger & Harbour 2007: 5)

Another language that makes use of this strategy liberally is French. The offending clitic can either be encased in an *á*-PP together with a strong (but unfocused) pronoun, or – in some varieties of French – the locative clitic *y* can be used instead of an offending clitic (Rezac 2011). (97) illustrates this. (97a) shows a classic IO>DO clitic combination that gives rise to the PCC. (97b) shows the first of the two rescue strategies. Here, the 3rd person IO is swapped out for an unfocused, strong pronoun (*elles*), which appears

together with a preposition (*à*).<sup>42</sup> In (97c), the IO is swapped out for the locative clitic (*y*) instead. Consequently, either of these last two constructions is able to avoid the conflicting 3>2 configuration and therefore rescues the derivation.<sup>43</sup>

(97) *French*

- (a) \**Lucille vous leur présentera.*  
 Lucille 2PL.ACC 3PL.DAT will.introduce  
 'Lucille will introduce you to them.' \*3>2
- (b) *Lucille vous présentera à elles.*  
 Lucille 2PL.ACC will.introduce to 3PL  
 'Lucille will introduce you to them.' 3.PRO>2
- (c) *Lucille vous y présentera.*  
 Lucille 2PL.ACC LOC will.introduce  
 'Lucille will introduce you to them.'  
 or 'Lucille will introduce you there.' LOC>2  
 (Rezac 2011: 96)

### 5.2.1 The Interface Algorithm (Rezac 2011)

If a strong pronoun is used instead of a clitic, the resulting configuration does not give rise to PCC effects, as strong pronouns do not trigger agreement on the verb (Anagnostopoulou 2005; Béjar & Rezac 2003). Anagnostopoulou (2005) suggests that in a sentence such as (97b), the DO moves to *v*, where it checks both person and number, while the IO stays in situ. Rezac (2011), on the other hand, argues that this type of repair turns a defective IO PP into a full PP, as a result of which it is able to license a strong unfocused pronoun.<sup>44</sup> Rezac (2011) calls this the Interface Algorithm  $\mathfrak{A}$  – a mechanism that can kick in when a PCC violation occurs. The Interface Algorithm is

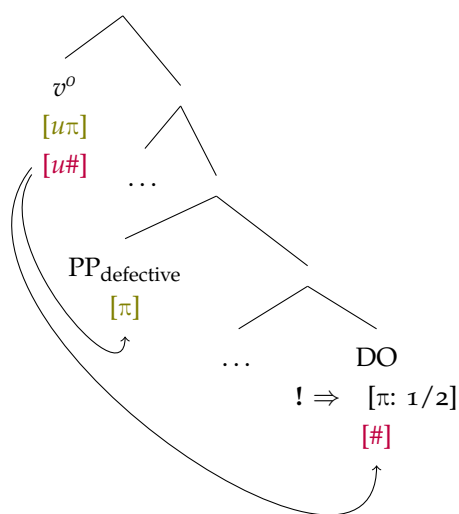
<sup>42</sup> Coon & Keine (2021) assume that a DP which is encased in a PP cannot be accessed by the probe. When it is the IO that is expressed as a PP, the probe can thus only access the DO. Because the probe can only agree with one DP in this case, no feature gluttony arises.

<sup>43</sup> Coon & Keine (2021) argue that (97b) is merely a variant of (97a). Following Rezac (2009), they maintain that an IO that is encased in a PP can be cliticized as *y*. Due to this syntactic configuration, the probe cannot access the DP that is inside the PP and thus cannot agree with it. Hence, no gluttony arises. However, they argue that the clitic *y* is the result of agreement with another probe, not the person probe. They do not further discuss the nature of this probe, though.

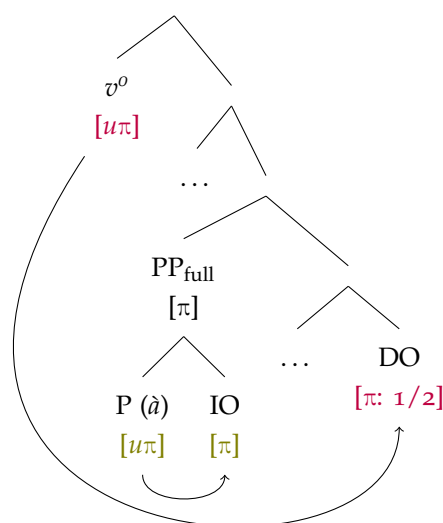
<sup>44</sup> The approach put forth by Rezac (2011) differentiates between what he calls "defective" PPs and "full" PPs and proposes different structures for the two. Rezac argues that dative clitics are defective PPs in that the argument within the PP can act as an intervener (because it is visible to the probe). Prepositional (*à*) datives, on the other hand, are taken to be full PPs (and phases). As such, their internal argument is not visible to an external probe. This claim is underpinned by the fact that the behavior of dative clitics differs from that of dative PPs in regard to floating quantifiers, binding and right dislocation.

able to add an uninterpretable person feature to the preposition of the defective dative PP (i.e., the IO clitic). Once it has done so, the defective PP turns into a full PP (i.e., a strong pronoun). This allows for the additional person feature to license the IO within the PP (98b). As a result of being in a full PP (which constitutes a phase) the IO is no longer an intervener for probing (as was the case when it was defective (98a)), and  $v$ 's person probe can license the DO (98b).

(98) (a) *PCC violation*



(b) *PCC repair*



(Yokoyama 2019a: 31)

Rezac (2011) also notes that the use of a strong pronoun instead of a clitic is licensed via semantic focus. This means that a (non-dislocated) strong IO or DO pronoun obligatorily is focused, while a clitic *cannot* be focused. A further (expected) observation is that strong unfocused IO pronouns are only possible in cases where the clitic gives rise to PCC effects (99). If a strong pronoun is used instead of a clitic in a constellation that does not trigger the PCC, it *must* be focused (100).<sup>45</sup>

- (99) (a) \*Roger *nous* *t* 'avait recommandés.  
 Roger us.DO you.IO had recommended  
 'Roger recommended us to you.'

\*2>1

<sup>45</sup> Rezac (2011) notes that some French speakers would not judge the sentence in (100b) as grammatical because they obligatorily require clitic doubling for strong pronouns. The general claim about focus made here still holds, though.

- (b) *Roger nous avait recommandés à toi.*  
 Roger us.DO had recommended to you.IO.STRONG  
 'Roger recommended us to you.'  
 (slightly adapted from Blanche-Benveniste 1975: 43) 2.PRON>1
- (100) (a) *Roger vous les avait recommandés.*  
 Roger you.IO them.DO had recommended  
 'Roger recommended them to you.'  
 (slightly adapted from Blanche-Benveniste 1975: 43) 2>3
- (b) *Roger les avait recommandés à VOUS, pas à Jean.*  
 Roger them.DO had recommended to you.IO.FOC not to Jean  
 'Roger recommended them to YOU, not to Jean.'  
 (slightly adapted from Blanche-Benveniste 1975: 43) 2.PRON.FOC>3

It thus seems to be the case that those clitic combinations that the PCC allows and those combinations which are repaired via a PP including a strong pronoun are in complementary distribution in French (Yokoyama 2019b). This pattern is summarized in (101) below.

(101) *Distribution of availability of clitics vs. strong pronoun repair*

|        | 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
|--------|-----|-----|-----|-----|-----|-----|-----|
| clitic | *   | ✓   | *   | ✓   | *   | *   | ✓   |
| repair | ✓   | *   | ✓   | *   | ✓   | ✓   | *   |

What is more, this kind of repair may be found in a surface position that is at a certain distance from the PCC-triggering clitic cluster, as is the case for causatives with clitic-climbing. Rezac (2011) argues that in (102), the 3rd person IO and the 1st person DO first form a clitic cluster in the embedded clause (indicated by the trace  $t_{cl}$ ). After undergoing repair in this position, the non-repaired clitic climbs higher in the structure, yielding the sentence in (102b).

- (102) (a) *\*Il me lui fera [t<sub>cl</sub> présenter par ses parents].*  
 he me.DO her.IO will.make introduce by her parents  
 'He will have me introduced to her by her parents.'  
 (b) *Il me fera [t<sub>cl</sub> présenter à elle par ses parents].*  
 he me.DO will.make introduce to her by her parents  
 'He will have me introduced to her by her parents.'  
 (adapted from Kayne 1975: 297) \*3>1  
3.PRON>1

Unlike the IO in (99) above, that could morph into the strong pronoun *toi*, a DO cannot be a strong unfocused pronoun. As far as the DO is concerned, it does not matter

whether speakers of French require clitic doubling for strong pronouns – for both groups, the sentence in (103b) with a strong unfocused DO pronoun is ungrammatical.

- (103) (a) *Elle te leur présentera.*  
 she you.DO them.IO will.introduce  
 'She will introduce you to them.' 3>2
- (b) \**Elle leur présentera toi.*  
 she them.IO will.introduce you.IO.STRONG  
 'She will introduce you to them.' 3>2.PRON
- (c) ?*Elle leur présentera TOI, pas ton frère.*  
 she them.IO will.introduce you not your brother  
 'She will introduce YOU to them, not your brother.' 3>2.PRON.FOC  
 (slightly adapted from Rezac 2011: 113)

Rezac (2011) argues that the only context that allows for a DO clitic to undergo the repair via a strong pronoun is one where the IO is an inherent clitic. This is the case for verbs such as French *s'imaginer* (to imagine) or *s'attaquer* (to attack), where (the contracted) *se* is an inherent clitic that got lexicalized with the verb. For verbs where *se* takes a dative argument (like *s'attaquer*), the IO can be repaired via a strong unfocused pronoun.

However, in cases where *se* combines with a 1st or 2nd person accusative, speaker judgement differs. The first group of speakers does not allow repairs for these constructions. For them, a strong pronoun would only be possible if it were focused. The second group does allow the repair via a strong pronoun, which makes sentences such as (104) the only environment where a strong unfocused DO pronoun is possible. However, Rezac (2011) notes that this DO repair usually requires some additional material (Blanche-Benveniste 1975; Couquaux 1977; Perlmutter 1971; Postal 1990), such as the modifying *dans un beau costume de bain* (in a beautiful bathing suit) in (104). Rezac (2011) further notes that there are certain verbs with inherent *se* for which some speakers of French do not report PCC effects. The same is true for Catalan and Spanish, in which this phenomenon seems to be more common than in French (Albizu 1997; Bonet 1991). Irrespective of this inter-speaker variation, it can certainly be made note of the fact that DOs are more difficult to rescue, so to speak. Unless we are dealing with an inherent IO clitic, there is no way to repair an offending DO clitic.

- (104) (a) *Je me rappelle vous* \*(dans un beau costume de bain).  
 I se.1SG.INH remember you in a beautiful suit for bathing  
 'I remember you in a beautiful bathing suit.'

- (b) *Je me rappelle vous* \*, (*quand vous aviez quinze ans*).  
 I se.1SG.INH remember you when you had fifteen years  
 'I remember you when you were fifteen.'  
 (slightly adapted from Perlmutter 1970: 225)

As was discussed in section 3.1, Cardinaletti & Starke (1999) argue that clitics are syntactically less complex (and thus lighter) than strong pronouns. This is taken to be the reason for them being preferred whenever they are available. Or, applying this logic from the opposite side, a structurally heavier strong pronoun only becomes available as a rescue mechanism whenever the lighter clitic is blocked due to certain syntactic constraints. While such a "blocking" or "competition" approach (i.e., a strong unfocused pronoun becomes available because the use of the clitic is blocked by the PCC) can indeed explain the basic process of the repair, it does run into a problem, as observed by Rezac (2011). In French, the PCC seems to be the only context that allows for a clitic to be repaired via the use of a strong unfocused pronoun in its place. Other contexts where an IO or a DO clitic is unavailable (e.g., multiple dative clitics with clitic clusters surface-identical to those ruled out by the PCC) do *not* allow for a strong unfocused pronoun. Rezac thus argues that simply conceptualizing the repair as a preference for the syntactically lighter clitic over the strong pronoun is too general a claim. He believes that it cannot be the case that strong unfocused pronouns are licensed by the mere fact that a clitic is not available in a certain context. Rather, their availability must be related to the PCC, as this type of repair is specific to it.

### 5.2.2 A potential problem for the Interface Algorithm

A puzzling question for the mechanism proposed by Rezac (2011) comes up in the case of the weak PCC because, interestingly, speakers with this variety seem to allow both combinations of 1st and 2nd person *and* its repairs. This means that those speakers of French who accept 1/2 combinations, as in (105), will nonetheless also accept the repaired version including a strong pronoun ("full PP"), as shown in (106). To salvage this situation, Rezac (2011) argues that the PCC repair mechanism always acts according to the restrictions of the strong PCC. This means that anytime a 1st or 2nd person DO arises, the Interface Algorithm is activated. As a result, speakers with a weak PCC grammar will allow *both* a (licit) clitic-cluster version and the repaired version with a strong pronoun. Underlyingly, this may be caused by different mechanisms for Agree for the weak vs. the strong PCC, as suggested by Anagnostopoulou (2005) and discussed in section 4.3 above. However, Rezac also highlights arguments brought

forth by Ormazabal & Romero (2007) and others who reason against the weak PCC being conceived of as its own variety that is on equal terms with the strong PCC. They argue that one of the clitics in 1st/2nd person combinations is similar to the ethical dative in nature and therefore not a true argument (Jouitteau & Rezac 2008). As a result, this dative is not within *v*'s agreement domain and can thus escape the PCC. The non-argumental dative may be interpreted as an argument based on idiomacy, similar to how *me* in *me seems* is read as *to me*. The conclusion that Rezac (2011) draws from this is that only the strong PCC exists as a variety within syntax proper. The pattern of the weak PCC (and arguably other varieties, though Rezac does not discuss these) surfaces due to other reasons.

(105) *French*

- (a) *Elle te m' a présenté.*  
 she you.ACC me.DAT has introduced  
 'She introduced you to me.' 1>2
- (b) *Elle me t' a présenté.*  
 she me.ACC you.DAT has introduced  
 'She introduced me to you.' 2>1  
 (Yokoyama 2019a: 82)

(106) *French*

- (a) *Elle t' a présenté à moi.*  
 she you.ACC has introduced to me  
 'She introduced you to me.' 1.PRON>2
- (b) *Elle m' a présenté à toi.*  
 she me.ACC has introduced to you  
 'She introduced me to you.' 2.PRON>1  
 (Yokoyama 2019a: 83)

### 5.2.3 Critique of Rezac's approach and an alternative suggestion

Rezac (2011) himself points out that it is puzzling that rescue mechanisms exist only for PCC violations and not for other ungrammatical constructions. The fact that other ungrammatical constructions that arise due to an unsatisfied feature cannot be repaired in the same manner calls for an explanation. Additionally, the question of how the insertion site for the additional probe in the form of an uninterpretable person feature is determined, and why it isn't the DO (i.e., the source of the violation) that is repaired instead, remains unanswered. Lastly, Rezac's handling of the weak PCC (and the

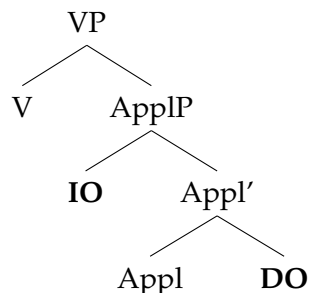
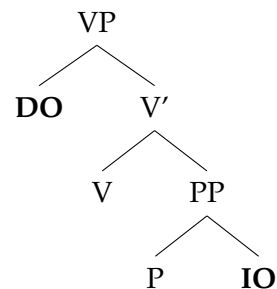
absence of comment about other proposed varieties) leaves room for criticism. If we take another look at the pattern for clitics and the repair via a strong pronoun, we can see that 1>2 and 2>1 combinations are no longer in complementary distribution in the case of the weak PCC, as the highlighted cells in (107) show. It is thus questionable whether we can even speak of a repair at this point. At least at the surface level, the PP-structure appears to be an alternative, rather than a repair, for 1st and 2nd person combinations in the weak PCC grammar.

(107) *Distribution of availability of clitics vs. strong pronoun repair for the weak PCC*

|        | 1>2 | 1>3 | 2>1 | 2>3 | 3>1 | 3>2 | 3>3 |
|--------|-----|-----|-----|-----|-----|-----|-----|
| clitic | ✓   | ✓   | ✓   | ✓   | *   | *   | ✓   |
| repair | ✓   | *   | ✓   | *   | ✓   | ✓   | *   |

Yokoyama (2019a) argues that restrictions for other varieties, such as the strong PCC, are missing from Rezac's approach. Under his assumption, it would thus be the case that all varieties are able to insert a non-argumental "ethical" dative instead of an argumental dative, thereby allowing combinations of 1st and 2nd person clitics. However, as has been made clear, this is not what is observed. Moreover, Yokoyama points out that nothing would hinder us from analyzing the French *me* in a \*<sub>3</sub>>1 combination as a non-argumental "dative" that is interpreted as the theme of a sentence since dative and accusative *me* are morphologically identical. Again, this is not what we see in French or other PCC languages. To overcome these grave issues, Yokoyama proposes to account for the appearance and the pattern of the PP-repair via Incremental Valuation (as laid out earlier in section 4.5). He argues that this mechanism is all that is needed to explain the PCC as well as its repair (at least for French).

For the prepositional repair of an illicit structure in French, Yokoyama assumes that the PP is postverbal and thus merged first. Based on this assumption, Yokoyama (2019a,b) assumes different syntactic structures for the double-clitic construction vs. the repair construction. In the former, the IO sits higher than the DO, as shown in (108a). Rezac (2011) only posits one structure for the two options, and it resembles that in (108a) in that the IO (either a defective or a full PP in Rezac's approach) is located between the verb and the DO. For the repair, Yokoyama assumes a structure where the IO is encased in a PP and lower than the DO, as in (108b).

(108) (a) *Double clitic construction*(b) *Repair construction*

(Yokoyama 2019a: 69f)

Yokoyama further stipulates that an *à*-PP in French, which has the structure in (108b), is inherently 3rd person and inanimate.<sup>46</sup> As a result, it can only value the number feature of the probe. The person features can be satisfied by the DO in the form of either a 1st or a 2nd person argument. Yokoyama (2019b) argues that the repair with *y* instead of *à* works just the same if *y* is considered to be a PP structurally, and therefore also 3rd person inanimate. For the configuration in (109), repeated from (105) above, both arguments participate in the valuation of the verb's  $\varphi$ -features, as a result of which the derivation can converge. The feature valuation in a 2>1 repair scenario is pictured to look as in (110). The PP is merged first (based on the assumed structure in (108b)) and values the number feature. The 1st person DO can then value the person features.

(109) *French*

*Elle m' a présenté à toi.*  
 she me.ACC has introduced to you  
 'She introduced me to you.'

2.PRON&gt;1

(Rezac 2011: 150)

<sup>46</sup> This assumption is motivated by the fact that we can see 3rd person agreement that is triggered by locational PPs in French (i) and English (ii), though Yokoyama does note that this could potentially also be interpreted as default agreement due to a failure of agreement (Preminger 2019).

(i) *French*

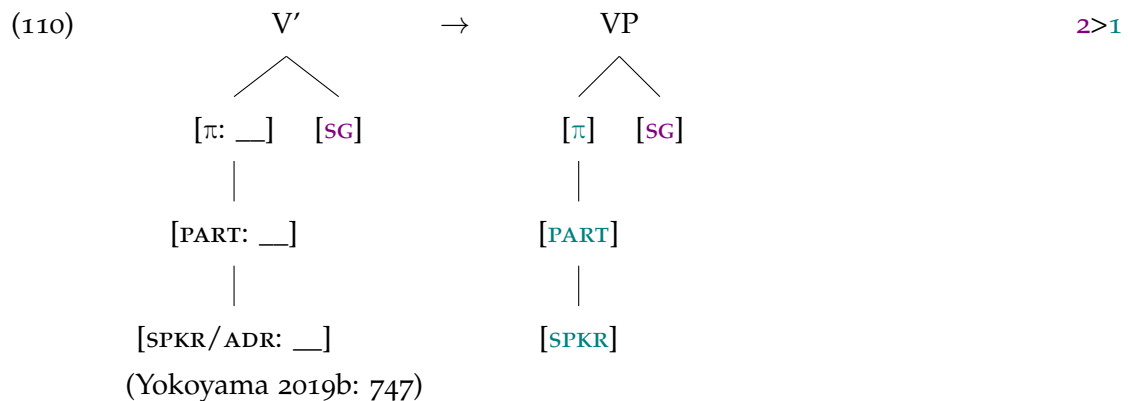
*[PP Sous le lit] n'est pas un bon endroit pour se cacher*  
 under the bed NEG.be.3SG NEG a good place for REFL hide.INF  
 'Under the bed is not a good place to hide.'  
 (Davies & Dubinsky 2001: 258)

## (ii) (a) [PP Under the bed] is a good place to hide.

(Davies &amp; Dubinsky 2001: 247)

## (b) [PP Under the tables] is the best place to hide.

(Yokoyama 2019a: 73)

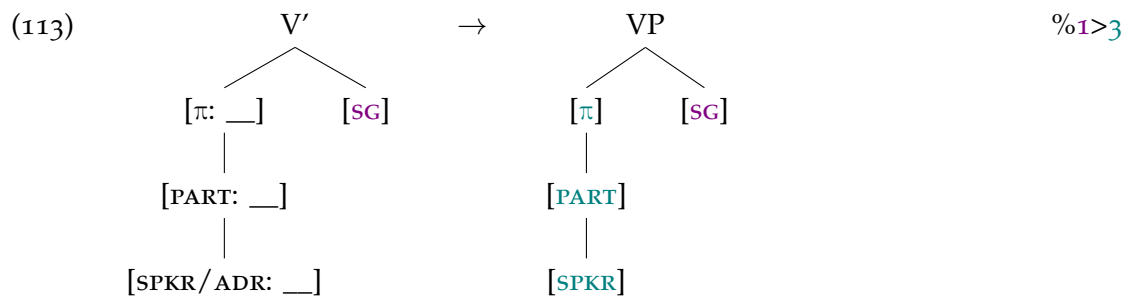


Interestingly, Incremental Valuation is also able to account for the fact that the PCC repair is rejected by most – but not all – (French) speakers for those combinations that are allowed in a certain PCC grammar, as shown in (111). Yokoyama (2019a) argues that for those speakers who do not allow the repair in this case, the PP again acts as a 3rd person inanimate argument and values the probe’s number feature. Consequently, if the DO were to be a 3rd person inanimate argument, it would not be able to participate in the valuation, as it would only carry a number specification, and number had already been valued by the PP. As a result, any combination where the DO is 3rd person (i.e., the licit constellations of 1/2/3>3) does not qualify for the PCC repair structure, as in (112) for 1>3, though the valuations for 2>3 and 3>3 would look the exact same. He further proposes that for those speakers that do allow the repair for an already licit structure, the DO can be animate. This means that in their grammar, the DO is not only specified for number, but also for person, whereby it can value the probe’s person feature. Since both arguments are now involved in the valuation of the probe, the derivation is successful. This valuation process, where the DO is animate, is illustrated in (113) below.

- (111) *French*
- %Elle *le*            *présentera*        *à nous*.  
 she    him.ACC wil.introduce to 1PL.DAT  
 ‘She will introduce him to us.’
- %1.PRON>3
- (Rezac 2011: 93)



(Yokoyama 2019a: 79)



(Yokoyama 2019b: 748)

In addition to Incremental Valuation, Coon & Keine's Feature Gluttony is also able to account for the French *à*-repair. They suggest that the DP that is encased within the PP is not accessible for the probe. This means that the probe can only agree with one of the two DPs, resulting in a configuration without any gluttony and thus a grammatical utterance. They furthermore argue that Rezac's Interface Algorithm can also be incorporated into their account: in order to avoid a probe being gluttonous, additional structure may be introduced into the derivation as a last resort.

## 5.3 Camouflages

### 5.3.1 Change of clitic

While French and Spanish may use a strong pronoun as a repair mechanism for a PCC-evoking structure, Catalan does things a bit differently. Instead of substituting a clitic for a strong pronoun, the IO clitic changes to a *different* clitic (Bonet 2008). Specifically, the 3rd person cliti *li* changes to *hi*, as shown in (114).

(114) *Catalan*

- (a) \**Al president, me li ha recomanat en Miquel.*  
 to.the president 1SG 3SG.DAT has recommended the Miquel  
 ‘As for the president, Miquel has recommended me to him.’ \*3>1
- (b) *Al president, m’ hi ha recomanat en Miquel.*  
 to.the president 1SG.DO CL has recommended the Miquel  
 ‘As for the president, Miquel has recommended me to him.’ 3>HI  
 (Bonet 2008: 106)

Anagnostopoulou (2003) and Nevins (2007) analyze this clitic as a locative clitic due to the fact that it can be used as such in Catalan (115). Because the locative cannot check person features, the DO clitic can check number *and* person, thus evading PCC effects (Anagnostopoulou 2003; Bonet 2008). Bonet (2008), however, argues that this assumption is redundant, as *hi* could simply be analyzed as an IO clitic that does not have a person or a number feature. She suggests that the *hi* in (115) is simply homophonous with the locative clitic and that the *hi* used to circumvent PCC effects is an inanimate IO (based on arguments made by Rigau 1982). She even goes so far as to claim that the corresponding pronunciation of *hi* – /i/ – is a dative morph because it can also be found in 3rd person singular and plural dative (*li* and (*e*)*lzi*, respectively). Based on this claim, *hi* is impoverished. I.e., it does *not* have person or number (just case) and can therefore surface in environments that would otherwise give rise to the PCC.

(115) *Catalan*

- A Matadepera, avui no hi seré, però hi aniré demà.*  
 to Matadepera today not CL will.be but CL will.go tomorrow  
 ‘As for Matadepera, I will not be there today, but I will go there tomorrow.’  
 (Bonet 2008: 106)

Ormazabal & Romero (2007) show that *Leísta* dialects use a similar strategy as Catalan to avoid PCC effects, as shown in (116). Catalan allows for the inanimate 3rd person DO clitic *lo* to be used in place of *le*, while still maintaining an animate meaning.

(116) *Leísta dialects*

- (a) \**Te le di*  
 2SG.DAT 3SG.ACC gave  
 ‘I gave him/her to you.’ \*2>3

- (b) *Te lo di*  
 2SG.DAT 3SG.ACC gave  
 'I gave it/him to you.'  
 2>3.INANIM

### 5.3.2 Periphrasis

Georgian, which exhibits the pattern of the strong PCC, may utilize "object camouflage" or "tavization" (Bonet 1994; Harris 1981). Under this strategy, a 1st or 2nd person DO is expressed in a periphrastic form instead of the usual clitic. In (117), the 1st person direct object is paraphrased as *čem-s tav-s*, which translates to "my self/head". Tavization is available for all illicit combinations (i.e., those with a 1st or 2nd person DO) in Georgian, while it is not available for licit combinations (i.e., those with a 3rd person DO). Yokoyama (2019a) suggests that this behavior can be accounted for via his mechanism of Incremental Valuation. He argues that the periphrastic expression is featurally equal to a third person inanimate argument. As such, it can only value the structure's number feature. Since the IO in (117) (*givi-s*) is specified as 3rd person animate, it can value the person feature (118). Because both objects have consequently contributed to the valuation process, the structure can be generated.

- (117) *Georgian*  
*Vano čem-s tav-s ∅- adar -eb -s givi-s.*  
 Vano my-DAT self-DAT 3.IO compare -THEME -3SG.SBJ Givi-DAT  
 'Vano is comparing me (lit. 'myself') to Givi.'  
 3>1.TAV  
 (Harris 1981: 49)

- (118)
- |                                                                                                                                                                                  |               |                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $  \begin{array}{c}  \text{Appl}' \\  \swarrow \quad \searrow \\  [\pi: \_] \quad [\text{SG}] \\    \\  [\text{PART}: \_] \\    \\  [\text{SPKR}/\text{ADR}: \_]  \end{array}  $ | $\rightarrow$ | $  \begin{array}{c}  \text{Appl}' \\  \swarrow \quad \searrow \\  [\pi] \quad [\text{SG}] \\    \\  [\text{PART}: \_] \\    \\  [\text{SPKR}/\text{ADR}: \_]  \end{array}  $ |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

(Yokoyama 2019a: 91)

The reverse order, i.e., 1.TAV>3 is not possible, however. Since the 3rd person animate DO would be more highly specified than the camouflaged 1st person IO (presenting as

3rd person inanimate), the derivation is not successful. Yokoyama (2019a) construes this as an explanation for why the sentence in (117) above gets the meaning it has rather than ‘Vano is comparing Givi to me.’, \* $1 > 3$ .

## 5.4 The reverse P(C)C/Clitic reordering

Stegovec (2020) argues for a pattern observed in Slovenian that he calls the "reverse" PCC. What stands out in this language is that it allows both IO>DO and DO>IO as the clitic base order in double object constructions.<sup>47</sup> Importantly, it is always the second clitic in such constructions that is the subject of person restrictions. Stegovec uses this observation as a starting point to suggest that this is actually the case for all languages, though it is only transparent in those languages where the IO and the DO are able to undergo reordering at a specific point in the derivation.<sup>48</sup>

(119) shows a pattern that is identical to that of other languages exhibiting the strong PCC. In (120), however, we can see the "reversed" pattern. (120) mirrors the numerical order of (119): we see a licit  $1/2/3 > 3$  and an illicit  $*3 > 1/2$  order for both. The only difference lies in the order in which the respective clitics appear: IO>DO for (119) vs. DO>IO for (120).

(119) *Slovenian (canonical)*

- (a) *Mama* [ *mi* / *ti* / *mu* ] *ga bo predstavila.*  
 mom [ 1.DAT / 2.DAT / 3.M.DAT ] 3.M.ACC will.3 introduce.F  
 ‘Mom will introduce him to me/you/him.’  $1/2/3.IO > 3.DO$
- (b) \**Mama mu* [ *me* / *te* ] *bo predstavila.*  
 mom 3.M.DAT [ 1.ACC / 2.ACC ] will.3 introduce.F  
 ‘Mom will introduce me/you to him.’  $*3.IO > 1/2.DO$   
 (Stegovec 2020: 264)

(120) *Slovenian (reverse)*

- (a) *Mama* [ *me* / *te* / *ga* ] *mu bo predstavila.*  
 mom [ 1.ACC / 2.ACC / 3.M.ACC ] 3.M.DAT will.3 introduce.F  
 ‘Mom will introduce me/you/him to him.’  $1/2/3.DO > 3.IO$

<sup>47</sup> According to Stegovec (2020), sentences that only differ with regard to an IO>DO vs. DO>IO word order are not equivalent, and the choice of one over the other is related to certain discourse factors. Specifically, in a  $3 > 3$  configuration, DO>IO is used when the DO is a salient topic. In the case of a 1st or 2nd person DO however, there are no such requirements for the DO>IO word order. It is simply used to circumvent the illicit  $*3 > 1/2$  (IO>DO) configuration, as one would expect.

<sup>48</sup> The reordering of the IO and DO clitics is also noted by Pancheva & Zubizarreta (2018) as another potential ‘inverse-like’ pattern for repairing illicit configurations.

- (b) \*Mama *ga* [ *mi* / *ti* ] *bo* *predstavila*.  
 mom 3.M.ACC [ 1.DAT / 2.DAT ] will.3 introduce.F  
 ‘Mom will introduce him to me/you.’ \*<sub>3.DO>1/2.IO</sub>  
 (Stegovec 2020: 264)

Stegovec (2020) argues that some speakers of Slovenian also show a canonical and reverse pattern for the weak PCC. Example (121) shows the canonical weak PCC pattern. (122a), on the other hand, shows a reversed version of the weak PCC, i.e., one where the DO appears before the IO. Notably, the \*<sub>1.DO>2.IO</sub> combination is not grammatical in Slovenian (122b), as would be expected for the reversed PCC, but Stegovec (2020) argues that this is due to causes that lie outside of the restrictions imposed by the PCC.<sup>49</sup>

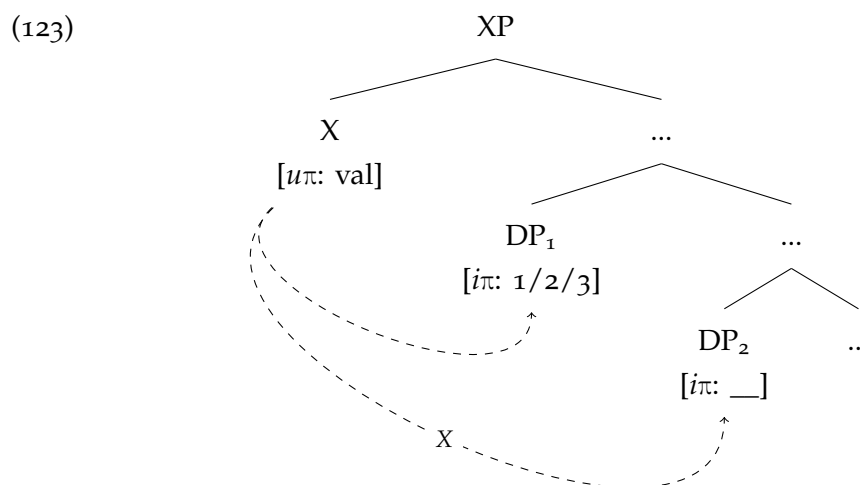
- (121) *Slovenian (canonical)*  
 %Mama [ *mi* / *ti* ] [ *te* / *me* ] *bo* *predstavila*.  
 mom [ 1.DAT / 2.DAT ] [ 2.ACC / 1.ACC ] will.3 introduce.F  
 ‘Mom will introduce you to me/me to you.’ <sub>1.IO>2.DO / 2.IO>1.DO</sub>  
 (Stegovec 2020: 265)

- (122) *Slovenian (reverse)*  
 (a) %Mama *te* *mi* *bo* *predstavila*.  
 mom 2.ACC 1.DAT will.3 introduce.F  
 ‘Mom will introduce you to me.’ <sub>2.DO>1.IO</sub>  
 (b) \*Mama *me* *ti* *bo* *predstavila*.  
 mom 1.ACC 2.DAT will.3 introduce.F  
 ‘Mom will introduce me to you.’ \*<sub>1.DO>2.IO</sub>  
 (Stegovec 2020: 265)

Stegovec (2020) argues that an analysis that relies on inherent asymmetries between the IO and the DO (such as case), like that of Béjar & Rezac (2003) or Anagnostopoulou (2003, 2005), is not fit to explain the symmetrical canonical/reverse pattern found in Slovenian. The only asymmetry that Stegovec postulates for the IO and the DO is that of their respective structural position. In every other regard, they are thought to behave symmetrically. Moving away from any asymmetry analysis, Stegovec argues instead that it is actually the deficient status (in the sense of Cardinaletti & Starke 1999) of the

49 This asymmetry of 2>1 being allowed, but \*1>2 being illicit in the reversed PCC is thought to be the result of certain restrictions on logophoric licensing. For the sake of simplicity, this thesis will simply accept this assumption as given and refrain from going into its specifics. For a detailed explanation of the restrictions in question see Stegovec 2020: 286ff.

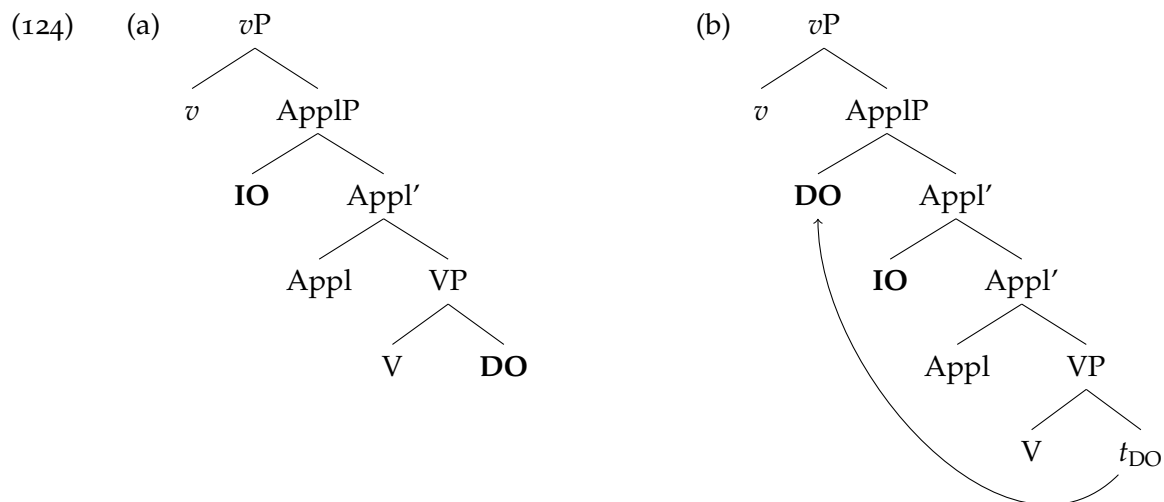
pronouns involved that triggers the observed PCC effects. He refrains from postulating requirements for or changes to the Agree operation itself. Rather, Stegovec suggests that the  $\varphi$ -features of the probe and the (potential) goals – regardless of whether they are an IO or a DO – are what give rise to PCC effects. He claims that clitics enter the derivation with *unvalued* interpretable person features and must thus be valued before spell-out. Additionally, he assumes that only *some* functional heads enter the derivation with *valued* uninterpretable person features, leading to a disequilibrium between unvalued and valued person features. In a classic PCC configuration, i.e., two DPs, but only one probe, only the structurally higher DP is able to have its person feature valued by the (valued) probe. Once this has happened, valuation of the lower DP by the probe is not possible anymore, whereby it receives default value. This is illustrated in (123).



(Stegovec 2020: 274)

Under this approach, it is not merely an interpretable person feature that fails to Agree with an uninterpretable person feature on a probe. Instead, it is an *unvalued* interpretable person feature that does not receive a value by a matching *valued* uninterpretable person feature on a probe. The patterns we observe for the PCC are thus a result of there being a higher number of clitics with unvalued person features in relation to probes with valued person features.

Structure-wise, Stegovec (2020) assumes that all double object constructions are applicative constructions (like Anagnostopoulou 2003 does, for example) and have an IO>DO base order (124a). However, in certain languages, the DO can optionally move over the IO (below *v*) to create the DO>IO order (124b).

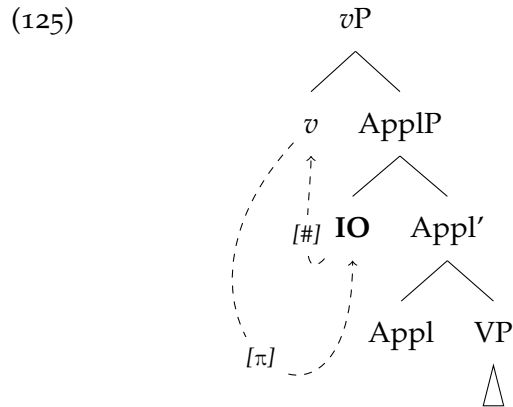


(adjusted from Stegovec 2020: 278f)

#### 5.4.1 The canonical strong PCC

Stegovec (2020) assumes that the mechanism for deriving the strong PCC builds on a very similar basis as the accounts by Béjar & Rezac (2003) and Anagnostopoulou (2003, 2005), introduced in section 4.2 and 4.3, respectively, albeit with some specifics in which it differs from them. *v* first probes for number, matching and agreeing with the IO, which values the probe's number feature.<sup>50</sup> As a result of this Agree relation with the IO, *v* is then able to *parasitically* – as Stegovec calls it – value the IO's person feature, as schematized in (125). Once the Agree relation between *v* and the IO has been established, the probe is deactivated as a possible intervener for future Agree operations (due to the fact that its number feature had already been valued and its person feature was valued by the IO). This consequently makes it impossible for *v* to agree with the DO, whose person feature can then only receive default value, i.e. 3rd person, yielding the expected strong PCC pattern.

<sup>50</sup> This happens under the assumption that *v* has a valued person feature, but an unvalued number feature.

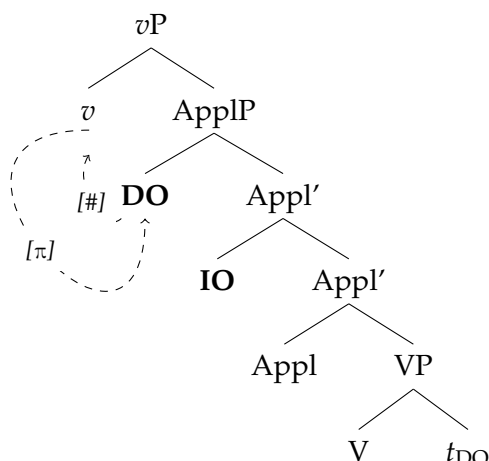


(adjusted from Stegovec 2020: 278)

#### 5.4.2 The reverse strong PCC

To account for the pattern of the reverse strong PCC, Stegovec (2020) suggests the already mentioned DO-over-IO movement. He argues that this movement is possible in Slovenian, but not in other languages that show the strong PCC, such as Greek, because they do not allow for a DO>IO configuration at this specific point in the derivation. Based on Stegovec's assumptions, the valuation process for a DO>IO order looks much the same as that for IO>DO in (125) above, with the exception that it is now the DO that is the closest DP to the probe. As such, it is the DO, rather than the IO, whose interpretable number feature enters into an Agree relation with *v*. In a next step, *v* values the DO's person feature (126). With this, again, *v* can no longer probe for  $\varphi$ -features and the structurally lower DP, in this case the IO, can only receive default value for its still unvalued person feature. The result is a mirror image of the canonical strong PCC, but with reverse roles.

(126)



(adjusted from Stegovec 2020: 279)

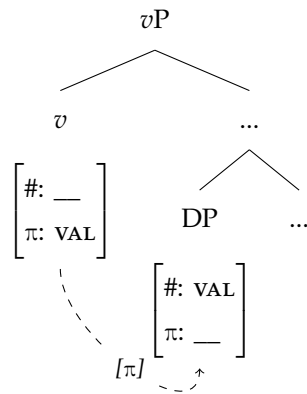
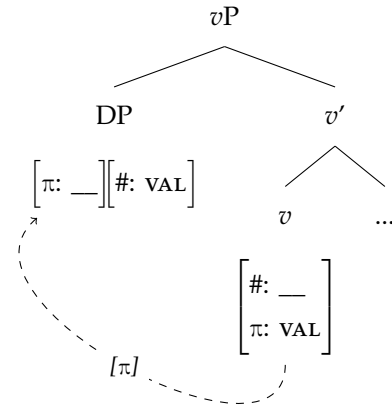
In both cases – the canonical and the reverse PCC – we can observe a disequilibrium between the number of valued person features (just one, supplied by the probe) and unvalued person features (two, on the goals). The culprit that Stegovec makes out as being responsible for this situation is the applicative head, which introduces another goal, but does not add another valued person feature that may act as a probe.

### 5.4.3 The canonical and the reverse weak PCC

In order to derive the weak PCC, Stegovec (2020) assumes that, unlike the strong PCC, the weak PCC requires that the probe enter into an Agree relation with the person features of *both* objects. Furthermore, he stipulates that the weak PCC pattern arises when the affected pronouns are internally more complex than those participating in the strong PCC. Instead of the number and the person feature on the pronoun being in a bundle (as is the case for the strong PCC), they branch out to form two distinct heads. As a result, once *v* has agreed with a DP in number, the DP's separate person feature can remain an active probe. The affected DP then moves to *Spec,v*, where it is able to receive a person value from *v*.

To recapture these thoughts – Stegovec (2020) suggests that in the case of the strong PCC, all  $\varphi$ -features on a DP form a bundle. The DP has a valued number feature, which values the number probe on *v*. Subsequently, *v*'s valued person feature values the DP's person feature parasitically (127a). In the case of the weak PCC, the  $\varphi$ -features for number and person are split up into two heads, which blocks parasitic valuation of the person feature like it happens with the strong PCC. Instead, after valuation for

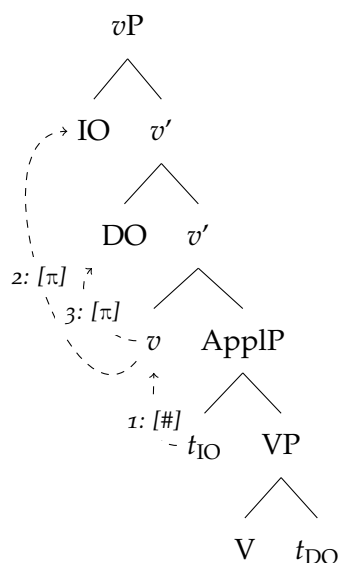
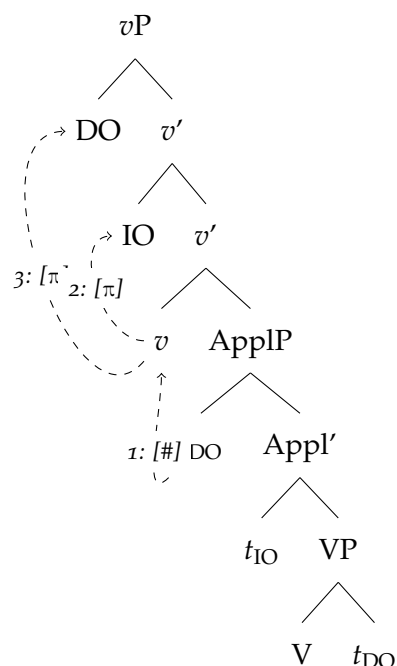
number has happened, the DP moves over  $v$  into its specifier, where it is then valued for person directly, rather than parasitically (127b). The two scenarios thus differ with regard to which feature is responsible for obtaining the valuation of the person feature: while it is thought to be # in the case of the strong PCC, it is the separate  $\pi$  itself in the case of the weak PCC.

(127) (a) *Strong PCC*(b) *Weak PCC*

(Stegovec 2020: 281)

A derivation of a 1st and 2nd person combination for the canonical weak PCC is shown in (128a) below. Here,  $v$  first agrees with the IO for number. The IO then moves to Spec, $v$  and is valued for 1st or 2nd person by  $v$ 's person feature. Next, the DO also moves to Spec, $v$  (below the IO) and gets its person feature valued by  $v$  (128a)<sup>51</sup>. The reverse weak PCC works the same way, with the exception that the DO has already moved over the IO before  $v$  enters the derivation. As a result, it is the DO that gets valued for person first, and the IO gets valued second (128b).

<sup>51</sup> Arrows indicating a valuation between a trace and  $v$  aim to indicate that the valuation has happened with the respective DP before it moved upwards in the tree.

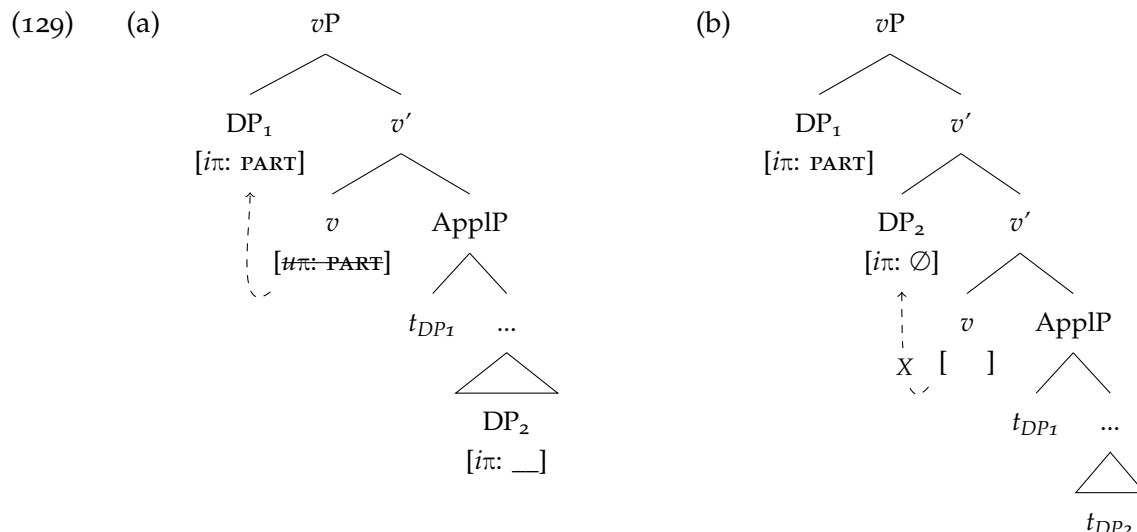
(128) (a) *Canonical weak PCC*(b) *Reverse weak PCC*

(adapted from Stegovec 2020: 282)

Stegovec (2020) argues for the superiority of this approach as compared to that of Anagnostopoulou (2005) because it does not require parametrization of Agree. Rather, it is the internal structure of the pronoun that is relativized (a single feature bundle vs. two distinct feature bundles). Moreover, he suggests that this sort of parametrization is better able to account for the fact that we sometimes see weak and strong PCC patterns coexist within a single language with judgement varying between speakers.

While this certainly does pose an advantage, it still needs to be explained why certain feature combinations are allowed in Stegovec's approach while others aren't. To do so, he assumes, like many others, that it is the structure of the probe that leads to these differences. Specifically, if the probe has a [PARTICIPANT] sub-feature (i.e., requires a 1st or 2nd person DP), the derivation proceeds as follows. Typically, the first Agree operation will already deactivate the person feature on  $v$ , which yields a 1/2>3 combination. This is shown in (129). First,  $v$  agrees with and values the person feature of  $DP_1$ , as a result of which  $v$ 's person feature gets deleted (129a). Next,  $DP_2$  moves to

Spec,*v* to be valued<sup>52</sup>, but since *v*'s person feature has already been deleted after the valuation of DP<sub>1</sub>, DP<sub>2</sub> can only receive default value (129b).



(adapted from Stegovec 2020: 285)

However, Stegovec (2020) assumes that valued uninterpretable features can optionally remain accessible after Agree, which is what gives us 1/2 combinations. In this case, *v* is obligated to share its [PART] feature with *both* DPs that it agrees with. This means that the two DPs can only receive 1st or 2nd person as a value, both in the canonical and in the reverse weak PCC. It is important to note, though, that Stegovec sees this sort of valuation as an exception from the default case. Lastly, if *v* does not have a [PART] feature, the resulting combination is 3>3. These three options are thus able to derive the complete pattern of the weak PCC, be it the canonical or the reverse.<sup>53</sup>

What must also be noted at this point is the observation made by Stegovec (2020) that if a language shows the reverse PCC, it always also has the canonical PCC. I.e., the existence of the reverse PCC seems to be dependent on the existence of the canonical PCC. Syntactically, Stegovec assumes a universal IO>DO base order for double object constructions and poses optional DO-over-IO movement below *v* as the reason for the arising of the reverse PCC.

<sup>52</sup> Movement to the specifier of *v* happens for both DPs, irrespective of whether they end up being able to receive a value in this position or not.

<sup>53</sup> A 3>1/2 combination is ruled out by the fact that the structurally higher DP can only be 3rd person if the probe lacks a [PART] feature, in which case the structurally lower DP can only receive a 3rd person value too.

#### 5.4.4 Critique of the reverse PCC

Coon & Keine (2021) argue that the symmetrical PCC restrictions that Stegovec (2020) argues for can be accounted for by their approach. They also suggest that there is optional DO-over-IO movement, though both arguments are thought to be situated under *v*. If the structurally higher DP is 3rd person, the probe agrees with its [PERS] feature, irrespective of whether it is an IO or a DO (that has undergone movement). If the lower DP is also 3rd person, there is no problem. However, if it is 1st or 2nd person, the probe's [PART] feature will agree with it, leading – again – to gluttony. Both Stegovec's as well as Coon & Keine's accounts are thus able to function completely detached from case. The major difference between the two boils down to having too little Agree (Stegovec 2020) vs. too much Agree (Coon & Keine 2021).

Yokoyama (2019a) argues that what Stegovec has observed for Slovenian is actually not a reverse PCC. Instead of an interaction between  $\varphi$ -features of the two arguments, what we are seeing is a clitic ordering restriction, much like has been argued for with the *me*-first PCC. Specifically, 1st and 2nd person arguments in Slovenian may not appear in the second position within a clitic cluster (which, Yokoyama (2019a) argues, may be called *me-and-you-first* PCC).<sup>54</sup> The fact that this constraint is not based on case in Slovenian may be a result of the language being less strict in terms of locality.

To me, too, it seems unlikely that the reverse PCC constitutes its own variety. The mere fact that the choice of one base order over the other for 3>3 combinations hinges on certain discourse factors points strongly towards a repair mechanism rather than another variety. The observed behavior fits nicely into the pattern of an (unmarked) repaired version only being available if a given combination would otherwise lead to PCC effects. Additionally, the fact that the reverse PCC is contingent on the canonical PCC, i.e., no language *only* shows the reverse pattern, further strengthens the assumption that this simply constitutes a repair.

### 5.5 Interim summary

As has been shown in this section, languages may use different rescue mechanisms in order to repair configurations that would otherwise be subject to the PCC. While the mechanisms introduced above by no means reflect a complete list, they have shown *that* such repairs exist and that they are worth investigating due to their uncommon

<sup>54</sup> Yokoyama (2019a) points out that the patterns observed for the weak, the strong, the ultra-strong and the super-strong PCC cannot be explained via ordering restrictions of this kind. Based on this, we may conclude that the *me*-first PCC and the reverse PCC constitute restrictions of a different kind.

status within the field of syntax. We have seen that in some languages in which the PCC occurs as a result of certain agreement affixes on the verb, one of the two offending arguments may simply not agree with the verb. Other languages may use a prepositional phrase that includes a strong pronoun, rather than a clitic, to circumvent PCC effects. Yet others opt to hide, so to speak, the offending clitic by either switching it out for another clitic or using a periphrastic form instead. Lastly, there is also the possibility of clitic reordering, which yields a "reverse" PCC pattern.

## 6 Summary

This thesis has provided an overview of different guises of the PCC, some syntactic approaches to explaining these patterns and certain repair mechanisms for circumventing offending configurations. The fact that the PCC does not present itself as uniform in all languages points to the complexity of this phenomenon. Existing analyses all have to make certain compromises if they want to supply a uniform approach to the PCC.

The large body of research on the PCC has naturally led to a certain amount of disagreement. In the literature, at least five different PCC varieties can be found: the strong PCC, the weak PCC, the *me*-first PCC, the ultra-strong PCC and the super-strong PCC. They differ in which person combinations they allow, with the only constants being the illicit  $*_3 > 1$  and the licit  $1/2 > 3$ . It may be the case that the *me*-first PCC is merely an ordering restriction (as suggested by Yokoyama 2019a). If this is true, the licit vs. illicit constants would be mirror images of each other for all four varieties:  $1/2 > 3$  and  $*_3 > 1/2$ . However, an ordering restriction has also been proposed for the super-strong PCC by Coon & Keine (2021). In section 4.7, I agree with this idea. I have shown how reducing the PCC varieties to a weak, a strong and an in-between ("ultra-strong") variety may fit into the different accounts that were introduced.

While split  $\varphi$ -feature checking, as proposed by Béjar & Rezac (2003), is not able to account for any variety other than the strong PCC, the approach by Anagnostopoulou (2003, 2005), which introduces Multiple Agree, is able to cover the weak PCC in addition to the strong PCC. The first account of those introduced that is able to provide a differentiated analysis of all PCC varieties is that of Pancheva & Zubizarreta (2018). Their P-Constraint, consisting of four clauses, is able to parametrically explain the different patterns observed throughout the languages of the world. I have argued that, if the *me*-first PCC and the super-strong PCC are excluded from the list of varieties, one of the four clauses of the P-Constraint would become redundant. Yokoyama (2019a) identifies some potential flaws in the account put forth by Pancheva & Zubizarreta (2018), though I have shown that these claims can be refuted. Based on the assumed shortcomings of other approaches, Yokoyama argues for Incremental Valuation – a mechanism that ensures that both arguments in a given configuration contribute to the

valuation of a probe's (person and number) features. This mechanism is able to account for different PCC varieties, with the exception of the *me*-first PCC (which Yokoyama dismisses), via positing slightly altered probes (or a stipulation in terms of animacy for the super-strong PCC) for each. The most radical break with previous approaches comes from Coon & Keine (2021), who argue that every time a probe enters into more than one valuation relation, it becomes gluttonous, which causes problems for subsequent operations, resulting in ungrammaticality. Under their approach, different PCC varieties are also derived via different probes (plus a stipulation about IOs in strong PCC grammars), similar to Yokoyama (2019a).

In addition to these diverse syntactic approaches to the PCC, this thesis has also discussed some repair mechanisms for those configurations that would otherwise elicit PCC effects. Whether it be a lack of agreement with one of the two arguments on a verbal prefix, a pre- or postpositional phrase encasing a strong pronoun replacing one of the clitics in an offending configuration, or a camouflage of one of the clitics – it is clear that, across languages, there are several mechanisms to this effect. A particularly interesting case of a repair mechanism is that of the "reverse" PCC, as proposed by Stegovec (2020). He argues that Slovenian shows the same PCC pattern, irrespective of whether there is an IO>DO or a DO>IO base order for the clitics. As a result of this, he proposes that case may be taken out of the PCC, as it supposedly represents a symmetrical restraint on only the person features of the arguments involved. However, as has been made clear, it appears more fitting to frame this pattern as an ordering restraint on clitics and a rescue mechanism rather than another PCC variety.

While it is obvious that many disagreements about the workings of the PCC persist, one aim of this thesis was to highlight the influence of notions such as Multiple Agree (Anagnostopoulou 2003, 2005), a person-feature geometry (Béjar 2003; Harley & Ritter 2002) or parametric variation (Chomsky 1995) within this area of research. At this point, it still seems difficult to make out a somewhat clear path that we syntacticians should want to follow. What we can say with certainty is that the PCC is a hierarchy effect operating on pronominal clitics and agreement prefixes. We also know that it can be found in a sizeable amount of unrelated languages, albeit exhibiting different patterns. Now may be the time to take a step back and reevaluate how many PCC varieties we want to define and how many stipulations we want to allow. I have suggested that we possibly only need a maximum of three varieties, namely the strong PCC, the weak PCC and the super-strong (or intermediate) PCC, which would automatically also reduce the amount of machinery needed for any approach.

## 7 Bibliography

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