On the Person-Case Constraint:
From the Giga to the Zero Version with Copy Impoverishment and Check

Bachelorarbeit

Aaron Doliana
Matrikelnummer: 2308350

Institut für Lingusitik
Universität Leipzig

Erstgutachter:	Prof. Dr. Gereon Müller
Zweitgutachter:	Dr. Andreas Opitz
Abgabefrist:	22.07.2013

Contents

Abstract[1]

Kambera, a Malayo-Polynesian language, shows a new version of the Person-Case Constraint (PCC), disallowing any combination of phonologically weak objects except the one where the indirect object is 1st/2nd person and the direct object is 3rd person. Recent minimalist accounts fail to capture this new pattern, which, I argue, indicates the existence of a continuum within the constraint's typology. In this paper, I am going to account for this new version as a syntactic rule-interaction effect between Agree and scale-driven Impoverishment. I claim that with this mechanism, set along the lines of an Optimality Theoretic version of the Minimalist Program, the whole typology of the PCC can be accounted for. These conclusion are then extended to account for Person-Case effects in Germanic languages, where optional movement seems to interact with the PCC. Specifically, I am going to argue that scrambling one object before compulsory Wackernagel movement bleeds the PCC and that the optional DO>IO serialisation therefore represents a strategy to avoid violations of the PCC.

1 Introduction

The Person-Case Constraint (PCC) is a constraint on combinations of phonologically weak objects in ditransitive constructions. Grammaticality vs. ungrammaticality of a combination depends on its person-feature specifications. The PCC has been a strongly debated phenomenon in the generative literature, where very different accounts have been put forward, e.g. representational constraints (Perlmutter, 1971), morphological accounts (among others Bonet, 1991, 1994) and syntactic accounts (among many others Béjar and Rezac, 2003; Anagnostopoulou, 2005; Adger and Harbour, 2007; Nevins, 2007; Richards, 2008).

This paper will follow a syntactic approach and is essentially divided into two main parts: sections 2–4 and sections 5–6. The first part aims to show by means of the *super-strong* version of the Person-Case Constraint that there is a continuum in the typology of the PCC, and thus to account for the full typology as a syntactic rule-interaction effect between Agree and scale-driven Impoverishment. In spite

[1]For valuable comments and suggestions I am grateful to the participants of the syntax colloquium at the University of Leipzig, to the audience of the *Workshop on Interaction of Syntactic Primitives* at the annual DGfS meeting 2013 in Potsdam, and especially to Gereon Müller, Anke Assmann, Doreen Georgi, Andreas Opitz and Philipp Weisser. The research was carried out in the project *Argument Encoding in Morphology and Syntax* as part of the DFG research group 742 *Grammar and Processing of Verbal Arguments*.

of their ability to derive other versions, the super-strong version of the PCC cannot be derived by existing minimalist approaches such as Anagnostopoulou (2005), Adger and Harbour (2007), Richards (2008) or Nevins (2007). These build on the insight that person-case effects arise when two phonologically weak elements are within the same agreement domain, i.e., in the sense of Chomsky (2001), when both goals are subject to the probing of a single head. Within this type of approach, ungrammatical combinations of direct object (DO) and indirect object (IO) result from the lack of resources (or visibility for Nevins) to check the features of both arguments. This type of approach and the insight that it builds on will from here on referred to as *scarcity of resources*. The first part of this paper builds on my recent work in Doliana (2013) and shows how this insight may be rescued once it is relativised to syntactic Impoverishment following from the Harmonic Alignment of markedness scales (cf. Keine and Müller, 2008, 2009; Keine, 2010). With the crucial assumption that the operation Agree is split up into two sub-operations, *Copy* and *Check*, PCC-violations follow in three derivational steps: (i) the person features of the goals are copied and transferred onto the probe by Copy; (ii) Impoverishment applies to the probe in the form of optimality theoretic constraints, which, in certain contexts, trigger deletion of certain features on the probe; (iii) the scarcity of resources caused by Impoverishment bleeds Check, which deletes uninterpretable features under the feature identity of probe and goal, and the derivation crashes. Consequently, the insight of scarcity of resources on the probe will be saved (although relativised to Impoverishment), person-case effects can be linked to Hale/Silverstein hierarchy effects and the full typology of the PCC can be derived without having to assume asymmetries between the representations of 1st/2nd and 3rd person.

The second part of this paper aims to extend the account to Germanic languages, which have weak pronouns rather than clitics or agreement affixes and bring a new dimension to person-case effects: Germanic pronouns may be subject to optional movement leading to different word orders of objects. I am going to argue that the optional DO>IO serialisation of weak objects in Germanic arises from lack of tucking-in when two different movement operations apply, viz. Wackernagel movement and scrambling, and that this represents a strategy to avoid person-case effects similar to the realisation of strong pronouns in Romance.

This paper is divided into seven sections. In section 2 I will summarise the background of the Person-Case Constraint, describe the different versions of it with special focus on the super-strong one and discuss the pros and cons of the approaches to the PCC by Anagnostopoulou (2005), Adger and Harbour (2007) and Haspelmath (2004). In section 3 I will introduce the theoretical background of section 4, where I will propose my general approach to the PCC and show how it derives the full typology of the PCC. In section 5 I will discuss some features of Germanic weak pronouns, present the person-case effects found by Anagnostopoulou (2008), extend the Impoverishment account to capture these new data and show how the workings of scrambling that I am going to argue for can be attested with the Müller-Takano generalisation. In section 6 I will present the findings of an acceptability-rating study on German I have undertaken with Andreas Optitz. In section 7 I will summarise the overall conclusions I have come to in this paper.

2 The Person-Case Constraint

2.1 Background

The Person-Case Constraint, also known as the **me-lui* Constraint, is a restriction on possible combinations of phonologically weak elements. This restriction was first reported for French by Perlmutter (1971). A ditransitive construction is grammatical if the IO is local person (i.e. 1st, 2nd person and reflexive pronouns) and the DO is 3rd person as shown in (1).

(1) On me le montrera.
one 1.DAT 3.ACC show.FUT
'They will show it to me.'[2]

However, the same sentence is ungrammatical if the indirect object is 3rd person and the direct object is local person, cf. (2).

[2]Abbreviations are as follows: NOM (nominative), ACC (accusative), DAT (dative), 1 (1st person), 2 (2nd person), 3 (3rd person), SG (singular), PL (plural), THM (theme), REC (recipient), FUT (future). I will furthermore adopt the notation <x, y>, where x = IO and y = DO.

(2) *On me lui montrera.
one 1.ACC 3.DAT show.FUT
'They will show me to him.'

The PCC was first thoroughly analysed by Bonet (1991, 1994) who noticed the following properties: (i) it applies in a large range of unrelated languages; (ii) it applies only to phonologically *weak* elements, i.e. clitics, agreement affixes and weak pronouns; (iii) it applies only to combinations of phonologically weak elements; (iv) it also applies to combinations where the DO is a reflexive element; (v) it only affects constructions with an external argument.

Apart from the super-strong version of the PCC, two further versions have been identified in the literature so far:[3] the *strong* version and the *weak* version of the PCC. The former disallows local person direct objects in double-object constructions in general, whereas the latter disallows local person direct objects only when the indirect object is 3rd person. Languages exhibiting the strong version of the constraint are, e.g., French, Greek and Kiowa. In (3) the four relevant sentences from French are given as an illustration. The first two sentences with 3rd person DOs are grammatical, the other two with local person DOs are ungrammatical.

(3) *Strong PCC in French*

a. On me l' a montrèe
One to me it has shown
'Someone showed it to me.'

b. On le lui a montrèe
One it to him/to her has shown
'Someone showed it to her/to him.'

c. *On me t' a montrèe
One me/to me to you/you has shown
'Someone showed me to you/you to me.'

d. *On me lui a montrèe
One me to him/to her shown
'Someone showed me to him/to her.'

[3]See Nevins (2007) for more versions of the PCC, which will not be discussed in this paper. Those are versions of the PCC where 1st and 2nd person do not pattern together as local person (*me-first* PCC and *strictly-descending* PCC). But see also Sturgeon et al. (2011) for an approach deriving the strictly-descending PCC as a linearisation effect.

Languages instantiating the weak version of the PCC are, e.g., Italian and Catalan. In (4) the relevant examples are given for Italian. The difference to French is in the grammaticality vs. ungrammaticality of (4-c) and (3-c) respectively. In Italian, local person DOs are ungrammatical only when the IO is 3rd person.

(4) *Weak PCC in Italian*

a. Me l' ha presentato
To me him has introduced
'He introduced him to me.'

b. Gliel' ha presentato
To him/to her him has introduced
'He introduced him to him/her.'

c. Mi ti ha presentato
Me/to me to you/you introduced
'He introduced me to you/you to me.'

d. *Mi gli ha presentato
Me to him shown
'He introduced me to him.'

Other PCC patterns exist. German, for instance, is argued not to exhibit the PCC at all by Cardinaletti (1999) and Haspelmath (2004) (but see Anagnostopoulou (2008) and section 5 of this paper where person-case effects in German and Germanic languages are discussed). A language wich appears not to have been discussed in the literature so far is Hausa, a West-African language. In Hausa, both phonologically weak IOs and DOs exist. However, combinations with both are not allowed. They are only allowed when the DO is phonologically independent/strong, cf. (5-c) vs. (5-d) (data from lecture material by Ari Awagana, University of Leipzig). The feminine 3rd person DO pronoun has the form *ta* with polar tone as a clitic, and *ita* as an independent pronouns.

(5) *PCC in Hausa*

a. Audù yaa kaawoo tà
Audu he brought her
'Audu brought it (e.g. the water).'

b. Audù yaa dafàa makà
Audu he cooked 2.DAT
'Audu cooked for you.'

c. *Audù yaa kaawoo makà ta
Audu he brought 2.DAT her
'Audu brought you it.'

d. Audù yaa kaawoo makà ita
Audu he brought 2.DAT her.STRONG
'Audu brought it to you.'

Finally, the PCC is argued to pattern together with other phenomena constraining certain combinations of person-features or combinations of certain person-features with certain ϕ-features. On the one hand the PCC is argued to have the same syntactic origin as Dat-Nom constructions in Icelandic (Anagnostopoulou, 2005), case syncretism in Kiowa and French (Adger and Harbour, 2007), defective Agree in Russian (Richards, 2008) or limited plural agreement in Pazar Laz (Blix, 2012). On the other hand it is argued by Haspelmath (2004, 2011) to be a reflex of Hale/Silverstein hierarchies (Hale, 1972; Silverstein, 1976), whose effects can best be seen in inverse systems and limited plural marking.

2.2 The super-strong PCC

Haspelmath (2004) introduces the super-strong version of the PCC, found in the Malayo-Polynesian language Kambera. The following data from Klamer (1997: 903-904) show that in Kambera ditransitive constructions only the configuration <1/2, 3> is allowed. Thus, in addition to the combinations prohibited in the strong PCC, the super-strong version also prohibits <3, 3> combinations as can be seen in (6-c).

(6) a. Na-wua-ngga-nya
3SG.AG-give-1SG.REC-3SG.THM
'He gives it to me.' – ✓ <1, 3>

b. Na-wua-nggau-nja
3SG.AG-give-2SG.REC-3PL.THM
'He gives them to you.' – ✓ <2, 3>

IO	DO	Hausa	super-strong	strong	weak	German
1/2	3	✗	✓	✓	✓	✓
3	3	✗	✗	✓	✓	✓
1/2	1/2	✗	✗	✗	✓	✓
3	1/2	✗	✗	✗	✗	✓

Table 1: Typology of the Person-Case Constraint

c. *Na-wua-nja-nya
3SG.AG-give-3PL.REC-3SG.THM
'He gives it to them.' – *<3, 3>

d. *Na-wua-ngga-nggau
3SG.AG-give-1SG.REC-2SG.THM
'He gives you to me.' – *<loc, loc>

In ditransitive constructions in Kambera only combinations of local person indirect objects with 3rd person direct objects are allowed[4].

Including the super-strong version and maybe language types such as German and Hausa, we see that there is a continuum within the typology of the PCC. This can be seen in table 1 and complicates the phenomenon, as it can no longer be analysed as a constraint against a certain person-feature in a certain context. Hence, unless one treats these other languages as epiphenomena of further constraints, one must analyse the PCC as a continuum. This is why the minimalist accounts I have cited cannot derive the super-strong version of the PCC (or a zero version as in German). Nonetheless, I would like to contend that their ideas offered fundamental insight that should be maintained. Therefore, these approaches will be the basis of a new account which comprises the idea of scarcity of resources, Optimality Theoretical modelling of scales and a rule-interaction effect with Agree.

[4]It may be worth noticing that in ditransitive constructions in Kambera both the objects bear the dative case (cf. Georgi 2007 for a detailed analysis of argument encoding in Kambera). Furthermore, the super-strong PCC has so far only been found in Kambera.

2.3 Existing approaches

2.3.1 Scarcity of resources

Anagnostopoulou (2005) proposes scarcity of syntactic resources as the trigger for the PCC. In general this means that there is a "two arguments against one head situation". More precisely, this approach consists of one functional head (viz. little *v*) entering Agree with both objects, but having only one set of ϕ-features to give them, which means that only one argument can have its full set of ϕ-features (viz. its person-feature) checked. The indirect object, being closer (in terms of c-command) to the functional head, undergoes Agree first and gets its person-feature checked. All that is left for the direct object to agree with is number, since Anagnostopoulou assumes that the indirect object does not undergo Agree for number. Crucially, Anagnostopoulou makes another assumption. As can be seen in (7),[5] the person-feature system she assumes bears an asymmetry. 1st and 2nd person are always specified for their person-features, whereas 3rd person can be optionally underspecified.

(7) 1: [+Author, +Participant]
2: [–Author, +Participant]
3: [–Participant]; [ ]

Anagnostopoulou justifies this asymmetry with "contextual salience". 3rd person can be underspecified when not salient, but is required to be specified for person when salient. Thus in ditransitive constructions 3rd person indirect objects, being salient, are always specified for person, whereas 3rd person direct objects can be underspecified. The strong version of the PCC follows because whenever the probe enters Agree with its goals, it first checks the person-feature on the indirect object, leaving only number for the direct object. Local person direct objects are ruled out because they necessarily have a person-feature. Since it cannot be checked, double-object combinations with a local direct object lead to a crash in the derivation. Languages with the weak version of the PCC are argued to have an optional Multiple Agree mechanism, which allows the probe to check the person-

[5] [Participant] stands for discourse participant. [+Part] is thus local person and [–Part] 3rd person. [Author] stands for author or narrator. [+Auth] means 1st person, [–Auth] 2nd and 3rd.

features of the two goals simultaneously. If the two features are identical (e.g. [+Part] and [+Part]; [Auth] plays no role here) the derivation converges and <loc, loc> configurations are saved. The super-strong version of the PCC, however, cannot be accounted for: both objects would either need to be specified or underspecified for [Part] in order to derive the ungrammaticality of <3, 3>, not being able to check the person-feature on the direct object or leaving an uninterpretable person-feature on the probe. This is ruled out by the fact that the two objects cannot both be salient to the same degree, resulting in different feature specifications.

2.3.2 Domain-specific restrictions

In Adger and Harbour (2007) the PCC also arises from a "two arguments against one head situation", but the system proposed is slightly different. The two phonologically weak objects merge with an Appl-head:[6] the direct object as its complement and the indirect object as its specifier. In addition, the Appl-head has the ability to ban a feature in its complement domain and to require the same feature in its specifier, the value of the feature being irrelevant. Adger and Harbour assume the same person-feature system as Anagnostopoulou in (7). They motivate it with observations on case syncretisms. The strong version of the PCC follows if the feature banned and required by the Appl-head is [±Part]. The 3rd person can be both direct or indirect object as it can be underspecified for [Part] and escape the ban when being the complement, and be specified for [Part] and fulfil the requirement when it is the specifier. Local person, though, can only be the indirect object as it has to be specified for [Part] and can never escape the ban on its feature in the complement domain. The weak version of the PCC is not considered in Adger and Harbour's approach because there seems to bee too much variance between regions and speakers as to which combinations of <local, local> are allowed.[7] The following points remain unclear: how the ban and requirement are modelled on the head, which features can be banned and required and what

[6] Appl stands for applicative in the sense of Pylkkänen (2002).

[7] Interestingly, the super-strong version of the PCC, which is also not taken into consideration in their paper, could possibly be derived in their system. If the feature banned and required by the Appl-head were [Author], the only grammatical combination would be <loc, 3>. However, this only holds if 3rd person could not bear the feature [Author] at all, a point which remains unclear in their appendix to the person-feature specifications.

lies behind the asymmetry between [Participant] and [Empathy], both entailing semantic animacy, but only [Part] being responsible for the PCC.

2.3.3 Markedness scales

Haspelmath (2004) is a diachronic, frequency-based approach to the PCC. The focus does not lie on combinations of person and case, but on combinations of person and semantic roles; although this difference is irrelevant for what follows. Haspelmath argues for a grammaticalisation effect, where over time only the more frequent structures are grammaticalised. In this case only the more frequent pronoun-combinations are grammaticalised into clitic-combinations, whereas their less frequent counterparts are not and are hence ungrammatical as clitics. The frequency of the pronoun-combinations is related to Silverstein/markedness scales: indirect objects (or recipients) tend to be 1st or 2nd person and direct objects (or themes) tend to be 3rd person. The unmarked combination in double object constructions is therefore <loc, 3>, which is allowed in almost all languages exhibiting the PCC. The most marked combination, on the other hand, is <3, loc>, which is forbidden in almost all languages obeying the PCC. Although it does not aim to explain how the PCC works in synchronic grammars and can therefore give no answer to that question, this approach succeeds in motivating the existence of the super-strong, strong and weak versions of the PCC. It also predicts a fourth logical version of the PCC, disallowing <3, 3> and <3, loc>, which, however, has not been attested in any language so far, to the best of my knowledge.

3 Theoretical Background

3.1 Impoverishment

Impoverishment (Halle and Marantz, 1993; Noyer, 1998; Keine and Müller, 2008, 2009; Keine, 2010; Bank, Sappir, and Trommer, 2012) is a post-syntactic feature-deletion operation. It was first introduced within the framework of Distributed Morphology (DM, Halle and Marantz, 1993), where it has the form of transformational rules and deletes certain features in certain contexts. DM operates under

the assumptions of the *Subset Principle* and *Specificity*.[8] The former states that a vocabulary item V_1 is inserted in a functional head F when its features form a subset of the functional head's features and V_1 is more specific than any other compatible vocabulary item V_i. The latter standardly states that a vocabulary item V_1 is more specific than a vocabulary item V_2 iff V_1 has more features than V_2. Thus, whenever Impoverishment applies, deleting certain features, a vocabulary item, otherwise the most specific, may no longer fit, giving room for the insertion of a less specific exponent. A typical example of Impoverishment, shown in (8), is the deletion of the feature [+object] in the context of singular neuter nouns in several Indo-European languages such as German. This leads to a syncretism between the nominative and the accusative case on singular neuter nouns because the distinctive feature [+object] is deleted.

(8) /[+obj]/ $\rightarrow \emptyset$ / [–mask, –fem, –pl]

In the approach to be developed here, however, I will follow Keine and Müller (2008, 2009) and Keine (2010), who, building on the work by Aissen (1999, 2003), developed a more restrictive theory of Impoverishment, ultimately driven by ranked and violable constraints in an Optimality Theoretic fashion. In this approach faithfulness constraints penalising featural changes (viz. deletion) compete with markedness constraints penalising the presence of certain features (hence demanding deletion). Consequently, the ranking between these two types of constraints determines whether or not Impoverishment applies. This is achieved in Keine and Müller (2008, 2009), who posit Harmonic Alignment of markedness scales at its base. Finally, Keine (2010) takes Impoverishment to apply in syntax, allowing it to interact freely with other syntactic operations such as Agree. Since these two assumptions play a major role in the following approach to the PCC, I shall explain briefly the mechanisms involved and give their theoretical background.

[8] It also operates under the assumptions of *Late Insertion*, i.e. the morphological exponents are inserted after all syntactic processes have terminated, and *Syntactic Hierarchical Structure all the Way Down*, i.e. syntactic hierarchical structure does not stop at the word level, but rather goes down all the way to morphemes.

3.2 Optimality Theory and Harmonic Alignment of Scales

Optimality Theory (OT) was originally introduced as a phonological framework by Prince and Smolensky (1993, 2004). Since then it has also been adopted in syntactic analyses (cf. Kiparsky, 1999; Wunderlich, 2000; Stiebels and Wunderlich, 2000; Stiebels, 2002; Lee, 2003). The main idea of OT is that grammatical constraints are *ranked*, *violable* and *universal*. Consequently, not satisfying a constraint does not strictly lead to ungrammaticality. Rather, it is the competition between different potential outputs that gives linguistic expressions grammatical status: an output is well-formed if it is optimal with respect to a given constraint ranking, i.e. it fares better than all its competitors. Whether an output *A* fares better than its competitor output *B*, depends on their constraint profiles. Output *A* has a better constraint profile if it violates a given constraint less often than its competitor and there is no higher ranked constraint which *A* violates, but *B* doesn't. This is important because constraints in OT are ranked strictly, which means that an output becomes suboptimal (and therefore ungrammatical) as soon as it violates a higher ranked constraint more often than another output, regardless of their relative violations of lower ranked constraints.

Moreover, within the framework of OT, two mechanisms to model hierarchical scales were given by Prince and Smolensky (Prince and Smolensky, 2004; Smolensky, 1993, 1995, 2006): *Harmonic Alignment* and *Local Conjunction*.

Harmonic alignment was first introduced to model sonority hierarchies in Phonology, but was also soon used to model Hale/Silverstein scales, too (cf. Aissen, 1999, 2003). The two mechanisms are defined in (9) and (10). Basically, the first element of a binary scale is aligned with the elements of another scale, starting from the edge with which it is best associated. Then the same is done for the second element of the binary scale, starting from the opposite edge. Two harmonically aligned scales result, with the most harmonic combination at its left edge and progressively less harmonic combinations towards the right edge. Furthermore, constraints can be gained from these scales by prohibiting the inverse order of the Harmonic-alignment scales.

(9) *Harmonic alignment* (Prince and Smolensky, 2004: 161)
Suppose given a binary dimension D_1 with the scale X > Y on its elements

{X,Y}, and another dimension D2 with a scale a > b > ... > z on its elements {a,b,...,z}. The *harmonic alignment* of D_1 and $D_2$is the pair of Harmony scales H_X, H_Y:

a. H_X: X/a $\succ$ X/b $\succ$ ... $\succ$ X/z
b. H_Y: Y/z $\succ$ ... $\succ$ Y/b $\succ$ Y/a

The *constraint alignment* is the pair of the following constraint hierarchies C_X, C_Y:

(10) a. *X/z $\gg$ ... $\gg$ *X/b $\gg$ *X/a
b. *Y/a $\gg$ *Y/b $\gg$ ... $\gg$ *Y/z

Local conjunction, on the other hand, is the creation of a new constraint, made up of the combination of two existing constraints. The new constraint is violated whenever both of the constraints which it comprises are violated within a given domain. Furthermore, it is inherently ranked higher than its combined parts.

(11) *Local conjunction* (Smolensky, 1995: 4)
The local conjunction of C_1 and C_2 in domain D, C_1 & C_2, is violated when there is some domain of type D in which both C_1 and C_2 are violated.

Universally, the local conjunction of two constraints C_1 and C_2 outranks the individual constraints C_1 and C_2; in other words: C_1 & $C_2 \gg C_1, C_2$.

3.3 Agree

The present approach is couched within the framework of an optimality-theoretic version of the *Minimalist Program* (Chomsky, 2000; Adger, 2003; Heck and Müller, 2007) with realisational morphology. Agree is – along with Merge – one of the two structure-building operations of the framework. The operation Agree checks features under c-command, allowing the deletion of uninterpretable features and thus preventing a crash of the derivation. When certain features are involved – such as e.g. ϕ, case or tense – checking happens by *valuation*. The interpretable ϕ-features of the c-commanded element (goal) are copied and trans-

ferred to the functional head (probe) yielding the corresponding uninterpretable feature. The probe is valued by the transferred copy and its uninterpretable feature may delete once it has been checked.

In accordance with much recent work, where Agree (cf. Di Sciullo and Isac, 2003; Arregi and Nevins, 2012; Bhatt and Walkow, t.a.; Bobaljik, 2008), Move (cf. Chomsky, 1995, 2000), or syntactic operations in general (cf. Hornstein, 2009) are decomposed into more fine-grained operations, I will split Agree into the two sub-operations Copy and Check. The former copies and transfers the goal's features onto the probe (and thus values it), the latter checks uninterpretable features under feature identity of probe and goal. This is necessary for Impoverishment to apply between the valuation (copying) and the checking of the probe, which is the key assumption of the new approach.

4 New Approach

4.1 Assumptions

Within this new approach I will make the following assumptions.

[A1] Clitics are the direct spell-out of agreement between a verb and its argument(s) (Borer, 1984).

[A2] There is only one probe entering Agree with both phonologically weak elements in ditransitive constructions. The probe is made up of an ordered tuple of uninterpretable feature bundles (viz. <[uϕ], [uϕ]>) that need valuation and checking by entering Agree with two elements providing interpretable features. The ordered tuple is valued in an order related to c-command closeness, thus, roughly speaking, resulting in the form <IO, DO>. This is more or less as in Anagnostopoulou (2005).

[A3] 3rd person is always fully specified (Nevins, 2007).

[A4] Impoverishment applies in syntax and is thus able to interact with operations such as Agree (Keine, 2010).

[A5] Impoverishment is scale-driven: markedness constraints penalising less likely feature-combinations interact in an optimality-theoretic fashion with a faithfulness constraint penalising the deletion of the features involved (Keine and Müller, 2008, 2009; Keine, 2010).

[A6] Impoverishment may target probes just as it may target goals.

[A7] Optimisation happens in a strictly derivational fashion (so-called "extremely local optimization"; Müller 2004, 2009; Heck and Müller 2007), only ever targeting one derivational step at a time. The step optimised in the present approach occurs between the applications of Copy and Check.

[A8] Crucially, Agree is made up of two sub-operations, cf. (12).

(12) *Agree*

Agree is a process containing the following operations.

a. Copy: The operation copying and transferring the goal's features onto the probe.

b. Check: The operation deleting uninterpretable features under feature identity.

They apply in the only logical order Copy > Check.

4.2 Impoverishment of the probe

The feature combinations interacting in the PCC are Case and Person. I further follow Bierwisch (1967) in assuming that cases are decomposed in binary features, e.g.: Nominative [–obl(ique), –obj(ect)]; Accusative [–obl, +obj]; Dative [+obl, +obj]; Genitive [+obl, –obj]. The decomposition of person is also possible, but not necessary for this account as only cases of the PCC that make a distinction between local and 3rd person are considered. The relevant scales are thus the case-feature scale in (13) and the person scale in (14), which will be the basis of the constraints at work. The first scale shows that [+obl]-arguments are more prominent than [–obl]-arguments. The second scale shows that 1st and 2nd person – patterning together as local person – are more prominent than 3rd person.

(13) *Case-feature scale*

[+oblique] > [–oblique][9]

(14) *Person scale*

$\underbrace{\text{1st person} > \text{2nd person}}_{\text{local person}} > \text{3rd person}$

These two scales are combined by harmonic alignment to give rise to the harmony scales in (15-a) and (15-b).The more harmonic (viz. less marked) combinations are on the left edge of the scales, whereas the less harmonic (viz. more marked) combinations are on the right edge. The OT constraints following from the prohibition against the reversed order of the harmonic scales in (15) can be seen in (16). The prohibition against less harmonic combinations is ranked higher, which in OT means that it is more difficult to violate in a well-formed output.

(15) *Harmony scales*

a. [+oblique]/local $\succ$ [+oblique]/3

b. [–oblique]/3 $\succ$ [–oblique]/local

(16) *Constraint alignment*

a. *[+oblique]/3 $\gg$ *[+oblique]/local

b. *[–oblique]/local $\gg$ *[–oblique]/3

As the PCC applies only to combinations, both the indirect and the direct object are relevant for triggering Impoverishment and the rankings in (16) have to be combined. This is achieved by local conjunction in (17). Recall that as defined in (11), local conjunction of two constraints C_1 and C_2 is violated whenever both constraints are violated within a given domain (by assumption the syntactic head, i.e. the probe).

(17) *Local conjunction*

a. *[+obl]/3_p & *[–obl]/loc_p $\gg$ *[+obl]/3_p & *[–obl]/3_p

[9]As noted in footnote 4, ditransitive constructions in Kambera actually have dative case for both objects. Therefore [–obl] does actually not apply to a dative-case object, as it bears [+obl]. This could however simply be a morphological effect. The case relevant here is the syntactically assigned case, not its morpho-phonological realisation.

a. *[+obl]/3_p & *[–obl]/loc_p

b. *[+obl]/3_p & *[–obl]/3_p c. *[+obl]/loc_p & *[–obl]/loc_p

d. *[+obl]/loc_p & *[–obl]/3_p

Figure 1: Inherent ranking of markedness constraints

b. *[+obl]/loc_p & *[–obl]/loc_p ≫ *[+obl]/loc_p & *[–obl]/3_p
c. *[–obl]/loc_p & *[+obl]/3_p ≫ *[–obl]/loc_p & *[+obl]/$local_p$
d. *[–obl]/3_p & *[+obl]/3_p ≫ *[–obl]/3_p & *[+obl]/loc_p

For example, the first constraint in (17-a) is violated if both a 3rd person with [+obl] case and a local person with [-obl] are present in the relevant domain. This will be the case if the two objects trigger Agreement on the same verbal head, justifying the assumption that the relevant domain of the locally conjoined constraints in (17) is the probe. Furthermore, the rankings in (17) correspond to markedness in terms of Hale/Silverstein hierarchies: *[+obl]/3_p & *[–obl]/loc_p is ranked higher than *[+obl]/3_p & *[–obl]/3_p as local person direct objects are less canonical than 3rd person direct objects. This can be shown graphically as in figure 1.

Since Impoverishment arises from the interaction of markedness and faithfulness constraints, I am going to introduce a faithfulness constraint – MAX – penalising deletion. More precisely, the faithfulness constraint will be relativised to the relevant feature and domain to avoid false predictions. The relevant feature is π and the relevant domain is the probe. The result is a constraint that penalises deletion of π-features on probes, cf. (18).

(18) MAX-π_{probe}
Penalise deletion of π-features on probes.

The relative ranking of this faithfulness constraint and the markedness constraints determines whether a certain feature combination is deleted or not. It also gives rise to the different versions of the PCC, as will be demonstrated in section 4.3.

4.3 Derivation of the PCC

Within the present approach, the PCC is accounted for by scale-driven Impoverishment causing scarcity of resources on the probe and consequent bleeding of Check. I will illustrate this with one grammatical and one ungrammatical example of each version of the PCC. Generally, the derivation may unfold into two different directions, as I will demonstrate on the two abstract examples in (19) and (20). The first example shows why certain phonologically weak object combinations lead to a crash of the derivation; the second why, on the contrary, others lead to grammaticality.

Crash: In any case, the first step of the derivation is the copying of the goal's interpretable features onto the probe. This is triggered by the uninterpretable feature on the probe, which may only be deleted by Check if the feature identity between the probe and its goals was established. The result of the copying is a valued probe with an uninterpretable feature yet to be checked, (19-a→b). The copying of certain features onto the probe may then feed Impoverishment.[10] Impoverishment of the copied features on the probe applies whenever the markedness constraint that penalises a given feature combination on the probe is ranked higher than the faithfulness constraint protecting the probe from feature deletion. This can be seen abstractly in the tableau in (19). Whenever this is the case, the copied features are deleted and the derivation continues with an empty probe. As a consequence, Check is bled, because the feature identity between the probe and its goals cannot be established. Since Check is bled, it can no longer delete the uninterpretable feature on the probe, which leads to a crash of the derivation, cf. (19-c→d).

(19) a. [$_{v}$ [uPers: <□, □>]] [$_{IO}$ [Pers: x]] [$_{DO}$ [Pers: y]] COPY →

b. [$_{v}$ [uPers: <x, y>]] [$_{IO}$ [Pers: x]] [$_{DO}$ [Pers: y]] impov. fed →

	[$_{v}$ [uPers: <x, y>]]	*<x, y>$_{p}$	MAX-π_{p}
	[$_{v}$ [uPers: <x, y>]]	*!	
☞	[$_{v}$ [uPers: < , >]]		*

[10]Feeding, bleeding, counter-feeding and counter-bleeding are all understood as in the sense of Kiparsky (1973).

c. $[_v$ [**uPers**: < , >]] $[_{IO}$ [Pers: x]] $[_{DO}$ [Pers: y]] CHECK bled →

d. Ungrammaticality

Convergence: On the other hand, if the faithfulness constraint is ranked higher than the markedness constraint, Impoverishment is not triggered. As a result, the probe maintains its valued features, cf. the tableau in (20). This has the consequence that Check may apply, because the feature identity between the probe and its goals can be established, cf. (20-c). Hence, Check deletes the uninterpretable feature on the probe and the derivation converges, cf. (20-c→d).

(20) a. $[_v$ [uPers: <□, □>]] $[_{IO}$ [Pers: x]] $[_{DO}$ [Pers: y]] COPY →

b. $[_v$ [uPers: <x, y>]] $[_{IO}$ [Pers: x]] $[_{DO}$ [Pers: y]] impov. bled →

	$[_v$ [uPers: <x, y>]]	MAX-π_p	*<x, y>$_p$
☞	$[_v$ [uPers: <x, y>]]		*
	$[_v$ [uPers: < , >]]	*!	

c. $[_v$ [~~**uPers**~~: <x, y>]] $[_{IO}$ [Pers: x]] $[_{DO}$ [Pers: y]] CHECK fed →

d. Grammaticality

4.3.1 The super-strong version of the PCC

The ranking specific to languages instantiating the super-strong version is the one in (21) (where *<x, y>$_d$ stands for *[+obl]/x$_p$ & *[–obl]/y$_p$). The faithfulness constraint is ranked lower than the markedness constraints penalising the ungrammatical combinations, but higher than the markedness constraint penalising the grammatical combination <loc, 3>.

(21) *Super-strong PCC Impoverishment ranking*

*<3, loc>$_p$ ≫ *<loc, loc>$_p$ ≫ *<3, 3>$_p$ ≫ **MAX-π_p** ≫ *<loc, 3>$_p$

The derivation unfolds as previously described. In the first case, the markedness constraint prohibiting the combination involved is ranked higher than the faithfulness constraint. This triggers deletion because the empty probe is optimal – as shown by the pointing finger in front of the optimal candidate and the exclamation mark signalling that the competitor's violation was fatal. As a consequence, the

feature identity of goal and probe cannot be established and Check is bled, leading to ungrammaticality.

(22) *Deriving *<3, 3>*:

a. [$_v$ [uPers: <□, □>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: 3]] COPY →

b. [$_v$ [uPers: <3, 3>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: 3]] impov. fed →

	[$_v$ [uPers: <3, 3>]]	*<3, loc>$_p$	*<loc, loc>$_p$	*<3, 3>$_p$	MAX-π_p	*<loc, 3>$_p$
	[$_v$ [uPers: <3, 3>]]			*!		
☞	[$_v$ [uPers: < , >]]				*	

c. [$_v$ [**uPers**: < , >]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: 3]] CHECK bled →

d. Ungrammaticality

In the second case, the copying of the feature combination <loc, 3> does not lead to their deletion, because the faithfulness constraint MAX-π_p is ranked higher than the markedness constraint *<loc, 3>$_p$. Therefore, the output with the full probe is optimal, which means that Check may apply and that the derivation will converge.

(23) *Deriving ✓<loc, 3>*:

a. [$_v$ [uPers: <□, □>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: 3]] COPY →

b. [$_v$ [uPers: <loc, 3>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: 3]] impov. bled →

	[$_v$ [uPers: <loc, 3>]]	*<3, loc>$_p$	*<loc, loc>$_p$	*<3, 3>$_p$	MAX-π_p	*<loc, 3>$_p$
☞	[$_v$ [uPers: <loc, 3>]]					*
	[$_v$ [uPers: < , >]]				*!	

c. [$_v$ [~~**uPers**~~: < loc, 3>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: 3]] CHECK fed →

d. Grammaticality

4.3.2 The strong version of the PCC

The ranking specific to languages obeying the strong version of the PCC is the one in (24): the faithfulness constraint is ranked lower than the markedness constraints

penalising the ungrammatical combinations, but higher than those penalising the grammatical combinations.

(24) *Strong PCC Impoverishment ranking*
*<3, loc>$_p$ ≫ *<loc, loc>$_p$ ≫ **MAX-π_p** ≫ *<3, 3>$_p$ ≫ *<loc, 3>$_p$

The derivation of the strong verion of the PCC behaves just like the previous one. The first example shows how <loc, loc> combinations are ruled out; the second how <3, 3> combinations can emerge as grammatical.

(25) *Deriving *<loc, loc>*:

a. [$_v$ [uPers: <□, □>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: loc]] COPY →

b. [$_v$ [uPers: <loc, loc>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: loc]] impov. fed →

	[$_v$ [uPers: <loc, loc>]]	*<3, loc>$_p$	*<loc, loc>$_p$	MAX-π_p	*<3, 3>$_p$	*<loc, 3>$_p$
	[$_v$ [uPers: <loc, loc>]]		*!			
☞	[$_v$ [uPers: < , >]]			*		

c. [$_v$ [**uPers**: < , >]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: loc]] CHECK bled →

d. Ungrammaticality

(26) *Deriving ✓<3, 3>*:

a. [$_v$ [uPers: <□, □>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: 3]] COPY →

b. [$_v$ [uPers: <3, 3>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: 3]] impov. bled →

	[$_v$ [uPers: <3, 3>]]	*<3, loc>$_p$	*<loc, loc>$_p$	MAX-π_p	*<3, 3>$_p$	*<loc, 3>$_p$
☞	[$_v$ [uPers: <3, 3>]]				*	
	[$_v$ [uPers: < , >]]			*!		

c. [$_v$ [~~**uPers**~~: < 3, 3>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: 3]] CHECK fed →

d. Grammaticality

4.3.3 The weak version of the PCC

The ranking specific to languages exhibiting the weak version of the PCC is the ranking in (27). Once more, the faithfulness constraint is ranked higher than the

constraints against the grammatical combinations <loc, 3>, <3, 3> and <loc, loc>, and lower than the constraint against the only ungrammatical combination <3, loc>.

(27) *Weak PCC Impoverishment ranking*

*<3, loc>$_p$ ≫ **MAX-π_p** ≫ *<loc, loc>$_p$ ≫ *<3, 3>$_p$ ≫ *<loc, 3>$_p$

The derivation of the weak version of the PCC unfolds as in the other versions. In the first case, the copying of features onto the probe leads to their deletion, to a bleeding of Check and thus to ungrammaticality. In the second case, the markedness constraint prohibiting the combination involved is ranked lower than the faithfulness constraint: deletion by Impoverishment is avoided and Check may apply, leading to grammaticality.

(28) *Deriving *<3, loc>*:

a. [$_v$ [uPers: <□, □>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: loc]] COPY →

b. [$_v$ [uPers: <3, loc>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: loc]] impov. fed →

	[$_v$ [uPers: <3, loc>]]	*<3, loc>$_p$	MAX-π_p	*<loc, loc>$_p$	*<3, 3>$_p$	*<loc, 3>$_p$
	[$_v$ [uPers: <3, loc>]]	*!				
☞	[$_v$ [uPers: < , >]]		*			

c. [$_v$ [**uPers**: < , >]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: loc]] CHECK bled →

d. Ungrammaticality

(29) *Deriving ✓<loc, loc>*:

a. [$_v$ [uPers: <□, □>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: loc]] COPY →

b. [$_v$ [uPers: <loc, loc>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: loc]] impov. bled →

	[$_v$ [uPers: <loc, loc>]]	*<3, loc>$_p$	MAX-π_p	*<loc, loc>$_p$	*<3, 3>$_p$	*<loc, 3>$_p$
☞	[$_v$ [uPers: <loc, loc>]]			*		
	[$_v$ [uPers: < , >]]		*!			

c. [$_v$ [~~**uPers**~~: < loc, loc>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: loc]] CHECK fed →

d. Grammaticality

4.4 Rule interaction

As shown in the previous subsection, the derivation can take paths:

1. The features copied onto the probe are penalised by a constraint ranked higher than the faithfulness constraint. The context for feeding impoverishment is given because the output with the empty probe is optimal. As a consequence Check is bled, leading to ungrammaticality.

2. The features copied onto the probe are penalised by a constraint ranked lower than the faithfulness constraint. The context for feeding impoverishment is not given and the output with the full probe is optimal. As a consequence Check is fed, leading to grammaticality.

As a consequence, the following two general patterns in (30) emerge.

(30) *Consequent ordering of processes and interaction*

a. Copy —feeds → deletion —bleeds → Check ⟹ ✗

b. Copy —feeds → Check ⟹ ✓

Moreover, the ordering of the three operations adopted so far (Copy > Impoverishment > Check) is the only logical one if person-case effects are to be explained this way. In fact, if the rule ordering were different – and Agree must be split for this ordering to be possible – no person-case effects would follow. Since there is only one logical ordering of Copy and Check, there are two further possible orderings: (31-b) and (31-c).

(31) *Possible rule orderings*

a. Copy > Impoverishment > Check

b. Impoverishment > Copy > Check

c. Copy > Check > Impoverishment

If (31-b) holds, Impoverishment will never take place. In fact, the probe would still be empty as Copy has not applied yet, meaning that the context for Impoverishment to apply is not given yet. This would create an opaque case of rule interaction: at the surface structure we would ask ourselves why the derivation

converged in spite of the possible deletion by Impoverishment; why Impoverishment was not triggered by what appears to be a suitable context in the surface structure. The answer would be that Impoverishment may only apply at a point where the context is not given yet: a classic case of counter-feeding. Furthermore, exactly the same logic is applicable to the interaction between Impoverishment and Check. Since Impoverishment may only apply at a point where there are no features on the probe, nothing can be deleted, and with no deletion Check will never be bled. Therefore, with the rule ordering of (31-b) we have counter-feeding between Impoverishment and Copy, and counter-bleeding between Impoverishment and Check, causing no person-case effects at all.

If (31-c) holds, Impoverishment will behave just as in the rule ordering I assume for all well-formed cases in (31-a): there is no opaque interaction between Copy and Impoverishment. However, Check can no longer be bled by Impoverishment because it may only apply too late. This is a case of counter-bleeding between Impoverishment and Check and their interaction is thus opaque. In fact, the features on the probe may be deleted in certain contexts and the derivation would still converge – with the consequences for the morphology or semantics interfaces remaining unclear. Still, no person-case effects would follow. The rule-interaction effects resulting from these two different rule orderings can be shown graphically as in (32-a) and (32-b) respectively.

(32) a. *Rule interaction under ordering Impoverishment > Copy > Check*

Impoverishment

counter-feeding

Copy *counter-bleeding*

feeding

Check

b. *Rule interaction under ordering Copy > Check > Impoverishment:*

Copy

feeding

feeding Check

counter-bleeding

Impoverishment

In sum, I tried to show here that, out of the three possible rule orderings of Copy, Check and Impoverishment, only one leads to a successful application of Impoverishment: only in that rule ordering can Impoverishment differentiate between the ungrammatical and the grammatical combinations of agreeing objects in the languages obeying the PCC. On the contrary, in the other two orderings, and especially the one in (32-a), Impoverishment does not seem to serve any purpose. This is why I exclude those two rule orderings from playing a role in person-case effects. However, I do not exclude their existence completely, as Impoverishment might show further interactions with other operations. This may well give sense to a rule ordering such as in (32-a). In conclusion, in the case of languages exhibiting the PCC, Impoverishment must apply as soon as it can, i.e. just after Copy. In fact, this is necessary for Impoverishment to bleed Check in the right contexts and differentiate between grammatical and ungrammatical Person-Case combinations.

4.5 Consequences

Positing scale-driven Impoverishment at the basis of the PCC has the consequence that the constraint typology of Impoverishment automatically and restrictively determines the typology of the PCC as well, cf. (33). Therefore, all existing PCC language types are accounted for, with a mechanism able to derive other ϕ-feature sensitive phenomena (cf. Keine, 2010). However, three novel versions of the PCC arise: these might be called the giga version in (33-a), the other-strong version in (33-d) and the zero version in (33-f). A language instantiating the giga version would have an absolute prohibition against double-object constructions with two phonologically weak elements. Hausa and, as pointed out to me by Thomas Graf (p.c.), Cairene Arabic (Shlonsky, 1997: 207) are two languages of that kind.[11] A language with the zero version is one allowing any combination, such as German. A language with the other-strong version would be one that prohibits only the phonologically weak combinations <3, 3> and <3, loc>. Given the present assumptions, this version has to be treated as an accidental gap, as no language

[11] See also Graf (2012) for an algebraic account for the PCC, also expecting a giga version to exist.

with that pattern has been attested so far, unless Spanish might be identified as an other-strong language with further research. In fact, <3, 3> combinations in Spanish are only grammatical if the IO is expressed by the reflexive clitic *se* – also known as the *spurious se*. As mentioned in the background section, reflexive elements pattern together with local person. The <se, 3> combination could thus also be analysed as a repair strategy to avoid the combination *<3, 3> by replacing it with a <loc, 3> combination of the same meaning. If this were the case, Spanish would fit the other-strong version of the PCC for those speakers who allow <loc, loc> combinations. All in all, the following typology is predicted:

(33) *Rankings*

a. Giga version of the PCC: (Hausa, Cairene Arabic)
*<3, loc>$_p$ ≫ *<loc, loc>$_p$ ≫ *<3, 3>$_p$ ≫ *<loc, 3>$_p$ ≫ **MAX-π_p**

b. Super-strong version of the PCC: (Kambera)
*<3, loc>$_p$ ≫ *<loc, loc>$_p$ ≫ *<3, 3>$_p$ ≫ **MAX-π_p** ≫ *<loc, 3>$_p$

c. Strong version of the PCC: (French, Greek, Kiowa)
*<3, loc>$_p$ ≫ *<loc, loc>$_p$ ≫ **MAX-π_p** ≫ *<3, 3>$_p$ ≫ *<loc, 3>$_p$

d. Other-strong version of the PCC: (Spanish?)
*<3, loc>$_p$ ≫ *<3, 3>$_p$ ≫ **MAX-π_p** ≫ *<loc, loc>$_p$ ≫ *<loc, 3>$_p$

e. Weak version of the PCC: (Italian, Catalan, Old Occitan)
*<3, loc>$_p$ ≫ **MAX-π_p** ≫ *<loc, loc>$_p$ ≫ *<3, 3>$_p$ ≫ *<loc, 3>$_p$

f. Zero version of the PCC: (German, Dutch)
MAX-π_p ≫ *<3, loc>$_p$ ≫ *<3, 3>$_p$ ≫ *<loc, loc>$_p$ ≫ *<loc, 3>$_p$

Furthermore, the analysis may be extended to capture PCC effects involving other ϕ-features, such as gender, animacy and number. In Italian both a masculine and a feminine 3rd person dative clitic exist. However, only the masculine one is grammatical in a clitic cluster (✓<3[–fem, +obl], 3[–obl]>; *<3[+fem, +obl], 3[–obl]>); in the Leísta dialects in Spanish the combination <loc, 3> is generally grammatical, unless the DO is animate (*<loc, 3[+animate]>, where 3[+anim, –obl] is syncretic with 3[+obl]).

4.6 Conclusion

So far I have shown in this section that the scarcity-of-resources approaches can be extended to capture not only the super-strong version but the full typology of the PCC by splitting Agree into Copy and Check and letting them interact with scale-driven Impoverishment. This has the consequences that (i) the Person-Case Constraint can be linked to the Hale/Silverstein scales as they are the trigger of Impoverishment; (ii) no asymmetry between the representations of 3rd and local person is needed, meaning that 3rd person is always specified in syntax avoiding complications for morphology; (iii) Agree, split into Copy and Check, can interact freely with other operations, resulting e.g. in Impoverishment of probes as has been shown; (iv) PCC effects involving further ϕ-features, and other similar phenomena involving one probe for two arguments, are also expected to be accountable for with the same mechanism.

5 Extension of the New Approach to Germanic

In this section I am going to discuss those languages that have been claimed not to instantiate the PCC, namely German and Dutch. Contrary to this fact, Anagnostopoulou (2008) presents some new data for German, Dutch and Swiss German. She claims that these three languages do exhibit the PCC, but only in certain syntactic configurations, and puts forward an analysis based on her work in Anagnostopoulou (2003, 2005). This section is organised as follows. First, I am going to illustrate some syntactic features of the pronominal system of these languages and discuss how pronouns relate to the PCC. Secondly, I am going to present the new data given by Anagnostopoulou (2008). Then, I am going to discuss Anagnostopoulou's analysis, and finally, I am going to show that these phenomena can also be accounted for as a rule-interaction effect, this time involving Move as well as Copy, Check and Impoverishment. The analysis will differentiate between two kinds of movement – *scrambling* and *Wackernagel movement* (henceforth WM) – and assume that while the latter is obligatory for weak pronouns and involves checking of ϕ-features, the former is optional and does not trigger Agreement. Furthermore, the analysis has the additional consequence that it gives a possible

explanation of the quirky status of IO-DO weak pronominal clusters in Standard German. Finally, a unified approach to Germanic languages will be possible in this way.

5.1 The Person-Case Constraint and Weak Pronouns

Although languages with clitics and agreement affixes show robust person-case effects, the same cannot be said about languages with pronouns, where there is much greater cross-linguistic variation, even between speakers of the same language. For example, it has been claimed that English (Bonet, 1991; Haspelmath, 2004) and Swiss German (Bonet, 1991) exhibit the PCC, cf. (34) and (35) respectively. In both languages it can be observed that while the sentences in (34-a) and (35-a) with the combination <loc, 3> are grammatical, (34-b) and (35-b) are ungrammatical. As the only difference is the objects' person-feature specification, the two languages are claimed to show person-case effects.

(34) a. They showed me it
b. *They showed her me

(35) a. D' Maria zeigt mir en
the Maria.NOM shows to me him
'Maria shows me to him'.
b. *D' Maria zeigt em mich
the Maria.NOM shows to him me

German, however, has been claimed not to instantiate the PCC on the basis of examples like (36), because even the combination <3, loc> is grammatical (Cardinaletti, 1999; Haspelmath, 2004).

(36) weil er mich ihm gestern nicht vorgestellt hat
because he me to him yesterday not introduced has
'because he did not introduce me to him yesterday.'

In the following part of this section I will describe the essential features of Germanic pronouns. I will start with some data from German and name the relevant difference for the other languages. Based on Anagnostopoulou (2008) and

Martin Salzmann (p.c.), Swiss German will be regarded as one with Dutch with respect to Wackernagel movement and the existence of the IO>DO word order.

Standard German Different degrees of strength can be observed for pronouns in German. Müller (2001) assumes the hierarchy in (37). Although each of these categories of pronouns behaves differently with respect to different syntactic processes,[12] the only distinction relevant here is between strong and non-strong pronouns (from here on the non-strong pronouns will be referred to as weak and the strong pronouns will be written capitalised). The feature [±stress] refers to whether the element bears sentential stress.

(37) *Personal pronoun scale*

Pron_{strong}	> $\text{Pron}_{unstressed}$	> Pron_{weak}	> $\text{Pron}_{reduced}$	(> Pron_{clitic})
IHN[+stress]	ihn[+anim]	ihn[–anim]	es	('s)

The main difference between strong and weak pronouns in German is that all weak pronouns must move to a left-peripheral position higher than the sentential adverb: the Wackernagel position (among many other Lenerz, 1992; Müller, 2001). (38-a-b) are grammatical because the weak pronouns have moved out of VP; (38-c) is ungrammatical because the weak pronouns remained in situ; (38-d) is grammatical because the pronoun is strong and therefore does not move.

(38) a. dass ihr der Fritz gestern *t* ein Buch geschenkt hat
that to her the Fritz.NOM yesterday t a book.ACC gave
'that Fritz gave her a book yesterday.'

b. dass der Fritz ihr gestern *t* ein Buch geschenkt hat
that the Fritz.NOM to her yesterday t a book.ACC gave

c. *dass der Fritz gestern ihr ein Buch geschenkt hat
that the Fritz.NOM yesterday to her a book.ACC gave

d. dass der Fritz gestern IHR ein Buch geschenkt hat
that the Fritz.NOM yesterday TO HER a book.ACC gave

Weak pronouns must occur not only to the left of sentential adverbs (viz. *gestern*),

[12]The processes are WM, R-pronoun formation, coordination and topicalisation. See Müller (2001) for evidence.

but also to the left of any full DP, (39-a-b). Only subject DPs may occur to the left of the Wackernagel position, cf. (39-c). According to Müller (2001), this alternation is given by optional subject movement to specT.

(39) a. *dass der Maria es der Fritz gestern *geschenkt hat*
that the Mary.DAT it.ACC the Fritz.NOM yesterday gave
'that Fritz gave it to Mary yesterday.'

b. dass es der Maria der Fritz gestern geschenkt hat
that it.ACC the Mary.DAT the Fritz.NOM yesterday gave

c. dass der Fritz es gestern der Maria geschenkt hat
that the Fritz.NOM it.ACC yesterday the Mary.DAT gave

Finally, there is an obligatory order for weak pronoun-clusters, namely Subject>DO>IO, cf. (40).

(40) a. dass er es ihr gestern geschenkt hat
that Subj > DO > IO yesterday gave
'that he gave her it yesterday.'

b. *dass es ihr er gestern geschenkt hat
that DO > IO > Subj yesterday gave

c. *dass es er ihr gestern geschenkt hat
that DO > Subj > IO yesterday gave

d. *dass er ihr es gestern geschenkt hat
that Subj > IO > DO yesterday gave

Swabian and Franconian Swabian and Franconian are two German dialects. According to Anagnostopoulou, there are only two relevant differences to Standard German relevant here. The first is that they also allow the IO>DO word order for even with pronominal subjects. Sentences like (40-d) are therefore as grammatical as (40-a) in these dialects. The second difference is that Swabian and Franconian do not exhibit the PCC effect that is claimed to exist in Standard German.

Dutch Dutch is also very similar to German with respect to pronouns and movement as it also distinguishes between weak (often referred to as clitics in the lit-

erature) and strong pronouns. Based on examples like in (41) which are strongly reminiscent of German, Cardinaletti (1999: 52) comes to the conclusion that "although more difficult to detect than in Romance languages, a number of distributional asymmetries between weak and strong pronouns have been put forth" and that "all of them point to the conclusion that weak pronouns are obligatorily portion of the clause which seems specialized to host them: a position between the definite subject and sentential adverbs".[13] The only differences to German are that Dutch allows the IO>DO serialisation and that it does not allow (41-c), i.e. that Dutch weak pronouns cannot appear to the left of subjects. If (i) Müller's assumption that the alternation in German is caused by optional subject movement is correct, and (ii) subject movement to SpecT is obligatory in Dutch verb-final clauses, then it seems reasonable to claim that Dutch too has a Wackernagel position where weak pronouns must move to.

(41) a. *dat Jan gisteren 'r gekust heeft
that Jan yesterday her kissed has
'that Jan kissed her yesterday.'

b. dat Jan 'r gisteren gekust heeft

c. *dat 'r Jan gisteren gekust heeft

5.2 New Data from Anagnostopoulou (2008)

Based on the data in her paper, Anagnostopoulou claims that Standard German and Dutch exhibit person-case effects in particular syntactic configurations. In Standard German the person-case effects are argued to arise when the weak object cluster occurs to the left of the subject, whereas they do not when it is to its right, cf. (42) vs. (43) respectively.

(42) a. *weil dich ihm irgendwer vorgestellt hat
because you.ACC him.DAT someone introduced has

b. ??weil mich ihr irgendwer vorgestellt hat
because me.ACC her.DAT someone introduced has

[13] See furthermore Zwart (1991: 85–88) for a discussion leading to the same conclusion.

(43) a. weil sie dich ihm vorgestellt hat
because she.NOM you.ACC him.DAT introduced has

b. weil die Maria mich ihr vorgestellt hat
because the Mary.NOM me.ACC her.DAT introduced has

In particular, Standard German is argued to instantiate the weak version of the PCC as <loc, loc> combinations are grammatical in both orders, cf. (44).

(44) a. weil dich mir irgendwer vorgestellt hat
because you.ACC me.DAT someone introduced has

b. weil irgendwer mich dir vorgestellt hat
because someone me.ACC you.DAT introduced has

According to Müller (2001), the alternation between weak pronouns > subject vs. subject > weak pronouns is due to optional subject movement in German. If it is both the case that (i) the ungrammaticality of the <3, loc> combination is triggered by the PCC, and (ii) the difference between the two possible word orders is the result of subject movement, this data represents a serious challenge to accounts as Anagnostopoulou's or this paper's Impoverishment approach. Nonetheless, I will first turn to Dutch and return to German later in this section.

Anagnostopoulou points out in her paper that the data she presents for Dutch is very reminiscent of the one from Swiss German. In these two languages[14] the PCC arises in a different configuration from Standard German. In contrast to Standard German, Swiss German and Dutch allow both the DO>IO and the IO>DO serialisations of weak objects. However, there is an asymmetry between the two orders. When the IO is 3rd person and the DO is local person, only the DO>IO order is well-formed, whereas the IO>DO configuration is ungrammatical. In other words, when the DO is higher than the IO, any combination is grammatical; when the IO is higher than the DO, PCC violations arise. This can be exemplified in Swiss German by comparing the pair in (45) with the pair in (46). The only ungrammatical sentence is the one in (46-b), where both the IO>DO word order and the <3, loc> person combination apply.

[14] Anagnostopoulou (2008) also talks about Swedish, which will not be treated here. However, the analysis outlined in this paper is claimed to be valid for Swedish, too.

(45) a. D' Maria zeigt en mir — Acc3 > Dat1 ✓
the Maria shows him to me

b. D' Maria zeigt mi em — Acc1 > Dat3 ✓
the Maria shows me to him

(46) a. D' Maria zeigt mir en — Dat1 > Acc3 ✓
the Maria shows to me him

b. *D' Maria zeigt em mich — Dat3 > Acc1 ✗
the Maria shows to him me

Again, this is only the case with <3, loc> combinations. Therefore, Swiss German exhibits the weak version of the PCC. The same seems to hold for Dutch. On one hand, most of Anagnostopoulou's informants judged the examples in (47) grammatical. On the other hand, there was a general tendency to judge the examples in (48) as ungrammatical. Again, the only difference between (47-a) vs. (48-a) and (47-b) vs. (48-b) is the order of IO and DO. In parallel to Swiss German, also Dutch instantiates the weak version of the constraint.

(47) a. dat Jan me 'r/'m voorstelde — Acc1 > Dat3 ✓
that Jan me to her/him introduced

b. dat Jan je 'r/'m voorstelde — Acc2 > Dat3 ✓
that Jan you to her/him introduced

(48) a. *dat Jan 'r/'m me voorstelde — Dat3 > Acc1 ✗
that Jan to her/him me introduced

b. *dat Jan 'r/'m je voorstelde — Dat3 > Acc2 ✗
that Jan to her/him you introduced

5.3 Scarcity of Resources Analysis

The analysis Anagnostopoulou puts forward to account for the asymmetry is based on her previous work in Anagnostopoulou (2003, 2005), therefore adopting *tucking-in* and *Shortest* (Richards, 1997) and the asymmetry in the representation of person discussed in section 2.3.1. In the case of two elements moving, Shortest ba-

sically states that the elements move the shortest way. This has the consequence that the second element moved tucks in in a lower specifier instead of going to a higher one, which would be further away. Consequently, Shortest forces maximally crossing paths, cf. (49-a) with tucking-in and obeying Shortest vs. (49-b) without tucking-in and disobeying Shortest.

(49) a. *Multiple movement with Shortest*
$[_{XP}\ \alpha'\ \beta'\ X^0\ [\ \alpha\ \beta\ ]\ ]$

b. *Multiple movement without Shortest*
$[_{XP}\ \beta'\ \alpha'\ X^0\ [\ \alpha\ \beta\ ]\ ]$

With the crucial assumption that datives check person only optionally, but accusatives do compulsorily, her analysis for Dutch and Swiss German unfolds as follows. In DO>IO configurations the DO moves/agrees first and is able to check all of its features, cf. (50-a). The IO then only checks whatever is left (e.g. definiteness, phonological features) as person is optional, cf. (50-b).[15]

(50) a.
vP

ACC_1 v{~~P~~,~~N~~}

v VP

b.
vP

ACC_1 v{0,0}

DAT_3 v{0,0}

v VP

[15]In this section I will follow Anagnostopoulou in representing left-branching trees for reasons of unanimity. This has no influence on the facts shown.

DO>IO configurations are therefore expected never to crash. In IO>DO configurations, on the other hand, it is the IO that moves/agrees first and checks person (not knowing that the DO might want to check that, too), cf. (51-a). When the DO then moves/agrees, it can no longer check person if it is specified for it, cf. (51-b). Hence, the derivation crashes in <3, loc> combination as the accusative can't check person though it must.

(51) a. vP

DAT$_3$ v{~~P~~,N}

v VP

b. * vP

DAT$_3$ v{0,N}

ACC$_1$ v{**0**,~~N~~}

v VP

For Standard German, this account is problematic because there is a PCC effect in spite of the fact that the only possible word order is DO>IO. Therefore, Anagnostopoulou argues that Standard German works differently from Dutch and Swiss German. She claims that the difference is that Standard German weak pronominal object movement does not make use of tucking-in. This is argued to be borne out when different types of movement apply: one object moves as an XP and the other as a head. If (i) the base-generated word order in German is IO>DO and (ii) the IO always moves first, two weak objects undergoing WM will always result in a DO>IO serialisation. As a consequence, person-case effects arise because the IO moves/agrees first, in parallel to Dutch and Swiss German, cf. (52).

(52) a. vP

DAT$_3$ v{P,N}

v VP

b. * vP

ACC$_1$ v{**0**,N}

DAT$_3$ v{0,N}

v VP

In summary, her analysis is based on the following main assumptions to account for person-case effects in Germanic languages. (i) Shortest and tucking-in; (ii) 3rd person is no person unless salient; (iii) person checking on datives is optional, but person checking on accusatives is obligatory; (iv) either object may undergo WM first. The first two assumptions follow from her work in Anagnostopoulou (2003) and Anagnostopoulou (2005). The third one is linked to the nature of the two cases, i.e. quirky vs. structural case. According to Chomsky (2000, 2001), structural case checking results from complete ϕ-checking. Consequently, not checking a ϕ-feature of an accusative leads to a crash as its structural case could not be checked. On the contrary, not checking a ϕ-feature of a dative does not lead to a crash because the case is quirky and does not need checking. The last assumption is problematic. The fact that either object is able to move first is deduced by Anagnostopoulou on the basis that both word orders exist. Since Anagnostopoulou (2005) claims that Move/Agree in Romance respects closeness, i.e. the closest element in terms of c-command moves/agrees first, one would have to say that in one set of languages Move/Agree respects closeness and in the other set of languages it does for the IO>DO order and does not for the DO>IO order.

Finally, Anagnostopoulou (2008) faces two major problems: (i) even though

her analysis of Standard German can account for the claimed PCC effect in the DO>IO>DP_{Subj} configuration, it then cannot account for the fact that it disappears in the DP_{Subj}>DO>IO configuration; (ii) the account outlined for Dutch, Swiss German, Standard German and Swedish cannot be extended to Swabian and Franconian where both the IO>DO and the DO>IO order are allowed without exhibiting any person-case effects. In the following section I am going to present an analysis which can account for (ii) in the same way it accounts for Dutch, Swiss German and Standard German. The only difference between these languages, I will argue, is their Impoverishment ranking.

The point in (i) will not be regarded for now, because other speakers and I do not share the clear judgement of ungrammaticality for the sentences presented by Anagnostopoulou. Conceded that the particular combination *dich ihm* 'you to him' to the left of the full DP subject sounds marked, when the dative is feminine (viz. *dich ihr* 'you to her', *mich ihr* 'me to her'), or when the accusative is 1rst person and the dative masculine (viz. *mich ihm* 'me to him'), I feel that the markedness is much attenuated or even not present. However, I will come back to this problem in the final part of section 6.3.

5.4 Scrambling Approach to the PCC in Germanic Languages

In this section I am going to propose an alternative account for Anagnostopoulou's data from Germanic.

Within the system I have advanced in section 4, an obvious claim would be that Swiss German and Dutch have an Impoverishment ranking leading to the weak version and that Standard German has one leading to the giga version of the PCC. Taken that IO>DO is the base order, this would explain why Swiss German and Dutch only disallow <3, loc> combinations in the IO>DO configuration, while Standard German disallows the order in its totality (viz. it disallows any combination of weak objects in the IO>DO order). In her paper, Anagnostopoulou comments that there seems to be a correlation between freedom of word order and affectedness from the PCC. Namely, the Germanic varieties that have a greater degree of freedom of word order show less PCC effects. The extremes are the Swabian and the Franconian dialects of German, which allow any word order

– viz. both IO>DO and DO>IO to the left or to the right of full DP subjects and both IO>DO and DO>IO to the right of pronominal subjects – and do not exhibit any of the person-case effects observed for the other languages.

More freedom of word order means that more movement operations are allowed, especially optional movement operations such as scrambling.[16] Scrambling is one feature that all these Germanic languages share – and one that all Romance lack. In the following section I am going to present an analysis based on the approach to the PCC from section 4 and the observation that scrambling might play a key role. Crucially, I am going to claim that scrambling is an optional strategy to avoid PCC effects, just as prepositional pronouns are in Romance. As a consequence, I claim that the factors determining the PCC typology in Germanic are (i) the language specific Impoverishment ranking, and (ii) the fact whether scrambling applies before Agree and WM or not.

5.4.1 Dutch and Swiss German

Starting from Dutch and Swiss German, the following additional assumptions will be made for Germanic:

[A1] The base-generated order of objects is IO>DO (cf. Lenerz (1977); Anagnostopoulou (2008: 34–37) for a detailed discussion; contra Müller (2001)).

[A2] Dutch and Swiss German also have WM.

[A3] Scrambling is a different kind of movement from WM (cf. Müller, 1998: 198–199 and references therein) .

[A4] Scrambling may apply at any step of the derivation.

[A5] Structural case means full ϕ-checking (Anagnostopoulou, 2008; Chomsky, 2000, 2001).

[A6] Agreeing weak pronouns must consequently undergo WM in Germanic.

[16] In this paper I am going to follow the common derivational view (cf. Grewendorf and Sabel, 1999; Müller, 2001) that the different word orders are derived from one base-generated order by the means of scrambling, an optional movement operation which targets layered specifiers of vP.

[A7] Tucking-in and Shortest apply only to elements targeted by the same operation. Or, as Müller (p.c.) more precisely defined it, tucking-in is the result of a constraint against movement of an element with a given movement-feature α over an other element with the same movement-feature α.[17]

IO > DO The derivation of the IO>DO serialisation, which maintains the base-generated order, unfolds in a similar fashion to Anagnotopoulou's derivation. Agree and WM apply one after the other. The only difference is that in Anagnostopoulou (2008) the objects move in order to Agree, whereas in this paper the objects Agree (viz. undergo Copy, Impoverishment and Check) in order to move. Hence, Copy, Impoverishment and Check apply subsequently to the two weak objects, (53-a) through (53-d). The Impoverishment ranking for Dutch and Swiss German is of the weak PCC's type, since the only PCC effect the two languages show is when the IO is 3rd and the DO is local person. Therefore, the probe remains unchanged in the case of the person combinations <loc, 3>, <3, 3> and <loc, loc>, cf. (53-c). Following [A6] and [A7], the weak objects must then undergo WM in an order-preserving manner, i.e. the IO moves first and the DO moves second, tucking in with crossing paths, cf. (53-e).

(53) *Derivation of grammatical IO>DO combinations*

a. [$_v$ [uPers: <□, □>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: 3]] COPY →

b. [$_v$ [uPers: <loc, 3>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: 3]] impov. bled →

	[$_v$ [uPers: <loc, 3>]]	*<3, loc>$_p$	MAX-π_p	*<loc, loc>$_p$	*<3, 3>$_p$	*<loc, 3>$_p$
☞	[$_v$ [uPers: <loc, 3>]]					*
	[$_v$ [uPers: < , >]]		*!			

c. [$_v$ [~~**uPers**~~: < loc, 3>]] [$_{IO}$ [Pers: loc]] [$_{DO}$ [Pers: 3]] CHECK fed →

d. Derivation converges

[17] See section 5.5 for how, again on suggestion by Müller (p.c.), this reformulation correlates with the Müller-Takano generalisation; and Gereon Müller's and David Pesetsky's comments about how this relates to a relativised view of the A-over-A condition in the comment section of a post on Norbert Hornstein's faculty of language blog (http://facultyoflanguage.blogspot.de/2013/04/methodological-hygiene.html accessed 18th July 2013).

e. vP

DAT_1[w] vP

① ACC_3[w] vP

② v VP

When, however, the person combination of the IO>DO weak object cluster is <3, loc>, Impoverishment is triggered because the faithfulness constraint protecting the probe is ranked lower than the markedness constraint against the <3, loc> combination, cf. the tableau in (54). Consequently, the features on the probe are deleted, which causes Check to bleed, because the feature identity of probe and goals cannot be established, and the derivation crashes, cf. (54-c) to (54-d).

(54) *Derivation of ungrammatical IO>DO combination*:

a. [$_v$ [uPers: <□, □>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: loc]] COPY →

b. [$_v$ [uPers: <3, loc>]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: loc]] impov. fed →

	[$_v$ [uPers: <3, loc>]]	*<3, loc>$_p$	MAX-π_p	*<loc, loc>$_p$	*<3, 3>$_p$	*<loc, 3>$_p$
	[$_v$ [uPers: <3, loc>]]	*!				
☞	[$_v$ [uPers: < , >]]		*			

c. [$_v$ [**uPers**: < , >]] [$_{IO}$ [Pers: 3]] [$_{DO}$ [Pers: loc]] CHECK bled →

d. Derivation crashes

DO > IO Similarly to Anagnostopoulou's derivation of this order, I claim that the DO>IO configuration is given by freedom of word order and therefore optionality of movement. However, contrary to Anagnostopoulou, I claim that WM always applies in the same way. The DO>IO configuration can therefore not follow from WM only. I claim that since freedom of word order is, on many occasion, a consequence of scrambling, the same operation is at work when the non-base-generated word order arises. More precisely, I claim that in the case of DO>IO

configurations in Germanic, the IO is scrambled and the DO Wackernagel moved, and that this is an optional derivation with the advantageous consequence that no person-case effects arise because only the DO Agrees.

The derivation unfolds as follows. First, the IO is scrambled out of VP. Second, Agree applies to the only object left, the DO, which must consequently undergo WM because of [A6]. The DO does not tuck in in this derivation and moves over the scrambled IO because the two movements are triggered by different operations. The DO has a feature [w] for Wackernagel and may move over the IO bearing the different feature [Σ] for scrambling.[18]

(55) *Derivation of DO>IO configuration*

vP

ACC[w] vP

③ DAT[Σ] vP Agree ②

① v VP

As mentioned above, contrary to the IO>DO configuration, PCC effects are not expected to arise in the DO>IO serialisation. This is due to the fact that Impoverishment cannot be triggered by one single set of features on the probe. If the IO is scrambled out of the c-command domain of little *v*, Agree applies only to the DO. Scrambling of one of the two weak objects therefore systematically bleeds Impoverishment. Note that the only weak object that may be targeted by scrambling before Agree is the IO. This follows from [A5] because the weak DO has structural case which needs to be licensed via full ϕ-checking by Agree, and [A6] as the DO must move to the Wackernagel position once it has undergone Agreement. Therefore, scrambling may not apply to a weak DO before Agree (and

[18] Another possibility may be that WM and movement of strong pronouns result from Repel (for Repel-based approaches to movement see Sappir (2011) and references therein) to the furthest point in the same phase/phrase and scrambling Attract. This would reflect the requirement for pronouns to be at the egde of their phrases/phases and would have the consequence that order-preserving movement of pronouns would be possible without tucking-in if Repel starts from the bottom, affecting the DO first, and the IO second.

Wackernagel movement).[19] The weak IO does not need full ϕ-checking because its case is quirky and may therefore be scrambled out of VP.

As a consequence of this asymmetry, the two possible derivations that result from different timing of scrambling, Agree and Wackernagel movement, are the two described above and schematised in (56-a-b).

(56) *Order of movements*

a. Agree (IO + DO) $\left\{ \begin{array}{l} < loc, 3 > \\ < 3, 3 > \\ < loc, loc > \end{array} \right\} \Longrightarrow$ Wackernagel movement

*<3, loc> $\Longrightarrow$ Crash

b. scrambling (IO) $\Longrightarrow$ Agree (DO) $\Longrightarrow$ Wackernagel movement

5.4.2 Standard German

The analysis outlined so far can be extended to Standard German with one single difference to Dutch and Swiss German: the Impoverishment ranking of Standard German is the one leading to the giga version of the PCC, i.e. the absolute prohibition against two weak objects to agree with the same head. This has the consequence that the IO>DO order may never surface, which is the case in Standard German where the IO>DO serialisation is ungrammatical.[20] The alternative derivation involving scrambling of the IO therefore represents an essential strategy for Standard German to avoid the ineffability of weak double-object constructions (as opposed to Hausa from section 2.1, which does not allow scrambling and has to resort to strong pronouns instead). In the following I am going to derive the

[19] Under the named assumptions, scrambling may target a weak DO once it is in the Wackernagel position. However, this would lead astray and will not be discussed in this paper.

[20] The IO>DO order does surface on occasion. See Anagnostopoulou (2008: 25) and references therein for examples. The only one for which I share the judgement of grammaticality is given in (i) and bears particular 'rising theme accent/topic accent' intonation (see Steube and Umbach (2001) and references therein). I also have the fealing that this only works with the neuter accusative *es* 'it'.

(i) Versprochen hat sie mir es jedenfalls
promised has she to me it anyway

The other examples may be dialectally influenced utterances, as they come from a corpus study and this configuration is indeed grammatical in Swabian and Franconian.

two possible configurations. First the ungrammatical IO>DO order, second the the grammatical DO>IO order.

***IO > DO** The derivation of the IO>DO order in Standard German unfolds as the one for Dutch and Swiss German. First, Copy copies and transfers the goals features onto the probe, cf. (57-a-b). Then, Impoverishment applies. As Standard German has the giga Impoverishment ranking (viz. the one where the faithfulness constraint is ranked lower than any of the four markedness constraints), the probe's features are deleted as soon as two weak objects agree with the same head, cf. the tableau in (57). As a consequence, this ranking systematically bleeds Check and Wackernagel movement and prevents the IO>DO order from ever surfacing.

(57) *Derivation of ungrammatical IO>DO combination*:

a. [$_{v}$ [uPers: <□, □>]] [$_{IO}$ [Pers: *n*]] [$_{DO}$ [Pers: *m*]] COPY →

b. [$_{v}$ [uPers: <*n*, *m*>]] [$_{IO}$ [Pers: *n*]] [$_{DO}$ [Pers: *m*]] impov. fed →

	[$_{v}$ [uPers: <*n*, *m*>]]	*<3, loc>$_{p}$	*<loc, loc>$_{p}$	*<3, 3>$_{p}$	*<loc, 3>$_{p}$	MAX-π_{p}
	[$_{v}$ [uPers: <*n*, *m*>]]	(*!)	(*!)	(*!)	(*!)	
☞	[$_{v}$ [uPers: < , >]]					*

c. [$_{v}$ [**uPers**: < , >]] [$_{IO}$ [Pers: *n*]] [$_{DO}$ [Pers: *m*]] CHECK bled →

d. Derivation crashes

DO > IO If scrambling applies prior to Agree, the giga PCC can be escaped. As seen for Dutch and Swiss German, this results in the inverse order of objects DO>IO. First the IO is scrambled out of little *v*'s c-command domain. Second, Copy, Impoverishment and Check apply to the DO, which cannot be scrambled and must Agree to get its structural case checked. Third, the DO undergoes WM and moves over the IO as tucking-in does not apply when two different movement types with different features are involved. Note that with this approach no person-case effects are expected for DO>IO orders derived in this fashion. The ungrammaticality of the DO>IO>DP$_{Subj}$ sentences presented by Anagnostopoulou will be ignored for now for the reasons given at the end of section 5.3.

5.4.3 Swabian and Franconian

A further advantage of this approach is also that the two German dialects Swabian and Franconian follow by simply changing the Impoverishment ranking. With the claim that Swabian and Franconian have the Impoverishment ranking of the zero version of the PCC, it follows straightforwardly that any combination is allowed both in the IO>DO and in the DO>IO order.

The derivation of the IO>DO order unfolds exactly as the one for Dutch, Swiss German and Standard German. The only difference is again in the Impoverishment ranking, where in this case the faithfulness constraint protecting the probe outranks the four markedness constraints, cf. the tableau in (58). Hence, no person-case combination triggers feature deletion on the probe, which means that Check is never bled and the derivation can always converges. Once more, the derivation is given step by step in (58).

(58) *Derivation of grammatical IO>DO combinations*

a. $[_v$ [uPers: <□, □>]] $[_{IO}$ [Pers: loc]] $[_{DO}$ [Pers: 3]] COPY →

b. $[_v$ [uPers: <*n*, *m*>]] $[_{IO}$ [Pers: *n*]] $[_{DO}$ [Pers: *m*]] impov. bled →

	$[_v$ [uPers: <*n*, *m*>]]	MAX-π_p	*<3, loc>$_p$	*<loc, loc>$_p$	*<3, 3>$_p$	*<loc, 3>$_p$
☞	$[_v$ [uPers: <*n*, *m*>]]		(*)	(*)	(*)	(*)
	$[_v$ [uPers: < , >]]	*!				

c. $[_v$ [~~**uPers**~~: < *n*, *m*>]] $[_{IO}$ [Pers: *n*]] $[_{DO}$ [Pers: *m*]] CHECK fed →

d. Derivation converges

5.5 Test for Application of Scrambling

In the following I want to discuss a test meant to empirically sustain the application of scrambling argued for in this section. The test concerns remnant movement (of coherent infinitives) in Standard German. Remnant movement is the movement of a remnant category, i.e. a category from which something was moved out. Consider what is referred to in the literature as the "Müller-Takano generalisation" in (59) (cf. Müller, 1996; Pesetsky, Spring 2006; Richards, 2001; Boeckx,

2006).

(59) *Müller-Takano generalisation*
A configuration "[$_{YP}$ ... t_{XP}...]...XP...t_{YP}" is allowed only if the XP and the YP are moved by a different movement type.[21]

The Müller-Takano generalisation (MTG) therefore predicts that remnant infinitives from which scrambling has taken place may be moved via, e.g., topicalisation, wh-movement, or Wackernagel movement, but not again by scrambling. Consider the following sentences from Müller (1996), where the predictions of MTG are exemplified. For instance, in the sentences in (60-a-b) the infinitive may be scrambled successfully because it is scrambled as a full category along with its objects. The sentences in (61-a-b), however, are ungrammatical: scrambling of the infinitive as a remnant category YP is not allowed because its object(s) XP were scrambled.

(60) a. dass [das Buch zu lesen]$_k$ keiner t_k versucht hat
that [the book.ACC to read]$_k$ nobody t_k tried has

b. dass [dem Matthias den Drucker zu reparieren]$_k$ der
that [the Matthias.DAT the printer.ACC to repair]$_k$ the
Frank t_k versprochen hat
Frank.NOM t_k promised has

(61) a. *dass [t_i zu lesen]$_k$ keiner das Buch$_i$ t_k versucht hat
that [t_i to read]$_k$ nobody the book.ACC$_i$ t_k tried has

b. *dass [t_i t_j zu reparieren]$_k$ der Frank dem Matthias$_i$ den
that [t_i t_j to repair]$_k$ the Frank.NOM the Matthias.DAT$_i$ the
Drucker$_j$ t_k versprochen hat
printer.ACC$_j$ t_k promised has

Contrary to scrambling, topicalisation of the same remnant infinitive is allowed:

(62) a. [t_i Zu lesen]$_k$ hat keiner das Buch$_i$ t_k versucht
[t_i to read]$_k$ has nobody the book.ACC$_i$ t_k tried

[21] As Richards (2001: 190) points out, the notion of 'type' needs to be defined. Within the present approach it refers to individual movement operations.

b. [t_i t_j Zu reparieren]$_k$ hat der Frank dem Matthias$_i$ den
[t_i t_j to repair]$_k$ has the Frank.NOM the Matthias.DAT$_i$ the
Drucker$_j$ t_k versprochen
printer.ACC$_j$ t_k promised

In the same way, Müller (1998: 197–198) notices that if the infinitive's object is a weak pronoun and therefore targeted by Wackernagel movement instead, the remnant infinitive may be scrambled: in the sense of MTG, XP and YP are not subject to the same movement operation.[22] His examples are the ones in (63).

(63) a. dass [t_i zu lesen]$_k$ es$_i$ keiner t_k versucht hat
that [t_i to read]$_k$ it.ACC$_i$ nobody t_k tried has

b. dass [t_i zu lesen]$_k$'s$_i$ keiner t_k versucht hat
that [t_i to read]$_k$ it.ACC$_i$ nobody t_k tried has

In addition, the following examples may be added to consolidate the point:[23]

(64) a. dass [t_i zu zeigen]$_k$ es$_i$ keiner t_k versucht hat
that [t_i to show]$_k$ it.ACC$_i$ nobody t_k tried has

b. (?)dass [t_i zu stehlen]$_k$ ihn$_i$ keiner t_k versucht hat
that [t_i to steal]$_k$ him$_j$ nobody t_k tried has

c. (?)dass [t_i zu kaufen]$_k$ sie$_i$ der Fritz gestern t_k versucht hat
that [t_i to buy]$_k$ her$_i$ the Fritz.NOM yesterday t_k tried has

Crucially, examples with two weak objects are ungrammatical, cf. (65). To the best of my knowledge, this is unexpected by any previous approach to WM.

(65) a. *dass [t_i t_j zu zeigen]$_k$ es$_j$ dir$_i$ keiner t_k versucht hat
that [t_i t_j to show]$_k$ it.ACC$_j$ to you$_i$ nobody t_k tried has

[22] And, along the lines of Müller (p.c.), no two identical movement features need to cross paths.

[23] Note, however, that for most speakers there seem to be some gender/person/animacy-effects with certain verbs which await further research.

(i) a. ??dass [t_i zu zeigen]$_k$ ihn$_i$ keiner t_k versucht hat
that [t_i to show]$_k$ him$_i$ nobody t_k tried has

b. ??dass [t_i zu zeigen]$_k$ dich$_i$ keiner t_k versucht hat
that [t_i to show]$_k$ you$_i$ nobody t_k tried has

b. *dass [t_i t_j zu kaufen]$_k$ sie$_j$ mir$_i$ der Fritz gestern t_k
that [t_i t_j to buy]$_k$ her$_j$ to me$_i$ the Fritz.NOM yesterday t_k
versucht hat
tried has

Under the assumption that MTG's notion of 'type' refers to specific movement operations (viz. specific features), these data directly support this present approach to WM in Standard German. Recall that for constructions with two weak objects to surface, the IO is must scramble and the DO must undergo WM. Agreement and WM of both weak objects is ruled out by the giga PCC's Impoverishment ranking. Constructions with a single weak object remain unaffected by Impoverishment and no scrambling is needed. Therefore, scrambling of the remnant infinitive YP is (a) disallowed if it contained two weak objects because at least one object XP was scrambled before and (b) allowed if it contained only one weak object because the object XP underwent WM instead.

To conclude the topic of remnant movement, the scrambling approach also makes the peculiar prediction that, if MTG applies to Dutch, Swiss German, Swabian and Franconian in the same way as it does to Standard German, MTG-violations are expected in the DO>IO order where the IO is scrambled, but not in the IO>DO order where both objects undergo WM. This prediction awaits further research.

5.6 Overview of Operations and Orders of Application

To give an overview of the processes involved in the scrambling analysis and their respective order of application, I have listed them schematically in (66). The first part in (66-a) reflects the overall order of application of the processes involved. The all caps scrambling stands for scrambling as the general process, which contains scrambling of different elements, e.g. weak and strong pronouns and full DPs.[24] Scrambling is bracketed to indicate optionality. The second part in (66-b)

[24] A possible order of application is the following: SCRAMBLING = scrambling[weak] > scrambling[strong] > scrambling[full DP]. Under the assumption that elements targeted by the same movement operation tuck in, this order of application would reflect their linearisation.

reflects the necessary orders of application to derive the IO>DO and DO>IO configurations respectively.

(66) a. *Order of operations*
(SCRAMBLING >) Copy > Impoverishment > Check > (SCRAMBLING >) Wackernagel movement > (SCRAMBLING)

b. *Order of operations of the two object configurations*
(i) IO>DO = Copy > Impoverishment > Check > (SCRAMBLING >) Wackernagel movement
(ii) DO>IO = Scrambling[weak] > Copy > Impoverishment > Check > (SCRAMBLING >) Wackernagel movement

Each language's specific version of (66-b) can be represented as has been done for Dutch and Swiss German, cf. (56) repeated as (67). Here only the combination <3, loc> leads to a crash in the IO>DO configuration because the languages have a weak Impoverishment ranking which leads to a crash of the derivation only in the case of this particular feature combination. The DO>IO configuration always converges because the IO is scrambled out before the application of Copy. It therefore bleeds Impoverishment, and WM may apply normally, moving the DO over the IO.

(67) *Dutch and Swiss German*

a. Agree (IO + DO) $\left\{ \begin{array}{l} < loc, 3 > \\ < 3, 3 > \\ < loc, loc > \end{array} \right\} \Longrightarrow$ Wackernagel movement

*<3, loc> $\Longrightarrow$ Crash

b. Scrambling (IO) $\Longrightarrow$ Agree (DO) $\Longrightarrow$ Wackernagel movement

Standard German has the giga Impoverishment ranking, which means that no combination of weak objects can escape Impoverishment. This is the case in the IO>DO configuration, when both objects are subject to Agree, viz. Copy, Impoverishment and Check.

(68) *Standard German*

a. Agree (IO + DO) $\left\{ \begin{array}{l} *<loc,3> \\ *<3,3> \\ *<loc,loc> \\ *<3,loc> \end{array} \right\} \Longrightarrow$ Crash

b. Scrambling (IO) $\Longrightarrow$ Agree (DO) $\Longrightarrow$ Wackernagel movement

Finally, Swabian and Franconian have the zero Impoverishment ranking. No feature combination triggers deletion because the faithfulness constraint protecting the probe is ranked higher than the markedness constraints against the four combinations. All person combinations are grammatical in both the IO>DO and the DO>IO configuration.

(69) *Swabian and Franconian*

a. Agree (IO + DO) $\left\{ \begin{array}{l} <loc,3> \\ <3,3> \\ <loc,loc> \\ <3,loc> \end{array} \right\} \Longrightarrow$ Wackernagel movement

b. Scrambling (IO) $\Longrightarrow$ Agree (DO) $\Longrightarrow$ Wackernagel movement

5.7 Conclusion

In this section I have shown that the PCC data from Germanic can be accounted for with the Copy-Impoverishment-Check approach outlined in this paper. Furthermore, I have shown that (i) a unified approach for Germanic is possible with the only difference between the languages being their Impoverishment ranking: Dutch and Swiss German have the weak PCC, Standard German the giga PCC and Swabian and Franconian the zero PCC; (ii) the different types of movement apply at different times of the derivation and may show interaction between them; (iii) the crucial difference for the PCC between Germanic and Romance is the presence vs. absence of scrambling; (iv) the base-generated order of objects in Standard German is indeed IO>DO, although it cannot surface because it is permanently bled by the giga PCC. I have also shown that in Standard German MTG supports the fact that scrambling applies when there are two weak objects but not

when there is only one. Very specific predictions were made on the same topic for the other languages examined. Whether they hold substance remains to be seen following further research.

Furthermore, the question from the conclusions of section 4, whether other primitive operations may apply between Copy and Check, could not be answered yet on the basis of Germanic. If a movement operation were to apply between the two sub-operations, Check would be bled unless it were able to apply onto traces/copies. Still, no asymmetries of the kind that were observed in Germanic would arise. These open questions also await further investigation, especially because the judgements on sentences with weak pronouns in German are not always unanimous, and there seems to be more disagreement in comparison to sentences with full DPs. For example, the sentences with remnant infinitives and weak pronouns may be judged differently depending on the intonation pattern. Therefore, more detailed studies of the exact status of certain constructions with weak pronouns are needed to advance in their understanding and theory. This leads to the next section, where I will present a first set of results of such an attempt.

6 Experimental Study on PCC Effects in German

In conclusion of this paper, I will present some data I have collected with Andreas Opitz through an acceptability-rating study in German. The aim of the study was (i) to certify that indeed there are no visible person-case effects in German, (ii) to find out whether there is any significant difference in acceptability between the four person combination <loc, 3>, <3, 3>, <loc, loc> and <3, loc>, and (iii) if there are, whether the found hierarchy correlates with typological and theoretical expectations.

This study is also motivated by the fact that weak pronouns are a difficult topic in German. Speakers do not always share each others judgements as to whether some pronominal object combinations sound better than others. Furthermore, a corpus study is extremely disadvantageous as 1st person pronouns are – and 2nd person even more – underrepresented in print in comparison to 3rd person pronouns. Haspelmath reports such a study of his in his paper of 2004. The study is based on the Goethe subcorpus of the online COSMAS corpus of the Institut

für deutsche Sprache in Mannheim. He chose the Goethe subcorpus to have more 1st person pronouns as Goethe used to write his novels in first person. Of the 241 instances of ditransitive constructions with two object pronouns, the distribution is shown in (70).

(70) *Frequency of weak object combinations in German*

DAT	ACC	241 instances	
1/2	3	132	(55%)
3	3	60	(25%)
1/2	1/2	15	**(6%)**
3	1/2	34	**(14%)**

The percentages of the last two combinations are boldfaced here as they go against typological and theoretical expectations. They should be in the inverted order. This shows that a corpus study is problematic as local pronouns are underrepresented in print, regardless of the inherently low frequency of ditransitve constructions with two weak objects. Therefore, an experimental study should be able to deliver more precise data on constructions in seldom use as such discussed here.

6.1 Method

The study was undertaken in the form of a questionnaire with 136 sentences each. The questionnaires were filled out by 48 students (mainly first year linguistics students), who had to answer the question "How well does this sentence sound?" by putting a cross on one value on a scale from 1 to 7. 1 was the worst, i.e. clear ungrammaticality; 7 was the best, i.e. clear grammaticality and acceptability. All subjects had German as their mother tongue. This was certified by having each subjects state age, origin, mother-tongue and whether dialects were spoken at home (yes, strongly; yes; no) on the front page. A short written explanation was also given on the front page, stating that there were no right or wrong answers, that one should follow their intuition rather than thinking what would be correct in a school grammar, and that they were going to cross one value for each sentence on the given scale. Two unrelated examples were also given, repeated in (71). The first example is perfectly grammatical as the verb ending *-e* agrees with the

subject. The second example is ungrammatical because the verb has the ending of the 2nd person singular (*-st*) and does not agree with the subject which is 1st person singular. On average it took the subjects 10–15 minutes to fill out the questionnaires.

(71) a. Ich renne.
'Wie gut klingt dieser Satz?'
☹ 1 2 3 4 5 6 7 ☺

b. Ich rennst.
'Wie gut klingt dieser Satz?'
☹ 1 2 3 4 5 6 7 ☺

The 136 sentences were the result of 24 experimental verbs and 10 filler verbs. The 24 experimental verbs were repeated four times, once for each condition, viz. the four possible person-case combinations ACC-3 & DAT-loc, ACC-loc & DAT-loc, ACC-3 & DAT-3 and ACC-loc & DAT-3, adding up to 96 experimental sentences. The ten filler verbs were also repeated four times each, twice in a grammatical sentence and twice in an ungrammatical sentence. There were also two types of ungrammaticality for the filler verb: in one type the object had the wrong case, in the other the number of objects was wrong. In contrast to the experimental verbs, the filler verbs were only monotransitive and intransitive verbs. All items were presented as embedded sentences and had the 3rd person singular masculine pronoun *er* 'he' as their subject. There were two matrix sentences the items were embedded in: *man wollte* 'one wanted' and *man besteht darauf* 'one insists'. The complementiser was always *dass* 'that'. An experimental item therefore looked as the example in (72) and a filler item as in (73), both with glosses here.

(72) Man besteht darauf, dass er mich dir vorstellt.
one insists that he me.ACC you.DAT introduces
'Wie gut klingt dieser Satz?'
☹ 1 2 3 4 5 6 7 ☺

(73) a. Man wollte, dass er ihr dankt.
one wanted that he she.DAT thanks
'Wie gut klingt dieser Satz?'

☹ 1 2 3 4 5 6 7 ☺

b. Man besteht darauf, dass er dich dankt.
one insists that he you.ACC thanks
'Wie gut klingt dieser Satz?'

☹ 1 2 3 4 5 6 7 ☺

Since there were repetitions of items, four version of the questionnaire were produces, one for each possible order of the four conditions. Also, the four conditions could not cover each single possible combination of person, number and gender because they would have been too many. So, concretely, only singular and, in the case of 3rd person, masculine pronouns were used and alternated within those conditions where there were more than one combination, cf. (74).

(74) *Pronouns used in each condition*

a. Acc-3 & Dat-loc *ihn dir* 'him to you', *ihn mir* 'him to me'
b. Acc-3 & Dat-3 *ihn ihm* 'him to him'
c. Acc-loc & Dat-loc *dich mir* 'you to me', *mich dir* 'me to you'
d. Acc-loc & Dat-3 *dich ihm* 'you to him', *mich ihm* 'me to him'

The experimental verbs were the best 24 verbs of a pretest previously done to assess which verbs may be used with both animate and inanimate and local and non-local person objects. This was necessary to test the verbs for all four conditions. The chosen verbs ranged from frequent verbs like *geben* 'give', *zeigen* 'show', *vorstellen* 'introduce', *verweigern* 'deny', *anbieten* 'offer' to less frequent verbs like *entreißen* 'wrench/wrest', *zuteilen* 'allocate' and *vermachen* 'bequeath'.[25]

6.2 Results

The results for the fillers show that the question "How well does this sentence sound?" was answered correctly. There is an almost categorial decision for the grammatical vs. the ungrammatical fillers. The results are given in the table in (75). With 1 being the lowest and 7 being the highest on the scale, ungrammatical

[25]The frequency was assessed through the website www.wortschatz.uni-leipzig.de. E.g. *geben* 'give' counted 63017 entries, *vermachen* 'bequeath' 24. The English translations of the verbs should not be taken as absolute.

fillers were judged 1,28 on average and grammatical fillers 6,56.

(75) *Results of filler items*

Gramm	Mean	N	Standard Deviation
no	1,28	936	,987
yes	6,56	935	1,053

The mean values for the experimental items in comparison to those of the ungrammatical filler items, indicate that they were all judged grammatically. This confirms that there are no visible person-case effects in German in the configuration with a pronominal subject. Furthermore, there are significant differences between the four conditions. As expected <loc, 3> was rated the best and <loc, loc> was rated better than <3, loc>. Unexpectedly, <3, 3> was rated the worst.

(76) *Descriptive statistics of experimental items*

DatLoc	AccLoc	Mean Value	Standard Deviation	N
loc	loc	4,9935	,71175	24
	nonloc	5,5661	,61079	24
	total	5,2798	,71708	48
nonloc	loc	4,5923	,58619	24
	nonloc	4,1505	,61960	24
	Gesamt	4,3714	,63708	48
total	loc	4,7929	,67612	48
	nonloc	4,8583	,93920	48
	total	4,8256	,81465	96

Statistical tests (ANOVAs) with the factors Dative-Locality (local, non-local) and Accusative-Locality (local, non-local) revealed a main effect for Dative-Locality ($F1(1,11) = 78.3$, $p < .001$, $F2(1,23) = 19.1$, $p < .001$) but no such effect for Accusative-Locality ($F1(1,11) < 1$, n.s., $F2(1,23) < 1$, n.s.). This can also be seen in the descriptive statistics in (76). There is a difference of almost one point between the mean values of the combined factors Dat-loc & Acc-total vs. Dat-nonloc & Acc-total, whereas there is not even a difference of .1 between the mean values of the combined factors Dat-total & Acc-loc vs. Dat-total & Acc-nonloc.

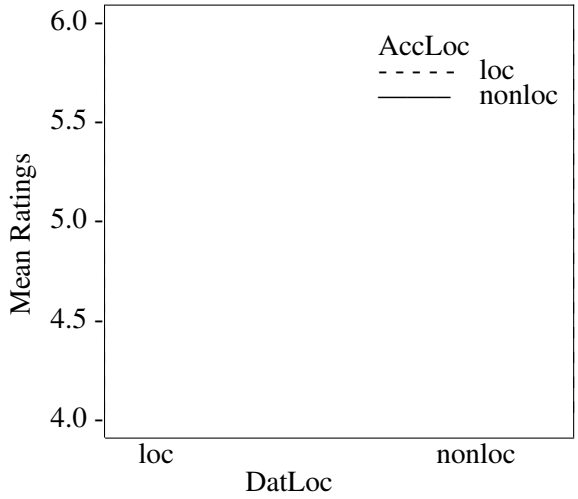

Figure 2: Interaction of factors Dative-Locality and Accusative-Locality

However, a significant interaction of both factors was observed (F1(1,11) = 52.6, p < .001, F2(1,23) = 124.5, p < .001), cf. figure 2 and the table in (77) (the number of observations for each cell N = 1128). The results indicate that sentences with local dative objects were rated more acceptable than sentences with non-local dative objects (5.27 vs 4.38). Specifically, sentences with local dative objects were rated higher when they contained a non-local accusative object (5.56) than when they contained a local accusative object (4.99): F1(1,11) = 46.9, p < .001, F2(1,23) = 26.6, p < .001. This rating preference was reversed for non-local dative objects: F1(1,11) = 16.4, p < .01, F2(1,23) = 13.1, p < .01.

(77) *Mean rating scores and standard deviations*

		Accusative			
		loc		nonloc	
Dative	loc	4.99	(1.93)	5.56	(1.73)
	nonloc	4.60	(1.94)	4.17	(1.92)

6.3 Discussion

Main effects The results show that there is a main effect for the locality of datives, but not for the locality of accusatives. Combinations with local person datives were rated more acceptable than combinations with 3rd person datives,

regardless of the accusative's locality. This main effect found for the Dative-Locality factor reflects the fact that datives, especially as IOs, are preferred to be local, which is most likely linked to the inherent animacy of local person. For the same reasons a main effect for the Accusative-Locality condition was expected. Combinations with local person accusatives were expected to be rated less acceptable than combinations with 3rd person accusatives, regardless of the dative's person value, as accusatives are generally preferred to be inanimate. Although it is not clear how this asymmetry should be interpreted, a number of possibilities may be considered. The first is the choice of verbs.

The experimental verbs chosen to test the conditions had to be such that both local and non-local accusatives are allowed by the verb's semantics (as opposed to verbs of speech, e.g., which only allow 3rd person inanimate accusatives). This was assessed with a pretest aimed to determine which 24 verbs have the least expectations for their objects animacy in the sense that both local and non-local objects are allowed in each object slot. As a consequence, this may have influenced the results for the Accusative-Locality factor. We needed verbs that allow both local and non-local DOs in order to test the verbs in all four conditions. Possibly, this choice of action impoverished the variety of verbs to a degree that, on average for the verbs used, a main effect had no chance to appear even if there were one when considering the whole language. This can be true only on average, as some verbs do have preferences: e.g. *anvertrauen* 'entrust', *auftischen* 'to serve (up)', *geben* 'give', *gönnen* 'deign', *hinterlassen* 'bequeath', *offenbaren* 'reveal' have a clear preference for 3rd person accusatives; *vorziehen* 'prefer', *vorstellen* 'introduce', *vorführen* 'demonstrate', *ausliefern* 'turn in' have a clear preference for local person accusatives. Most other verbs have little or no preference. A pattern of semantic features could not be identified.

A second possibility may be considered. The 3rd person pronouns used for the Acc-nonloc and Dat-nonloc conditions were always masculine. The masculine and the feminine 3rd person pronouns may be interpreted both as animate or as inanimate when no context is given to disambiguate – as was the case in the questionnaires. In the dative form, these pronouns are, by assumption for the verbs used, always interpreted as animate/human. This may have affected the subjects in a way that the accusative 3rd person pronouns were also interpreted as human

on many occasions, e.g. for practical reasons of not having to think about every new sentence from scrap or unknown semantic requirements of the verbs. One of the main differences between local person and 3rd person would be rendered void. However, it's not clear how this may have altered the results to such an extent. To monitor this effect, the study needs to be repeated with mixed neuter and non-neuter 3rd person pronouns.

In summary, although no main effect was found for the Accusative-Locality condition, a main effect was found for the Dative-Locality one. This shows that local person does not distinguish itself from 3rd person only by entailing animacy and humanness and sustains syntactic approaches to the PCC based on person features rather than those based on animacy alone.

Rating of <3, 3,> The results show that hierarchy effects according to Silverstein scales are manifested not only in the distinction between grammatical and ungrammatical, but also between more and less acceptable structures. This is true for three out of four conditions that were tested with the questionnaires: <loc, 3> is more acceptable than <loc, loc>, which is more acceptable than <3, loc>. The <3, 3> condition, however, should have been rated second or third best according to typological expectations. Instead, it was rated the worst combination. Only three subjects have rated the <3, 3> condition below 3 systematically; the ratings of the other subjects do not show greater deviation from the mean value than those of the other conditions. Even if the three subjects are excluded from the statistical tests, the results remain almost unchanged. Therefore, a number of factors may have influenced the judgements and distorted the results and should be considered here. The first is that all three pronouns are 3rd person singular masculine, viz. *er ihn ihm* 'he him to him'. However, there should be no problems with understanding the three pronouns as referring to three different entities; otherwise, there would be a reflexive pronoun instead (viz. *sich* '(to) himself'). The second factor may be a phonological one. Apparently, the cluster with the feminine dative *er ihn ihr* 'he him to her' does not sound as odd. Possibly, *ihn* and *ihm* are too similar when read as individual words, i.e. when they are not read as a cluster as e.g. I would do, being a speaker from the south, viz. *dass er ihn ihm* [das ʔɛɐ ʔiːn ʔiːm] shortened to *dass =a =n ihm* [dasɐn ʔiːm]. Whichever the reason, the contrast to

the cluster with the feminine dative remains. This is reminiscent of the contrast between the PCC data presented by Anagnostopoulou for Standard German and strengthens doubts on them, cf. (42) repeated here as (78).

(78) a. *weil dich ihm irgendwer vorgestellt hat
because you.ACC him.DAT someone introduced has

b. ??weil mich ihr irgendwer vorgestellt hat
because me.ACC her.DAT someone introduced has

The questionnaire would need to be repeated with examples with both masculine and feminine datives in the <3, 3> condition to test this hypothesis.

6.4 Conclusion

In this section I have shown that there are significant differences between the acceptability of the four person-case combinations in German. They were rated in the following order: <loc, 3> ≫ <loc, loc> ≫ <3, loc> ≫ <3, 3>. Apart from the combination <3, 3>, which should be ranked second or third, the ranking confirms typological expectations with respect to hierarchy effects and Silverstein scales. On the basis of the verbs used in this study, the results also indicate that the locality (local vs. 3rd person) of datives has an effect on the acceptability of weak double-object constructions in German; locality of accusatives does not entail the same effect. The results for the unexpectedly low rated <3, 3> combination have raised questions on the precise status of masculine vs. feminine datives in weak double-object constructions. Finally, this study may be repeated for testing new configurations. Especially the ones argued to show PCC violations by Anagnostopoulou (2008) need to be included, e.g. by repeating the study with the weak pronouns to the left of the full DP subject in half of the sentences and to its right in the other half of the sentences.

7 Overall Conclusions

In this paper I have argued for a new approach to person-case effects, based on the insight of the scarsity-of-resources approaches, and motivated by typological

evidence towards a more strongly hierarchical understanding of the PCC. Namely, little *v*, the head probing the Agreement domain common to the two weak objects, may be subject to syntactic scale-driven Impoverishment, a process involving conflicting optimality theoretic constraints which force and prevent deletion of certain person-case combinations from the probe. The operation Agree was split into the two more finegrained sub-operations Copy and Check, responsible for the valutation and the checking of uninterpretable features, in order to give Impoverishment a successfull window of application. Although some assumptions are not standard, they are in trend with much recent work, and have the rewarding consequence that the full person-case typology is accounted for with one mechanism. The differences between the languages is solely their Impoverishment ranking. For an overview consider again (33), repeated and updated here as (79).

(79) *Rankings*

a. Giga version of the PCC: (Hausa, Cairene Arabic, Standard German)
*<3, loc>$_p$ ≫ *<loc, loc>$_p$ ≫ *<3, 3>$_p$ ≫ *<loc, 3>$_p$ ≫ **MAX-π_p**

b. Super-strong version of the PCC: (Kambera)
*<3, loc>$_p$ ≫ *<loc, loc>$_p$ ≫ *<3, 3>$_p$ ≫ **MAX-π_p** ≫ *<loc, 3>$_p$

c. Strong version of the PCC: (French, Greek, Kiowa)
*<3, loc>$_p$ ≫ *<loc, loc>$_p$ ≫ **MAX-π_p** ≫ *<3, 3>$_p$ ≫ *<loc, 3>$_p$

d. Other-strong version of the PCC: (Spanish?)
*<3, loc>$_p$ ≫ *<3, 3>$_p$ ≫ **MAX-π_p** ≫ *<loc, loc>$_p$ ≫ *<loc, 3>$_p$

e. Weak version of the PCC: (Italian, Catalan, Old Occitan, Swiss German)
*<3, loc>$_p$ ≫ **MAX-π_p** ≫ *<loc, loc>$_p$ ≫ *<3, 3>$_p$ ≫ *<loc, 3>$_p$

f. Zero version of the PCC: (Swabian, Franconian)
MAX-π_p ≫ *<3, loc>$_p$ ≫ *<3, 3>$_p$ ≫ *<loc, loc>$_p$ ≫ *<loc, 3>$_p$

This approach was extended in section 5 to account for person-case effects in Germanic languages, where the presence vs. absence of person-case effects depends on the relative order of the two weak objects. There I have argued that while both weak objects agree and undergo Wackernagel movement when they surface in the base-generated IO>DO order, only the DO agrees and undergoes WM in the optional DO>IO order because the IO is previously scrambled. This asymmetry entails that Impoverishment may be triggered in the IO>DO order, but not in the

DO>IO order. Therefore, I have argued that scrambling of the IO represents an essential strategy of escaping PCC and have shown how the application of scrambling in DO>IO configurations is supported by the Müller-Takano generalisation on remnant movement in German. As a consequence, the Germanic languages examined differ only in their Impoverishment ranking: Dutch and Swiss German have the weak, Standard German the giga and Swabian and Franconian the zero version. Finally, I have presented the results of an experimental study on German, which indicate that person-case effects are manifested also by grammatical sentences in the form of different degree of acceptability. The study further represents a model with which other person-case effects in German may tested.

References

Adger, David (2003). *Core Syntax: A Minimalist Approach*. New York: Oxford University Press.

Adger, David and Daniel Harbour (2007). Syntax and Syncretisms of the Person Case Constraint. *Syntax*, 10: pp. 2–37.

Aissen, Judith (1999). Markedness and Subject Choice in Optimality Theory. *Natural Language and Linguistic Theory*, 17: pp. 673–711.

Aissen, Judith (2003). Differential Object Marking: Iconicity vs. Economy. *Natural Language and Linguistic Theory*, 21: pp. 435–483.

Anagnostopoulou, Elena (2003). *The Syntax of Ditransitives: Evidence from Clitics*. Berlin/New York: Mouton de Gruyter.

Anagnostopoulou, Elena (2005). Strong and Weak Person Restrictions: A feature checking analysis. In: *Clitic and Affix Combinations*, edited by Heggie Ordoñez and Francisco Ordoñez, Amsterdam/Philadelphia: John Benjamins Publishing Company, pp. 199–235.

Anagnostopoulou, Elena (2008). Notes on the Person Case Constraint in Germanic (with special reference to German). In: *Agreement Restrictions*, edited by Roberta D'Alessandro, Susann Fischer, and Gunnar Hrafn Hrafnbjargarson, Berlin/New York: Mouton de Gruyter, pp. 15–47.

Arregi, Karlos and Andrew Ira Nevins (2012). Contextual neutralization and the Elsewhere Principle.

Bank, Sebastian, Michael Sappir, and Jochen Trommer (2012). A User's Guide to Distributed Morphology.

Béjar, Susana and Milan Rezac (2003). Person Licensing and the Derivation of PCC Effects. In: *Romance Linguistics*, edited by A. T. Pérez-Leroux and Y. Roberge, Amsterdam: John Benjamins, pp. 49–62.

Bhatt, Rajesh and Martin Walkow (t.a.). Locating Agreement in Grammar: An argument from Agreement in Conjunctions. *Natural Language & Linguistic Theory*.

Bierwisch, Manfred (1967). Syntactic features in morphology: general problems of so-called pronominal inflection in german. In: *To honour Roman Jakobson*, The Hague: Mouton, pp. 239–270.

Blix, Hagen (2012). The Shallowness of Being Third: Beyond Not Participating. University of Leipzig (B.A. thesis).

Bobaljik, Jonathan David (2008). Where's Phi? Agreement as a Post-Syntactic Operation. In: *Phi-Theory*, edited by Daniel Harbour, David Adger, and Susana Béjar, Oxford University Press, pp. 295–328.

Boeckx, Cedric (2006). *Minimalist essays*. Amsterdam: John Benjamins.

Bonet, Eulàlia (1991). Morphology after Syntax: Pronominal Clitics in Romance Languages. Ph.D. thesis, MIT, Cambridge and Mass.

Bonet, Eulàlia (1994). The Person-Case Constraint: A Morphological Approach. In: *MIT Working Papers in Linguistics 22. The Morphology-Syntax Connection*, pp. 33–52.

Borer, Hagit (1984). *Parametric Syntax*. Dordrecht: Foris.

Cardinaletti, Anna (1999). Pronouns in Germanic and Romance Languages: An overview. In: *Clitics in the Languages of Europe*, edited by Henk van Riemsdijk, Berlin/New York: Mouton de Gruyter, pp. 33–82.

Chomsky, Noam (1995). *The Minimalist Program*. Cambridge and Mass: MIT Press.

Chomsky, Noam (2000). Minimalist Inquiries: The Framework. In: *Step by step*, edited by Roger Martin, David Michaels, and Juan Uriagereka, Cambridge and Mass: MIT Press, pp. 89–155.

Chomsky, Noam (2001). Derivation by Phase. In: *Ken Hale*, edited by Michael Kenstowicz, Cambridge and Mass: MIT Press, pp. 1–54.

Di Sciullo, Anna Maria and Daniela Isac (2003). Ways of Agreeing, Phrases, and Interfaces.

Doliana, Aaron (2013). The Super-Strong Person-Case Constraint: Scarcity of Resources by Scale-Driven Impoverishment. In: *Linguistische Arbeitsberichte 90*, edited by Fabian Heck and Anke Assmann, Leipzig: Universität Leipzig, pp. 177–202.

Georgi, Doreen (2007). A Distributed Morphology Approach to Argument Encoding in Kambera. Universität Leipzig.

Graf, Thomas (2012). An Algebraic Perspective on the Person Case Constraint. In: *Theories of Everything. In Honor of Ed Keenan*, edited by Thomas Graf, Denis Paperno, Anna Szabolcsi, and Jos Tellings, *UCLA Working Papers in Linguistics*, vol. 17, pp. 85–90.

Grewendorf, Günther and Joachim Sabel (1999). Scrambling in German and Japanese. *Natural Language and Linguistic Theory*, 17: pp. 1–65.

Hale, Ken (1972). A New Perspective on American Indian Linguistics. In: *New Perspectives on the Pueblos*, edited by Alfonso Ortiz, Albuquerque: University of New Mexico Press, pp. 87–103.

Halle, Morris and Alec Marantz (1993). Distributed Morphology and the Pieces of Inflection. In: *The View from Building 20*, edited by Ken Hale and Samuel J. Keyser, Cambridge and Mass: MIT Press, pp. 111–176.

Haspelmath, Martin (2004). Explaining the Ditransitive Person-Role Constraint: a usage-based account. *Constructions*, 2.

Haspelmath, Martin (2011). Occurrence of Nominal Plurality. In: *The World Atlas of Language Structures Online*, edited by Matthew Dryer and Martin Haspelmath, München: Max Planck Digital Library.

Heck, Fabian and Gereon Müller (2007). Extremely Local Optimization. In: *Proceedings of the 34th Western Conference on Linguistics (WECOL 34)*, edited by Erin Brainbridge and Brian Agbayani, Fresno: California State University, pp. 170–183.

Hornstein, Norbert (2009). *A theory of syntax: Minimal operations and universal grammar*. Cambridge and UK and New York: Cambridge University Press.

Keine, Stefan (2010). *Case and Agreement from Fringe to Core: A Minimalist Approach*. Berlin: de Gruyter.

Keine, Stefan and Gereon Müller (2008). Differential Argument Encoding by Impoverishment. In: *Scales*, edited by Marc Richards and Andrej Malchukov, *Linguistische Arbeitsberichte*, vol. 86, Leipzig: Universität Leipzig, pp. 83–136.

Keine, Stefan and Gereon Müller (2009). Non-Zero/Non-Zero Alternations in Differential Object Marking. Universität Leipzig.

Kiparsky, Paul (1973). Abstractness, Opacity and Global Rules. In: *Three Dimensions in Linguistic Theory*, edited by Osamu Fujimura, Tokyo: TEC, pp. 57–86.

Kiparsky, Paul (1999). Analogy and OT: Morphological Change as Emergence of the Unmarked. Stanford University.

Klamer, Marian (1997). Spelling out clitics in Kambera. *Linguistics*, 35: pp. 895–927.

Lee, Hanjung (2003). Parallel Optimization in Case Systems. University of Minnesota.

Lenerz, Jürgen (1977). *Zur Abfolge nominaler Satzglieder im Deutschen*. Tübingen: Narr.

Lenerz, Jürgen (1992). Zur Syntax der Pronomina im Deutshen. *Sprache und Pragmatik 29*.

Müller, Gereon (1996). A constraint on remnant movement. *Natural Language and Linguistic Theory*, 14, no. 2: pp. 355–407.

Müller, Gereon (1998). *Incomplete Category Fronting: A Derivational Approach to Remnant Movement in German*. Dordrecht: Kluwer.

Müller, Gereon (2001). Harmonic Alignment and the Hierarchy of Pronouns in German. In: *Pronouns - Grammar and Representation*, edited by Horst Simon and Heike Wiese, Amsterdam: Benjamins, pp. 203–232.

Müller, Gereon (2004). Argument Encoding and the Order of Elementary Operations. IDS Mannheim.

Müller, Gereon (2009). Ergativity, Accusativity, and the Order of Merge and Agree. In: *Explorations of Phase Theory*, edited by Kleanthes Grohmann, Berlin: Mouton de Gruyter, pp. 269–308.

Nevins, Andrew Ira (2007). The Representation of Third Person and its Consequences for Person-Case Effects. *Natural Language & Linguistic Theory*, 25, no. 2: pp. 273–313.

Noyer, Rolf (1998). Impoverishment Theory and Morphosyntactic Markedness. In: *Morphology and its Relation to Phonology and Syntax*, edited by Steve Lapointe, Diane Brentari, and Patrick Farrell, Palo Alto: CSLI, pp. 264–285.

Perlmutter, David (1971). *Deep and surface structure constraints in syntax*. New York: Holt, Rinehart and Winston.

Pesetsky, David (Spring 2006). Course materials for 24.960 Syntactic Models.

Prince, Alan and Paul Smolensky (1993). Optimality Theory: Constraint Interaction in Generative Grammar. Rutgers University.

Prince, Alan and Paul Smolensky (2004). Optimality Theory: Constraint Interaction in Generative Grammar. Oxford.

Pylkkänen, Lina (2002). Introducing Arguments. Ph.D. thesis, MIT, Cambridge and Mass.

Richards, Marc (2008). Defective Agree, Case Alternations, and the Prominence of Person. In: *Scales*, edited by Marc Richards and Andrej Malchukov, *Linguistische Arbeitsberichte*, vol. 86, Leipzig: Universität Leipzig, pp. 137–161.

Richards, Norvin (1997). What Moves Where When in Which Language? Ph.D. thesis, MIT, Cambridge and Mass.

Richards, Norvin (2001). *Movement in language: Interactions and architectures*. USA: Oxford University Press.

Sappir, Michael (2011). The Possessor Dative Construction of Modern Hebrew: Movement as Repel-Based Extremely Local Optimization. Ph.D. thesis, Universität Leipzig, Leipzig.

Shlonsky, Ur (1997). *Clause structure and word order in Hebrew and Arabic*. Oxford: Oxford University Press.

Silverstein, Michael (1976). Hierarchy of features and ergativity. In: *Grammatical Categories in Australian Languages*, edited by R. M. W. Dixon, Canberra, pp. 112–171.

Smolensky, Paul (1993). Harmony, Markedness, and Phonological Activity. University of Colorado.

Smolensky, Paul (1995). On the Internal Structure of the Constraint Component *Con* of UG. John Hopkins University.

Smolensky, Paul (2006). Harmonic Completeness, Local Constraint Conjunction, and Feature Domain Markedness. In: *The Harmonic Mind*, edited by Paul Smolensky and Géraldine Legendre, Cambridge and Mass: MIT Press, pp. 27–160.

Steube, Anita and Carla Umbach, eds. (2001). *Kontrast – lexikalisch, semantisch, intonatorisch*, *Linguistische Arbeitsberichte*, vol. 77. Leipzig: Universität Leipzig.

Stiebels, Barbara (2002). *Typologie des Argumentlinkings: Ökonomie und Expressivität*. Berlin: Akademie-Verlag.

Stiebels, Barbara and Dieter Wunderlich, eds. (2000). *Lexicon in Focus*. Berlin: Akademie-Verlag.

Sturgeon, Anne, Boris Harizanov, Maria Polinsky, Ekaterina Kravtchenko, Carlos Gómez Gallo, Lucie Medová, and Václav Koula (2011). Revisiting the Person Case Constraint in Czech. Harvard University.

Wunderlich, Dieter (2000). Optimal Case in Hindi. Universität Düsseldorf.

Zwart, Cornelius Jan-Wouter (1991). Clitics in Dutch: Evidence for the Position of INFL. *Groninger Arbeiten zur germanistischen Linguistik*, 33: pp. 71–92.

Eigenständigkeitserklärung

Hiermit versichere ich, dass ich die vorliegende Arbeit ohne fremde Hilfe und nur mit den zulässigen Hilfsmitteln angefertigt habe.

Ort, Datum	Unterschrift
.....	.....