Person Mismatch Agreement

Imke Driemel
Leipzig University

1. Introduction

Resolution agreement containing PERSON mismatches typically follows a PERSON hierarchy of the form 1 ≻ 2 ≻ 3 (Zwicky 1977), that is conjoining arguments with different PERSON features will lead to agreement with the argument which contributes the highest PERSON feature specification. Czech provides a subject-verb agreement pattern which strictly obeys the PERSON hierarchy, see the paradigm in (1).

(1) Resolution in Czech (Petr Biskup, p.c.)
   a. Můj otec a já zůstaneme doma.
      my father and I will.stay.1PL at-home
   b. Tvůj otec a ty zůstanete doma.
      your father and you will.stay.2PL at-home
   c. Já a ty zůstaneme doma.
      I and you will.stay.1PL at-home
      ‘{My father and I} {your father and you} / {you and I} will stay home.’

German subject-verb agreement, however, does not act in accordance with the PERSON hierarchy: the 2PS+3PS conjunction in (2b) allows for both 2PL and 3PL agreement (see Findreng 1976, Corbett 1983, Timmermans et al. 2004, Fuß 2014). None of the judgements change if the conjuncts switch places or if one of the conjuncts is marked as plural.¹

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¹The pattern carries over to lexical verbs and modals, and is not affected by tense.
Resolution mechanisms

PERSON hierarchy effects for resolution contexts have been argued to require external, universally specified, resolution rules (Corbett 1983), cf. also Fuß (2014) who argues for a post-syntactic repair operation, triggered by contradicting feature sets. Verbal resolution agreement in German, thus, poses a problem since it suggests that resolution rules ought to be made language-specific. The current proposal provides an alternative view based on set union of $\phi$-features and underlying feature structures without the need to postulate external resolution rules.

Two types of set operations have been proposed to overcome PERSON feature mismatches: set union (Dalrymple & Kaplan 2000, Bhatt & Walkow 2013) and set intersection (van Koppen & Rooryck 2008, Franks & Willer-Gold 2014, Marušić et al. 2015). The semantics of the coordinator provides a strong argument against a set intersection approach to resolution agreement. Plurality-forming conjunctions have long been accepted to exist alongside standard sentence conjunction (Link 1983, Schwarzschild 1996), modeled either as set union (flat sets) or as set formation (nested sets). A further advantage of set
union/formation stems from the fact that these representations are already made use of in different parts of grammar. They are a side product of a probe agreeing with more than one goal under the assumption that feature bundles are either flat (Adger 2010) (set union), or structured (set formation). Set union can also be modeled as a post-syntactic operation, fusing structured sets, see [Deal (2015) and Zimmermann (2017) for recent applications.]

We will present fused sets for the remainder of the paper, but the account does not depend on the distinction.

A few syntactic assumptions are needed to ensure that resolution agreement can take place. As is shown in (3), the conjunctive coordinator is the head of its own functional projection and takes the conjuncts as its arguments. This coordinator bears a PERSON probe with separate unvalued agreement slots that gather the PERSON features of its arguments in a cyclic fashion (see also Béjar & Řezác 2009). The NUMBER feature enters the derivation already valued for plural.

(3) Agreement within the coordinate phrase:

\[
\begin{array}{c}
\text{DP} \\
[\ast \text{NUM:SG*}] \\
[\ast \text{PERS:1*}] \\
\end{array} \\
\begin{array}{c}
\text{&P} \\
\ast \text{NUM:PL*}, \ast \text{PERS:1,2*} \\
\end{array} \\
\begin{array}{c}
\text{DP} \\
[\ast \text{NUM:SG*}] \\
[\ast \text{PERS:2*}] \\
\end{array}
\]

3. Strict hierarchies and underlying feature systems

There are two PERSON feature systems presently on the market: speaker-hearer and author-participant. In addition to clusivity and syncretism patterns, PERSON hierarchies – who can be argued to be at work in cases of multiple-argument exponence, such as PCC contexts (Nevins 2007) and agreement displacement phenomena (Béjar & Řezác 2009) – serve as viable diagnostics to detect underlying feature systems.

Binary feature systems have been argued to be decomposed into either \([\pm \text{SPEAKER}]\) and \([\pm \text{HEARER}]\) (Frampton 2002, Müller 2006, Wechsler 2010, Albright & Fuß 2012) or \([\pm \text{AUTHOR}]\) and \([\pm \text{PARTICIPANT}]\) (Halle 1997, Nevins 2007, Arregi & Nevins 2012, Harbour 2016). While the former can group 1PS and 3PS together against 2PS, the latter is designed to group 1PS with 2PS against 3PS.

\[
\begin{array}{c}
+\text{SPEAK}, -\text{HEAR} & \leftarrow 1 \rightarrow & +\text{AUTH}, +\text{PART} \\
-\text{SPEAK}, +\text{HEAR} & \leftarrow 2 \rightarrow & -\text{AUTH}, +\text{PART} \\
-\text{SPEAK}, -\text{HEAR} & \leftarrow 3 \rightarrow & -\text{AUTH}, -\text{PART} \\
\end{array}
\]

Accounts like Harbour (2016) are very different from the conjunction approaches discussed above and therefore require a separate discussion. See also Ackema & Neeleman (2013) for a privative account along these lines.

[1]
Neither of those systems can derive the $1 \succ 2 \succ 3$ hierarchy under set union/formation, without any further assumptions about the language-specific encoding of vocabulary items. For an illustration consider (5), where the resolution contexts for 1PS conjoined with 2PS are shown for both systems, respectively. Neither of those contexts straightforwardly predicts the insertion of 1PS. Resolution contexts including 3PS equally predict languages to diverge from the hierarchy.

$$1 \cup 2 = \{ [+\text{AUTH,+PART,−AUTH}] [+\text{SPEAK,−HEAR,−SPEAK,HEAR}] \} \neq 1$$

Further problems arise with clusivity: while a speaker-hearer system can provide a 1<sup>st</sup> incl form: [+SPEAK,+HEAR], an author-participant system cannot. Hence, [Nevins (2007)] proposes a hybrid system which decomposes into a binary author-participant system + privative hearer. While this addition enables a clusivity distinction, where [+AUTH,+PART,HEAR] encodes 1<sup>st</sup> incl, it does not lead to a strict hierarchy in resolution contexts.

Privative feature systems have mostly been suggested for author-participant decompositions ([Béjar 2003][Béjar & Řezáč 2009][Preminger 2011][Ackema & Neeleman 2013], shown in the second column in (6). For a set of languages (Nishnaabemwin among others), [Béjar 2003] and [Béjar & Řezáč 2009] propose a minimally different version of their system where AUTHOR is replaced by ADDRESSEE, leading to the third column in (6).

$$\begin{bmatrix}
\text{SPEAK} & \leftarrow 1 \rightarrow & \text{AUTH},\text{PART} & \leftarrow 1 \rightarrow & \text{PART} \\
\text{HEAR} & \leftarrow 2 \rightarrow & \text{PART} & \leftarrow 2 \rightarrow & \text{ADD},\text{PART} \\
& \leftarrow 3 \rightarrow & \leftarrow 3 \rightarrow & & \\
\end{bmatrix}$$

Neither of the author/addressee-participant systems can provide an inclusive form since, depending on the PERSON hierarchy detectable in the language, either author or addressee is present. A speaker-hearer system, in contrast, can encode 1<sup>st</sup> incl form as [SPEAK,HEAR]. Note that privative systems generally have no problem resolving PERSON mismatch contexts involving 3PS towards the highest person since 3PS is radically underspecified. The only problematic context is the one in which 1PS conjoins with 2PS. It turns out that author/addressee-participant systems provide exactly the right underlying structure to derive the PERSON hierarchy, while speaker-hearer systems fail to do so, see (7).

$$1 \cup 2 = \{ [\text{ADDR,PART}] = 2 [\text{AUTH,PART}] = 1 [\text{SPEAK,HEAR}] \neq 1 \}$$

Let us turn to proposals specifically designed to deal with either strict resolution hierarchies, shown on the left ([Dalrymple & Kaplan 2000]), or clusivity, shown on the right ([Harley & Ritter 2002]) in (8).

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3The reason why languages, like e.g. Nishnaabemwin, are assumed to have the feature system shown in the third column in (6) is that they exhibit a $2 \succ 1 \succ 3$ hierarchy in their direct/inverse marking. Under the assumption that this hierarchy is at work in resolution contexts as well, 2PS is the correctly predicted outcome for $1 \cup 2$. 

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While the author-addressee-participant system, proposed by Harley & Ritter (2002) for languages with a clusivity distinction, can encode 1st incl as \([\text{AUTH, PART, ADDR}]\), it cannot, however, derive the correct resolution contexts for 1+2 contexts. Dalrymple & Kaplan (2000) derive the person hierarchy by gradually increasing the specificity of the PERSON features – a decomposition that seems “more analytically convenient than theoretically justified” (van Koppen & Rooryck 2008, 3). 1 ∪ 2 resolution contexts are given in (9) for both systems.

(9) \(1 \cup 2 = \begin{cases} [\text{AUTH, PART, ADDR}] & \neq 1 \\ [\text{SPEAK, HEAR}] & = 1 \end{cases}\)

Dalrymple & Kaplan (2000) additionally offer a way to distinguish 1st incl from 1st excl by encoding the former as \([\text{SPEAK, HEAR}]\), identical to 1st person in three-way systems, and the latter as \([\text{SPEAK}]\). While this set-up works nicely for languages with a clusivity distinction, it causes problems for the interpretation of 1st person in tripartite systems. The decomposition of 1st person into \([\text{SPEAK, HEAR}]\) forces an inclusive interpretation for 1st plural pronouns, running counter to the observation that 1st plural pronouns are reported to be ambiguous between an inclusive and an exclusive reading.

4. Proposal: strict hierarchies through impoverishment

As was shown in the previous section, no system is capable of deriving a strict person hierarchy on the one hand and providing (interpretable) feature combinations for a clusivity distinction on the other hand. Feature systems that can provide an inclusive form are: (i) the binary speaker-hearer systems in (4), (ii) the privative speaker-hearer systems in (6), (iii) the Harley & Ritter (2002) privative system in (9). Of the three, the binary system runs into troubles for every resolution context. The latter two privative systems, however, only have a problem with 1+2 contexts, repeated in (10), in that they predict optionality between 1PS or 2PS to occur as agreement markers.

(10) \(1 \cup 2 = \begin{cases} [\text{AUTH, PART, ADDR}] \\ [\text{SPEAK, HEAR}] \end{cases} = 1 \text{ or } 2\)

While these resolution contexts make the wrong prediction for languages without an inclusive-exclusive distinction, they constitute suitable contexts for languages with a clusivity distinction. They predict insertion of 1st incl forms, shown for Fula in Dalrymple & Kaplan (2000, 782), and given here in terms of possessor agreement for Tamil (11) and Angami (12).

(11) Resolution in Tamil possessors (Gurujegan Murugesan, p.c.)
Naan-um nii-um nam-ode vitt-ai tolachit-om.
1SG-CONJ 2SG-CONJ 1PL[INCL]-GEN house-ACC lost-1PL
‘[Me and you], lost our, house.’
How can we derive strict hierarchies in languages without a clusivity distinction? We propose an *impoverishment rule*, shown in (13) for each feature system, which accounts for the lack of a morphological distinction between 1<sup>st</sup> *incl* and 1<sup>st</sup> *excl*, as well as the resolution paradigm in PERSON mismatch coordinations. The rule in (13) is independently motivated by markedness requirements (Noyer 1992, Nevins 2011, Arregi & Nevins 2012), in that it constitutes a case of MARKEDNESS-TARGETED neutralization (Nevins 2011): the marked category is neutralized towards its unmarked (less-specific) counterpart 1<sup>st</sup> *excl*.

(13)  *Impoverishment rule:*

   a. [HEARER] → ∅ / [SPEAKER]___
   b. [ADDRESSEE] → ∅ / [AUTHOR]___

The rule in (13) is language-specific, i.e. it only applies in languages without a clusivity distinction. The relevant resolution contexts are shown below for both feature systems, after the impoverishment rule has applied.

(14)  *Resolution contexts for Harley & Ritter (2002) privative system:*

\[ 1 \cup 2 = [\text{AUTH, PART}] \cup [\text{ADDR, PART}] = [\text{AUTH, add}, \text{PART}] \]

(15)  *Resolution contexts for speaker-hearer privative system:*

\[ 1 \cup 2 = [\text{SPEAK}] \cup [\text{HEAR}] = [\text{SPEAK, it/it}] \]

If privative feature systems trigger strict hierarchies in resolution contexts, any divergence from the hierarchy must be due to an underlying binary feature system. Since PERSON mismatch coordinations cannot be argued to serve as the input for learners, the presence of a binary system must be independently motivated, e.g. by syncretisms a language consistently exhibits. The next section will explore such a case for German and Dutch.

5.  **The curious German(ic) pattern**

Germanic languages provide independent evidence to decompose PERSON features into \( \{\pm \text{SPEAKER}\} \) and \( \{\pm \text{HEARER}\} \). This feature set-up makes it possible to capture the often observed 1/3 syncretism in Germanic because it can single out 1<sup>PS</sup> and 3<sup>PS</sup> to the exclusion of the addressee (Frampton 2002). The fact that 1/3 syncretisms are cross-linguistically rare (Cysouw 2005, Baerman et al. 2005) provides an explanation as to why 2+3→2,3 resolution patterns are so exceptional. A language like German requires a binary speaker–hearer system to account for 1/3 syncretisms, thereby creating the conditions to trigger 2+3→2,3 resolution patterns. By switching to a binary feature system, languages ultimately become
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less predictable with respect to vocabulary insertion into PERSON mismatch resolution contexts, thus allowing them to potentially diverge from a strict PERSON hierarchy. Since German does not exhibit a clusivity distinction, the rule, proposed in the previous section in (13), must be translated into the current feature system, see (16).

(16) Impoverishment rule:

\[ [+\text{HEARER}] \rightarrow \emptyset / [+\text{SPEAKER}] \]

Resolution agreement takes place in 3 steps: 1. set union, 2. impoverishment, 3. vocabulary insertion. The relevant resolution contexts are given in (17)-(19).

(17) \( 1 \cup 3 = [+\text{SPEAK}, -\text{HEAR}] \cup [-\text{SPEAK}, -\text{HEAR}] = [+\text{SPEAK}, -\text{HEAR}, -\text{SPEAK}] \)

(18) \( 2 \cup 3 = [-\text{SPEAK}, +\text{HEAR}] \cup [-\text{SPEAK}, -\text{HEAR}] = [-\text{SPEAK}, -\text{HEAR}, +\text{HEAR}] \)

(19) \( 1 \cup 2 = [+\text{SPEAK}, -\text{HEAR}] \cup [-\text{SPEAK}, +\text{HEAR}] = [+\text{SPEAK}, +\text{HEAR}, -\text{HEAR}, -\text{SPEAK}] \)

In order to capture the syncretisms of the verbal inflectional paradigm, shown in (21), we propose the vocabulary items shown in (20). Crucial for the exceptional German pattern is that both plural exponents, -\((\@)n\) and -t, are compatible for the context in (18), while also being equally specific. Note that the optionality in (18) comes about as a result of resolution analyzed as set union/formation. These operations are uniquely qualified to create feature sets with identical features but conflicting feature values. Superimposing a feature hierarchy (e.g. number is more important than gender) to regulate vocabulary insertion between equally specific items will not resolve the conflict. This restricts optionality arising across the board via identical cardinality of feature sets.

(20) \text{PERSON/NUMBER/TENSE}^5

\text{VIs for verbal suffixes:}

a. /-t/ \leftrightarrow [-\text{SPEAKER}, -\text{HEARER}, -\text{PL}]^6
b. /-t/ \leftrightarrow [+\text{HEARER}, +\text{PL}]
c. /-st/ \leftrightarrow [+\text{HEARER}]
d. /-(\@)n/ \leftrightarrow [-\text{HEARER}, +\text{PL}]
e. /-\emptyset/ \leftrightarrow [ ]^7

(21) \text{German verbal suffixes}

<table>
<thead>
<tr>
<th></th>
<th>SING</th>
<th>PLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ST</td>
<td>-@/\emptyset</td>
<td>-(@)n</td>
</tr>
<tr>
<td>2ND</td>
<td>-st</td>
<td>-t</td>
</tr>
<tr>
<td>3RD</td>
<td>-t</td>
<td>-(@)n</td>
</tr>
</tbody>
</table>

\(^4\text{Assuming contradicting feature bundles is not unprecedented, see Bhatt & Walkow (2013).}\)
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If 1/3 syncretisms are indicators of non-privative features systems we expect languages exhibiting this syncretism to diverge similarly from strict hierarchies in PERSON resolution contexts. Timmermans et al. (2004) report on a resolution agreement paradigm in Dutch that is identical to German but found on reflexive pronouns:

(22) Resolution with Dutch reflexives (Cora Pots, p.c.)

a. Ik en mijn vriend vervelen ons.
   I and my friend bore 1PL.REFL

b. Jij en je vriend vervelen je/zich.
   you and your friend bore 2PL.REFL/3PL.REFL

c. Jij en ik vervelen ons.
   you and I bore 1PL.REFL
   ‘{Me and my friend} / {you and your friend} / {You and me} are bored.’

While Modern Dutch has only one syncretic plural form, Middle Dutch shows 1/3 syncretism in plural (Aalberse 2009). This syncretism is also reflected in past and plural forms in Dutch dialects (Aalberse & Don 2009) as well as for a closed class of modal verbs across dialects (Ackema & Neeleman 2013). Hence, there is reason to assume a binary speaker-hearer feature system for Dutch.

6. Conclusion

This proposal provides a new implementation for PERSON hierarchy effects in resolution agreement contexts, one that makes use of an inherent markedness motivated impoverishment rule languages use if they do not provide 1st incl forms. Together with the assumption that 3PS exponents are underspecified, we can derive an agreement pattern that strictly follows the PERSON hierarchy. If underspecification is achieved system-externally, e.g. by a privative author-participant system, strict hierarchy effects will occur throughout the language. If, however, underspecification is tied to exponents, divergence from the hierarchy is potentially expected to arise, as plural markers can have equally specific feature sets, giving rise to optionality. The latter option provides an explanation for German verbal agreement and Dutch reflexive pronoun agreement in resolution contexts. Due to 1/3 syncretisms that these languages show, they require binary speaker-hearer features – a system that provides exactly the right conditions to encode two equally specific plural markers. The exceptional character of the resolution pattern is thus tied to the cross-linguistic rarity of 1/3 syncretisms.

5 The inventory ignores minor variation in past tense and strong vs. weak forms, see Müller (2006) for an analysis of the latter.

6 Following the arguments in Albright & Fuß (2012), I assume that the German 2PL/3SG syncretism is the result of accidental homophony, hence (20a) and (20b), as opposed to e.g. the 1PL/3PL syncretism which is due to morphological identity.

7 If there is no stem alternation from present to past (weak forms), the elsewhere marker is realized as /-₃/₆, see also Müller (2006).
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References


