

Mismatches in free relatives - grafting nanosyntactic trees

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Abstract

German free relative constructions allow for case requirement mismatches under two types of circumstances. The first is when the case required in the embedded clause is more complex (NOM < ACC < GEN < DAT) than the case required in the main clause, and the relative pronoun takes the form of the embedded clause case. The second type of circumstance is when the form that corresponds to the two required cases is syncretic. I propose an analysis that combines Caha's (2009) case hierarchy in nanosyntax with Van Riemsdijk's (2006a) concept of grafting. By placing case features as separate heads in the syntax, a less complex case can be grafted into a different clause, explaining the first type of circumstance. The second type makes reference to the fact that syncretic forms are inserted via the same lexical entry (Superset Principle). The paper provides additional evidence that case is complex, and that more complex case can license less complex cases. Two aspects of the analysis for German are identified as language-specific parameters. Varying these two parameters gives the grammaticality patterns observed in free relatives in Polish, Greek and Gothic.

1 Introduction

A free relative construction is a type of relative clause that occurs without an antecedent. In the headed relative clause in (1a), the antecedent of the relative pronoun *den* 'who.ACC' is the homophonous demonstrative pronoun *den*

‘the.ACC’. In (1b), the free relative counterpart of (1a), the relative pronoun *wen* ‘who.ACC’ does not have an antecedent.^{1,2,3}

- (1) a. Ich mag den, den ich eingeladen habe.
 I like_{acc} the.ACC who.ACC I invited_{acc} have
 ‘I like the one, who I have invited.’
- b. Vogel (2001: 344)
 Ich lade ein, wen auch Maria mag.
 I invite_{acc} who.ACC also Maria likes_{acc}
 ‘I invite whoever Maria also likes.’

(1b) is an example of a matching free relative. Both *lade ein* ‘invite’ in the main clause and *mag* ‘likes’ in the embedded clause require their object to be in accusative. *Wen* ‘who.ACC’ satisfies both these accusative case requirements.⁴

In German free relatives, the case requirements in both clauses do not need to match: mismatching free relatives are permitted under particular circumstances. The first type of circumstance is when the case required in the embedded clause is more complex (or more oblique) than the case required in the main clause (according to the complexity scale NOM < ACC < GEN < DAT < ...). Additionally, the relative pronoun has to surface in the more complex case (cf. Pittner 1991; 1995; Vogel 2001; Grosu 2003). I illustrate this in (2) and (3) below. The examples in (2a) and (2b) only differ in the relative pronoun that is used. The predicate *vertraut* ‘trusts’ in the embedded clause requires its object to be in dative, and *lade ein* ‘invite’ in the main clause requires it to be in accusative. German has two distinct forms for accusative and dative to denote *who*: *wen* ‘who.ACC’ and *wem* ‘who.DAT’ respectively. The sentence is grammatical as long as the (more complex) dative relative pronoun *wem* ‘who.DAT’ is used, as shown in (2a). (2b) shows that the construction is ungrammatical if the accusative relative pronoun *wen* ‘who.ACC’ is used.^{5,6}

¹ All examples in the paper are from German, unless indicated differently.

² The annotation of case on the verb indicates the case that the verb requires the free relative pronoun to be in, e.g. *acc* on *like* in (1b) indicates that *like* requires its object to be in accusative case.

³ The German data and the description of the generalizations in the German data in this paper originate in Vogel (2001).

⁴ Matching free relatives in German do not only exist with accusative - accusative pairs, but also with double nominative, genitive and dative case requirements.

⁵ In Polish (Citko 2013) (and in some varieties of German (Vogel 2001)), mismatches with distinct lexical entries are never permitted, and (2a) is ungrammatical. Presumably these speakers require a stricter form of matching. I return to this point in Section 5.

⁶ Other languages that show (different types of) hierarchy effects are Gothic (Harbert 1982) and Modern Greek (Daskalaki 2011), to which I return to in Section 5.

- (2) Vogel (2001: 344)
- a. Ich lade ein, wem auch Maria vertraut.
 I invite_{acc} who.DAT also Maria trusts_{dat}
 ‘I invite whoever Maria also trusts.’
- b. * Ich lade ein, wen auch Maria vertraut.
 I invite_{acc} who.ACC also Maria trusts_{dat}
 ‘I invite whoever Maria also trusts.’

In (3) the case requirements are reversed: the predicate in the embedded clause *mag* ‘likes’ requires its object to be in accusative and the one in the main clause *vertraue* ‘trust’ requires it to be in dative. This means that the case required in the embedded clause is less complex than the case required in the main clause. The sentence in (3) is ungrammatical, independent of which relative pronoun (*wen* ‘who.ACC’ or *wem* ‘who.DAT’) is used.

- (3) Vogel (2001: 345)
- * Ich vertraue, wen/ wem auch Maria mag.
 I trust_{dat} who.ACC/ who.DAT also Maria likes_{acc}
 ‘I trust whoever Maria also likes.’

The pattern observed here does not only appear with accusative - dative case combinations. As long as the embedded clause requires a more complex case than the main clause, and the more complex relative pronoun is used, a mismatching free relative is grammatical. If the embedded clause requires a less complex case than the main clause, the result is ungrammatical. For example, if the embedded clause requires a genitive case, the main clause can have either an accusative or a genitive case requirement. What follows is that German does not have mismatching free relatives with the embedded clause requiring a nominative, because nominative is the least complex case. For the relevant examples, see Appendix 1. In this paper, I illustrate my proposal using the accusative - dative case examples, but the analysis carries over to the other case combinations.

The second type of circumstance in which mismatching free relatives are permitted is when the phonological form that corresponds to two cases is syncretic, and the syncretism resolves the mismatch (cf. Groos & van Riemsdijk 1981; Zaenen & Karttunen 1984; Dyta 1984; Pullum & Zwicky 1986; Ingria 1990; Dalrymple & Kaplan 2000; Sag 2003). In (4), the case required in the embedded clause is less complex than the case required in the main clause. The example in (4) is grammatical, although it also has the less complex case required in the embedded clause, just like the ungrammatical example in (3). The crucial difference between (3) and (4) is that the latter has a syncretic

form that corresponds to the two cases, and the former does not. *Gefällt* ‘pleases’ in the embedded clause requires a nominative subject, and *erzähle* ‘tell’ requires its object to be in accusative. *Was* ‘what.NOM/ACC’ is syncretic between both nominative and accusative; it has the same phonological form in both cases. Therefore, it is able to satisfy both the nominative and accusative case requirements, and the sentence is grammatical.

- (4) Vogel (2001: 344)
 Ich erzähle, was immer mir gefällt.
 I tell_{acc} what.NOM/ACC ever me pleases_{nom}
 ‘I tell whatever pleases me.’

For completeness, I give an example of a free relative with a syncretic form and the less complex case required in the embedded clause, which is also grammatical. In (5), the predicate in the embedded clause *weiß* ‘know’ requires its object to be in accusative, and *macht* ‘makes’ requires a nominative subject. *Was* ‘what.NOM/ACC’ is able to satisfy both the nominative and accusative case requirements.

- (5) Vogel (2001: 363)
 Was ich nicht weiß, macht mich nicht heiß.
 what.NOM/ACC I not know_{acc} makes_{nom} me not hot
 ‘What I don’t know doesn’t excite me.’

Unlike the German-specific effect in (2a), resolving a case mismatch by syncretism is not specific to German. (6) gives three examples from different Slavic languages that show the same effect. In (6a), the Russian *kogo* ‘who.ACC/GEN’ satisfies the accusative case requirement from *iskal* ‘sought’ and the genitive case requirement from *bylo* ‘was’. (6b) shows a conversational Bulgarian example in which *kojto* who.NOM/ACC is syncretic between nominative and accusative, and the accusative case requirement of *celuna* ‘kiss’ and the nominative one of *dojde* ‘comes’ are satisfied. The Polish *kogokolwiek* ‘whoever.ACC/GEN’ is both accusative and genitive, and satisfies the genitive case requirement from *unik* ‘avoids’ and the accusative case requirement of *obrazil* ‘offended’.

- (6) a. Russian, Levy & Pollard (2002: 222)
 Kogo ja iskal, ne bylo doma.
 who.ACC/GEN I sought_{acc} not was_{gen} home
 ‘Who I was looking for wasn’t at home.’

- b. *conversational Bulgarian*, Izvorski (1997: 279)
 Šte celuna kojto dojde prâv.
 will kiss_{acc} who.NOM/ACC comes_{nom} first
 ‘I will kiss whoever comes first.’
- c. *Polish*, Citko (2013)
 Jan unika kogokolwiek wczoraj obraził
 Jan avoids_{gen} whoever.ACC/GEN yesterday offended_{acc}
 ‘Jan avoided whoever he offended yesterday.’

A summary of the patterns discussed in this section is shown in Table 1. As long as the case required in the embedded clause is more complex, and the form corresponding to this more complex case is inserted, the free relative is grammatical (the left column). If the case required in the embedded clause is less complex, the phonological form starts to play a role. If German has two different forms for the different cases, the free relative is ungrammatical (see upper-right cell). It can be saved, however, if there is a single syncretic form that corresponds to the two required cases (see lower-right cell).

Table 1: Grammaticality pattern for German.

	case in embedded clause	
	more complex	less complex
distinct forms	✓	*
syncretism	✓	✓

In lexicalist frameworks, the effect that a more complex case is required in the embedded clause was generally claimed to originate from the stipulation that more marked cases are able to license less marked cases (cf. Pittner 1995). The power of syncretism was mostly explained by underspecified lexical entries: the presyntactic lexicon contains phonological forms that are specified for more than one case (cf. Ingria 1990). Lately, theories of late insertion, such as Distributed Morphology (Halle & Marantz 1993), have become more prominent. At first sight, the fact that syncretism resolves mismatches is problematic for such approaches. If there is no presyntactic lexicon that contains phonology, it is unclear how phonological forms can influence grammaticality. Nevertheless, in recent years, the resolution of case mismatches has been accounted for using different theories within late insertion. Asarina (2011) provides an analysis that combines underspecified lexical entries in Distributed Morphology with multidominance. Her analysis of Russian can be extended to the syncretic cases in German, but does not capture the effect of requiring a more complex case in the embedded clause (which does not exist in Rus-

sian). [Himmelreich \(2017\)](#) proposes an agree-based account, which captures both the syncretic cases and the more and less complex cases. However, she needs two different mechanisms to derive the effects. In this paper, I provide a unified analysis that accounts for both types of circumstances in which mismatching free relatives are permitted, crucially drawing on case containment ([Caha 2009](#)). This paper provides further evidence that case is internally complex, a more complex case can license a less complex case, and that syntactic structure can be shared between clauses.

The paper is organized as follows. Section 2 presents the internal structure I assume for the free relative pronoun. I introduce the nanosyntactic ([Starke 2009](#)) tools for the analysis, the projections within the relative pronoun, and I show how a relative pronoun is formed in a derivation. One of the projections within the relative pronoun is the KP (case phrase), which contains the case hierarchy ([Caha 2009](#)) which is crucial for the analysis in Section 4. Section 3 discusses the external syntax of a free relative construction. A free relative pronoun is associated with two syntactic positions, which can be analyzed by a grafting operation ([Van Riemsdijk 2006a](#)): embedded features in one structure can be remerged into a different structure. In Section 4, I present the analysis. The basic idea is that a free relative pronoun can satisfy two different case requirements in four steps. In Step 1, the relative pronoun takes the case required in the embedded clause. In Step 2, the relative pronoun moves to the left edge of the clause (the SpecCP position). In Step 3, additional features can be inserted, if necessary, as long as they are contained in the lexical tree that is associated with the relative pronoun. This restriction on the adding of features distinguishes syncretic from non-syncretic forms. In Step 4, the predicate in the main clause externally remerges with the required case projection in the relative pronoun (grafting). Section 5 identifies two parameters that are responsible for cross-linguistic differences attested in free relatives across languages. I illustrate how the proposal for German carries over to the other three languages. Section 6 concludes.

2 Internal syntax of free relatives

In this section I make explicit what I assume to be the internal syntax of free relative pronouns. I argue that free relative pronouns consist of a combination of the element *w*- and an element which expresses different mass type and case distinctions. First, I introduce the basic concepts from nanosyntax that allow for a discussion, and I discuss the feature make-up of the different projections.

Towards the end of the section, I show how the lexical entries that I propose correspond to free relative pronouns as they surface.

2.1 Nanosyntax

Nanosyntax (Starke 2009; Caha 2009; Baunaz & Lander 2018) is a generative approach in which syntactic features correspond to their own terminal nodes and are merged into syntactic trees. Nanosyntax has a postsyntactic lexicon that consists of lexical trees which correspond to phonological and conceptual structure. The content of lexical entries is determined by a universal hierarchy of features, the functional sequence (fseq). The order of the fseq can be determined by studying e.g. syncretism and morphological containment patterns (Baunaz & Lander 2018).

Spellout in nanosyntax is phrasal: instead of spelling out individual terminal nodes, lexical entries target phrasal (non-terminal) nodes in the syntactic tree. Spellout is also cyclic, and each successful spellout overrides previous successful spellouts (Principle of Cyclic Override Starke 2009: 4). After each instance of merge, the syntactic tree is matched against the lexicon. The two principles in (7) govern lexical insertion.

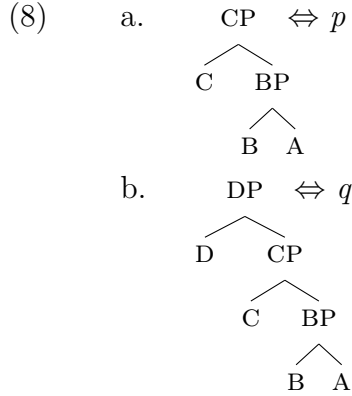
- (7) a. **Superset Principle:** a lexically stored tree matches a syntactic node iff the lexically stored tree contains the syntactic node (Starke 2009: 3)
- b. **Elsewhere Condition:** if several lexical items match the root node, the candidate with the least unused nodes wins (Starke 2009: 4)

The Superset Principle in (7a) ensures that a lexical tree matches a syntactic tree if the lexical tree is a superset (proper or not) of the syntactic tree. This means that a lexical tree can match a syntactic tree if the former contains features that the latter does not, but not vice versa. The Elsewhere Condition as in (7b) makes sure that, when more than one lexical tree can lexicalize the same syntactic tree (by the Superset Principle), the lexical tree with the least amount of superfluous material is chosen.

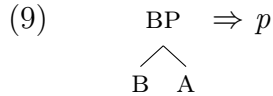
I illustrate with abstract examples how these principles together select a single lexical entry. In (9) to (11), the structure [DP[CP[BP]]] is created in three derivational steps with lexicalizations after each step. (8) gives two abstract lexical entries.⁷ The lexical tree [CP[BP]] corresponds to the phonological

⁷ Throughout the paper, \Leftrightarrow indicates the pairing between a lexical tree and a phonological form in a lexical entry, and \Rightarrow indicates how a node in the syntactic structure is spelled out.

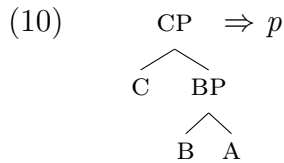
structure p , and the lexical tree $[\text{DP}[\text{CP}[\text{BP}]]]$ corresponds to the phonological structure q .



In the first step of the syntactic derivation, A is merged with B, creating BP in (9). Both the lexical trees $[\text{CP}[\text{BP}]]$ in (8a) and $[\text{DP}[\text{CP}[\text{BP}]]]$ in (8b) are a superset of BP (Superset Principle). $[\text{CP}[\text{BP}]]$ has less superfluous material than $[\text{DP}[\text{CP}[\text{BP}]]]$ (Elsewhere Condition), and therefore the phonological form p is inserted.

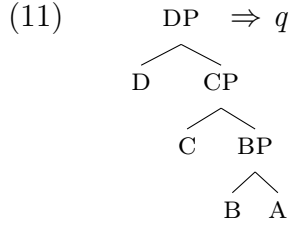


Next, BP merges with C, and $[\text{CP}[\text{BP}]]$ in (10) is created. Here again, both lexical trees $[\text{CP}[\text{BP}]]$ in (8a) and $[\text{DP}[\text{CP}[\text{BP}]]]$ in (8b) are a (proper) superset of the syntactic tree (Superset Principle). As $[\text{CP}[\text{BP}]]$ has no superfluous material but $[\text{DP}[\text{CP}[\text{BP}]]]$ does, the lexical entry (8a) matches with the syntactic structure via the Elsewhere Condition. In this example, $[\text{CP}[\text{BP}]]$ and BP are syncretic: they correspond to the same lexical entry and have the same phonological form p .



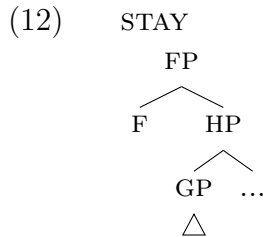
Finally, $[\text{CP}[\text{BP}]]$ merges with D, as shown in (11). The lexical tree $[\text{CP}[\text{BP}]]$ in (8a) is no longer a superset of the syntactic tree, as it does not contain D (Superset Principle), so it is not a candidate for a match. $[\text{DP}[\text{CP}[\text{BP}]]]$ in (8b),

however, still contains all features. The earlier spellout of (8a) is overridden by (8b) and the phonological structure q is inserted (Principle of Cyclic Override).



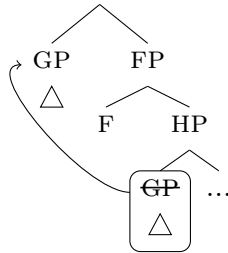
Spellout takes place under strict constituenthood, i.e. only constituents can be targeted for spellout. This means that if there is no lexical tree in the lexicon that matches the syntactic tree, the syntactic structure needs to be altered. This is necessary because no parts of the syntactic structure can remain unlexicalized (known as Cyclic Exhaustive Lexicalization, Fábregas 2007). Movement is allowed to alter the structure in such a way that it can spell out a newly merged feature. There are several types of movement that can be done, of which I only discuss the first one in this paper (see for additional steps not required for this paper Baunaz & Lander 2018; Starke 2018; Caha et al. 2018; De Clercq 2019). These types of movement are part of the so-called spellout algorithm. The first step in this algorithm has already been used to illustrate the principles governing lexical insertion in (7). This step is called STAY: the syntactic structure stays as it is after the merge of a new feature, and the lexicon is checked for a lexical entry. If there is no lexical entry available that matches, the first movement possibility takes place. This is CYCLIC: the leftmost daughter of the sister of the last added feature is moved to the left of the last added feature. The lexicon is consulted again after this movement.

I illustrate the spellout algorithm with an abstract example in (12) to (13). I start with the first step: STAY. The structure stays at it is, and the lexicon is consulted for a lexical entry with the syntactic structure, shown in (12).



If there is no lexical entry available for this configuration, then GP, the leftmost daughter of the sister of F, moves to the left of F (CYCLIC). The lexicon is checked for an entry that contains the syntactic structure FP. This FP contains HP, but it does not have a GP in it, shown in (13).

(13) CYCLIC



This kind of movement happens to an unlabeled specifier and does not leave traces (Baunaz & Lander 2018; Starke 2018). In the next section, I discuss the internal feature make-up of the free relative pronouns. In Section 2.3, I apply the tools introduced in this section to show how the free relative pronouns are built.

2.2 The feature inventory

In this section I make my assumptions for the internal structure of German free relative pronouns explicit. An overview of the pronouns is given in Table 2.⁸

Table 2: German free relative pronouns.

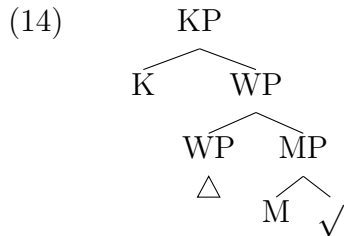
	‘who’	‘what’
NOM	wer	was
ACC	wen	was
GEN	wessen	-
DAT	wem	-

I follow a large body of literature that argues that pronouns have complex internal structure and that they correspond to phrases (cf. Cardinaletti 1994; Weerman & Evers-Vermeul 2002; Boef 2013; Hachem 2015). Most scholars do not explicitly discuss which part of the syntactic structure within the pronoun

⁸ For discussion on the incompleteness of the paradigm of *was*, see Hachem (2015: 162) and references therein.

corresponds to which part of the phonology of the pronoun (except for cf. [Hachem 2015](#)). Looking at the paradigm, there is reason to assume that pronouns consist of a form *w-* and a form that expresses gender and case. Moreover, the latter form also appears on other elements that show gender and case distinctions, such as definite determiners and demonstratives (compare *d-er* ‘the-M’ and *w-er* ‘what-M’, *d-as* ‘the-N’ and *w-as* ‘what-N’). Taking this formal identity seriously (like cf. [Leu 2008](#); [Hachem 2015](#)), I assume that they are the same morphosyntactic object.

In my analysis, the internal structure of the free relative pronoun looks as in (14). Following [Hachem \(2015\)](#), I assume that the WP corresponds to the *w*-element. The case phrase (KP) contains the case features and will be split up further following [Caha 2009](#). The mass phrase (MP) contains different types of mass (that correspond to the distinctions better known as different grammatical genders) ([Hachem 2015](#)). The MP and KP together correspond to a single phonological element. In the structure in (14), the KP and the MP do not form a constituent that can match a lexical tree. Spellout-driven movement (of the WP into the specifier of the KP) will ensure that KP and MP form a constituent, such that they can be spelled out together.



In the next sections, I discuss each of the projections in (14) in turn.

2.2.1 Case (KP)

[Caha \(2009\)](#) (building on [Blake 1994](#)) proposes that case features are organized in the fseq given in (15).



This hierarchy is not specific to nanosyntax; it is motivated typologically ([Blake 1994](#)), and a version of it has been incorporated in work on Distributed Morphology ([Smith et al. 2018](#)).⁹

⁹ There is some controversy about the positioning of the genitive in this ordering, as some languages (such as Icelandic, see [Caha 2009: 273ff](#)) point to an ACC — DAT — GEN ordering instead of ACC — GEN — DAT. [Starke \(2017\)](#) solves this problem by refining the

The evidence that *Caha* provides for the hierarchy comes from amongst others syncretisms in morphological case suffixes and case compounding. He proposes that case syncretism only targets contiguous regions (nodes that are adjacent) in the case hierarchy. *Caha* investigates possible syncretisms in the Russian noun system. Of all possibilities, 15 syncretisms are predicted to exist by the case hierarchy (because they target contiguous regions) and 42 are not (because they do not). 8 of the 15 predicted patterns occur in Russian. Not all 15 logically possible patterns arise because syncretism mostly covers only two contiguous elements and not ‘long’ stretches. Only one of the 42 non-predicted patterns occurs, which can be explained as accidental homophony (*Caha* 2009: 13-14). Table 3 (*Caha* 2009: 12) shows some examples of nouns with syncretisms in their case suffixes that target contiguous regions.

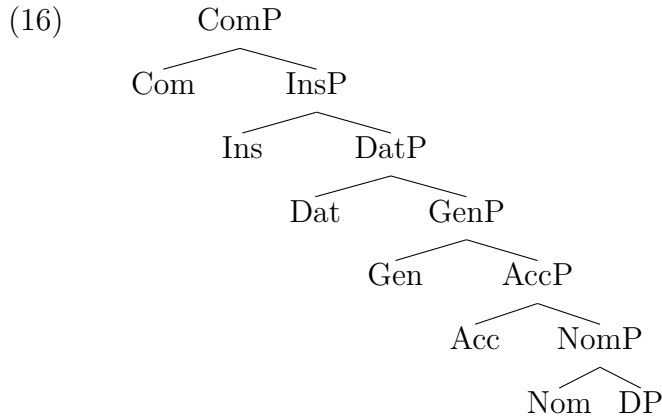
Table 3: Case syncretisms in Russian.

	‘window’	‘teachers’	‘two’	‘book’	‘100’
NOM	okn- o	ucitel-ja	dv-a	knig-a	st-o
ACC	okn- o	ucitel- ej	dv-a	knig-u	st-o
GEN	okn-a	ucitel- ej	dv- ux	knig-y	st- a
PREP	okn-e	ucitel-jax	dv- ux	knig- e	st- a
DAT	okn-u	ucitel-am	dv-um	knig- e	st- a
INS	okn-om	ucitel-ami	dv-umja	knig-oj	st- a

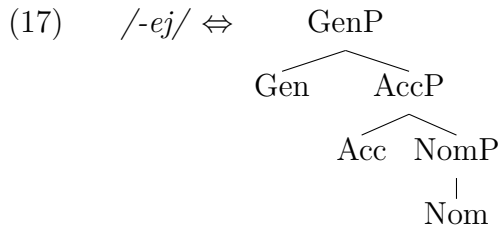
As can be seen in Table 3, *-o* in *okno* ‘window.NOM/ACC’ is syncretic for nominative and accusative, *-ej* in *ucitelej* ‘teachers.ACC/GEN’ is syncretic between accusative and genitive, etcetera. Syncretism only targets contiguous regions, and no non-contiguous syncretisms exist, e.g. nominative and genitive to the exclusion of accusative.

Working within nanosyntax, *Caha* implements the case hierarchy in terms of syntactic structure, given in (16). The higher, more complex cases contain the smaller, less complex cases. A nominative consists of a DP merged with nominative features. An accusative consists of a DP merged with nominative and accusative features. The accusative contains, by definition, the nominative, and so forth.

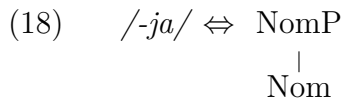
case hierarchy, arguing that there are two types of accusative and dative, both above and below the genitive. As I do not discuss data with a genitive, I maintain the bare ordering in (15).



In nanosyntax, the syncretic forms in Table 3 involve lexical entries that map onto multiple syntactic structures. For example, for *-ej* in *ucitelej* ‘teachers.ACC/GEN’, there is a single lexical entry that contains nominative, accusative and genitive features, as in (17).



If there is a genitive in the syntax, this lexical entry is selected, as the lexical tree exactly matches the syntactic tree. If there is an accusative in the syntax, the same lexical entry is chosen, as the lexical tree is a superset of the syntactic tree (via the Superset Principle), and there is no more specific lexical entry (Elsewhere Condition). The reason why */-ej/* is not inserted as nominative is because there is a lexical entry only for the nominative, as given in (18).



In Table 4, further evidence from case compounding is exemplified (Caha 2009: 69, after Gippert 1987).

As shown in (16), a genitive does not only contain genitive features, but also the accusative (and nominative). Table 4 shows that this containment relation is morphologically visible in West Tocharian: the genitive marker *-mts* formally contains the accusative marker *-m*.

Table 4: Case compounding West Tocharian.

	‘horses’	‘men’
NOM	yakwi	eñkwi
ACC	yakwe- ṃ	eñkwe- ṃ
GEN/DAT	yäkwe- ṃ -ts	eñkwe- ṃ -ts

When implemented in nanosyntax, case compounding looks as follows. I give two lexical entries for West Tocharian in (19).

- (19) a. $/-m/ \Leftrightarrow \text{AccP}$
 $\quad \quad \quad |$
 $\quad \quad \quad \text{Acc}$
- b. $/-ts/ \Leftrightarrow \text{DatP}$
 $\quad \quad \quad \swarrow \quad \searrow$
 $\quad \quad \quad \text{Dat} \quad \text{GenP}$
 $\quad \quad \quad \quad \quad |$
 $\quad \quad \quad \quad \quad \text{Gen}$

If a genitive is spelled out, it spells out all features up to the genitive (so also the accusative features). The accusative features are spelled by $/-m/$ in (19a), and the genitive features are spelled out by $/-ts/$ in (19b). It is crucial here that the lexical entry for the genitive and dative does not contain accusative features, so the phonological structure of the accusative is not canceled out by the Principle of Cyclic Override. Instead, both phonological structures in (19) are combined as *-mts*.

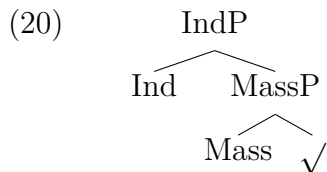
2.2.2 Mass types (MP)

In the previous section I discussed the y-axis of Table 2 (case). This section concerns the x-axis of the table, the choice between *wer* ‘who’ and *was* ‘what’. In this paper, I follow [Hachem \(2015\)](#) who argues that the distinction between *wer* ‘who’ and *was* ‘what’ is one of ‘mass type’. Parallel to the KP for case, I use the MP for mass type. [Hachem](#) proposes that mass type is the notion that should replace, at least for German and Dutch, what has been formerly known as grammatical gender. According to her, the morphological distinctions that can be seen are not semantically empty, but they are used to classify noun phrases into different types of mass. In her work, [Hachem](#) discusses so-called *d-* and *w-*elements in German and Dutch, such as *d-er* ‘the/that’ and *w-er* ‘who’. She analyzes *-er* in *d-er* and *w-er* as the same morphosyntactic element. She lets this element combine with *d-*, which denotes a definite interpretation,

or *w-*, which introduces a set of alternatives. I return to the element *w-* in the next section. In this section I discuss the feature content of the elements that combine with *w-*: *-er* and *-as*.

Hachem (2015) argues that mass type distinctions provide a much better understanding of the nature of *w*-elements than gender distinctions. First, in terms of traditional gender distinctions, *-er* would be masculine gender and *-as* would be neuter. There is no principled reason for the absence of the feminine variant that could refer to a feminine antecedent. Second, gender distinctions do not shed any light on why *was* ‘what’ represents a general lack of information and *wer* ‘who’ refers only to humans (Hachem 2015: 164). Instead, Hachem (2015) introduces the idea that *-as* and *-er* denote different types of mass. The element *-as* (former neuter) expresses unbounded mass, which is defined as ‘homogeneous undifferentiated stuff without any certain shape or precise limits’ (Koptjevskaja-Tamm 2004: 1067). The element *-er* (former masculine) refers to concentration/boundedness/individuation which ‘includes referents that have clear conceptual boundaries, such as natural objects, artifact, or body parts’ (Audring 2009: 69). As the highest point on the individuation scale is a human, *wer* has a default interpretation as a set of human individuals. Answering the question ‘Who are you thinking about?’ will always generate a set of human individuals. *Was*, on the other hand, refers to unboundedness, basically anything. An answer to the question ‘What are you thinking about?’ can be anything: an activity, a state, but also a person. This indicates that ‘what’ and ‘who’ do not refer to inanimates and animates respectively, but that ‘who’ refers to a subset of what ‘what’ refers to. If the person who asked the question knows that the answer is going to be a person, it would be infelicitous to ask ‘what’ and instead ‘who’ should be used, because this is more specific.

Hachem (2015) merges a root (which includes encyclopedic knowledge, see Hachem 2015: 97-98) with unbounded mass features (into a MassP), and with individuation mass features (into an IndP), creating an fseq that looks as in (20).¹⁰ The syntactic containment relation is reflected in the semantics: every individual is made up of mass (Hachem 2015: 108).



¹⁰ Hachem (2015) actually places a CollP (denoting a collective) and a DivP (dividing the collective into individuals, making a plural) on top of the IndP. I only discuss the two lowest elements of the hierarchy, as only these two are relevant for this paper.

Hachem (2015) argues that the unbounded mass - individuable distinction is still reflected in Modern German in remnants of multiple gender assignment. A single noun can combine with multiple determiners of different mass types, rendering distinct meanings. An example is *das Erbe* ‘the heritage’ in which the definite determiner contains the unbounded mass type marker *-as*. It is a mass noun that denotes inherited property. *Der Erbe* ‘the heir’ has the definite determiner with an individuable mass type marker *-er*. It is a count noun that denotes the person that receives the heritage. See Hachem (2015) for more arguments for the fseq she proposes, which include amongst others how nouns in Indo-European combine with different gender suffixes.¹¹

I adopt Hachem (2015)’s terminology and refer to the syntactic node that spells out *-as* as MassP (unbounded mass) and the one that spells out *-er* as IndP (individuable), which always contains the MassP.

2.2.3 *W*-element (WP)

As I noted at the end of the previous section, Hachem (2015) proposes an account for German and Dutch *w*- and *d*- elements. Both *w*- and *d*- combine with the same morphosyntactic objects expressing mass type (and case) distinctions. In Hachem’s work, *d*- is an element that is responsible for establishing a definite reference. The *w*-element, on the other hand, triggers the construction of a set of alternatives in the sense of Rooth (1985; 1992). This set of alternatives is restricted by whatever is in the complement of the WP (Hachem 2015: 180). For Hachem this is always the MP. This means that a *w*-item can refer to a set of alternative individuals (in the case of *wer* ‘who’) or a set of alternative unbounded masses in the case of *was* ‘what’.¹² I do not discuss the internal structure of the WP, but I assume it is a complex element that contains more than a single feature.

Summing up, I split the KP up in different cases, according to the fseq in (16) (Caha 2009). I split the MP up in different types of mass, according to the fseq in (20) (Hachem 2015). Lastly, I assume that the WP introduces a set of alternatives, which is restricted by the KP that contains the MP.

¹¹ Hachem (2015) points out that not all article-noun pairs exhibit the expected mass type, e.g. *das Haus* ‘the house’. According to her, most article-noun pairs in German and Dutch are nowadays idioms, fixed expressions that need to be learned. See Hachem 2015: 130-132 for discussion.

¹² I assume that the MP is a sister of the WP, as shown in (14). In the next section I show how the WP needs to be moved (via spellout driven movement) from its base position, such that the MP is not the sister of the WP anymore. Instead, the WP is a sister of KP, and the set of alternatives introduced by WP is restricted by the KP (which contains MP).

2.3 The lexical entries

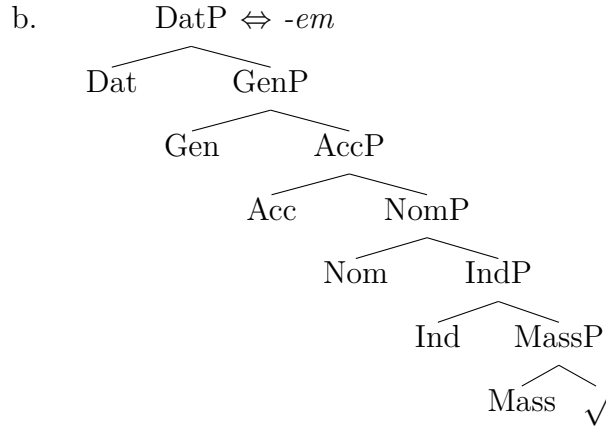
In the previous two sections, I presented nanosyntactic lexical insertion and spellout-driven movements. I also discussed the fseqs of the KP and the MP, and I introduced the WP. In this section, I give the lexical entries that I use in this paper, and I illustrate the construction of a free relative pronoun in the course of a derivation.

I start with the WP. As already pointed out in the previous section, I follow Hachem (2015) in that the WP corresponds to *w-*. The lexical entry is given in (21).

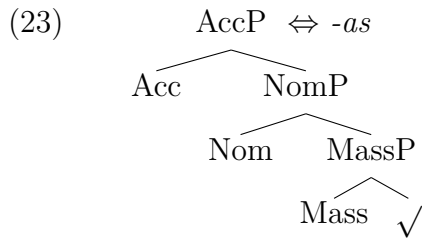
$$(21) \quad \text{WP} \Leftrightarrow w- \\ \quad \quad \quad \triangle$$

Throughout this paper I illustrate my proposal using examples with the relative pronouns *wen* ‘who.ACC’, *wem* ‘who.DAT’ and *was* ‘what.NOM/ACC’. Therefore, I only give the lexical entries for *-en*, *-em* and *-as*. First, *-en* and *-em* express individuating mass, as they refer to individuals. Therefore their lexical entries contain mass type features up to the IndP. The relevant case features are built on top of the mass features. For *-en* this is the fseq up to the AccP. The lexical entry for *-em* also contains genitive and dative. The lexical entries for *-en* and *-em* are given in (22).

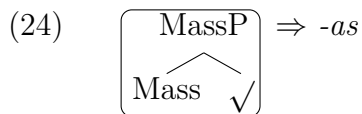
$$(22) \quad \text{a.} \quad \begin{array}{c} \text{AccP} \Leftrightarrow -en \\ \swarrow \quad \searrow \\ \text{Acc} \quad \text{NomP} \\ \quad \quad \swarrow \quad \searrow \\ \quad \quad \text{Nom} \quad \text{IndP} \\ \quad \quad \quad \quad \swarrow \quad \searrow \\ \quad \quad \quad \quad \text{Ind} \quad \text{MassP} \\ \quad \quad \quad \quad \quad \quad \swarrow \quad \searrow \\ \quad \quad \quad \quad \quad \quad \text{Mass} \quad \checkmark \end{array}$$



The marker *-as* expresses unbounded mass (i.e. basically anything) in nominative and accusative case. Specifying the lexical entry for accusative (which contains nominative) makes it possible to insert it in both contexts by means of the Superset Principle. The lexicon does not contain a lexical entry specifically for unbounded mass in nominative, so the lexical entry for unbounded mass in accusative is inserted.¹³ I give the lexical entry in (23).



In (24) to (28) I give a step by step derivation of the creation of *was* ‘what.NOM’. In the first step, the root is merged with *Mass*, creating *MassP*, shown in (24). The lexical entry that can be inserted is (23), as the lexical tree in (23) is a superset of the structure in (24), and it has less superfluous material than the entries for *-en* and *-em* (STAY).



In a separate workspace, the WP is built, and spelled out as *w-*.

¹³ The individuating mass type in nominative case (*-er*, with lexical tree [NomP[IndP[MassP[✓]]]]) will not be inserted because trees are only allowed to shrink from the top. See Vanden Wyngaerd 2018 for a discussion on multidimensional paradigms.

$$(25) \quad \begin{array}{c} \text{WP} \Rightarrow w- \\ \triangle \end{array}$$

In the next step, the WP merges with the MassP, both having their own spellout.¹⁴

$$(26) \quad \begin{array}{c} \text{WP} \\ \swarrow \quad \searrow \\ \boxed{\begin{array}{c} \text{WP} \\ \triangle \end{array}} \quad \boxed{\begin{array}{c} \text{MassP} \\ \swarrow \quad \searrow \\ \text{Mass} \quad \checkmark \end{array}} \Rightarrow -as \end{array}$$

MassP merges with Nom, resulting in the structure in (27).

$$(27) \quad \begin{array}{c} \text{NomP} \\ \swarrow \quad \searrow \\ \text{Nom} \quad \text{WP} \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ \boxed{\begin{array}{c} \text{WP} \\ \triangle \end{array}} \quad \boxed{\begin{array}{c} \text{MassP} \\ \swarrow \quad \searrow \\ \text{Mass} \quad \checkmark \end{array}} \Rightarrow -as \end{array}$$

No lexical entry exists for the structure as it is (STAY). There is no lexical entry for NomP that contains MassP with WP in its specifier. To alter the syntactic structure, the WP cyclically moves to the left of Nom (CYCLIC;), as shown in (28).

$$(28) \quad \begin{array}{c} \text{NomP} \\ \swarrow \quad \searrow \\ \boxed{\begin{array}{c} \text{WP} \\ \triangle \end{array}} \quad \boxed{\begin{array}{c} \text{NomP} \\ \swarrow \quad \searrow \\ \text{Nom} \quad \text{MassP} \\ \swarrow \quad \searrow \\ \text{Mass} \quad \checkmark \end{array}} \Rightarrow -as \end{array}$$

Now (23) matches the structure again, and MassP is spelled out as *-as*.

This concludes the section on the internal structure of free relative pronouns. In the next section, I discuss the external syntactic structure of the free relative construction.

¹⁴ I assume the WP is created in a separate workspace and it merges as a complex specifier that projects. As the exact mechanics of how this happens are not relevant for the analysis in this paper, I do not discuss the details here. See Starke cf. 2018; Caha et al. cf. 2018 for discussion.

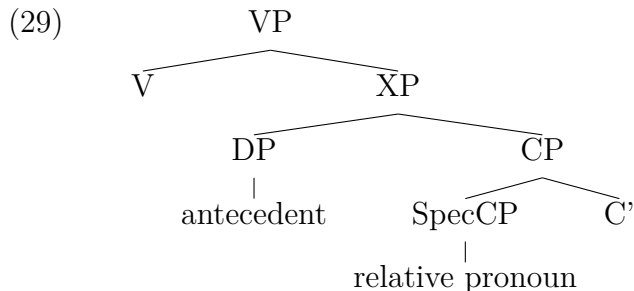
3 External syntax of free relatives

This section discusses the external syntax of free relatives. I show that the free relative pronoun is both the DP in the main clause and in the SpecCP of the embedded clause. I introduce [Van Riemsdijk \(2006a\)](#)'s concept of grafting to account for this. Grafting entails that embedded features in one structure are remerged into a different structure. Applying this to free relatives means that the free relative is connected to the main and embedded clause via the relative pronoun. I also show how nanosyntactic structures can be grafted.

3.1 Two syntactic positions

In this section I discuss the syntactic position of the relative pronoun in the main and embedded clause. I provide evidence that indicates that the relative pronoun is part of the embedded clause and also of the main clause. I conclude, following [Van Riemsdijk \(2006a\)](#), that relative pronouns are simultaneously part of both clauses, and that they should be analyzed with grafting, i.e. embedded features from one structure are remerged into a different structure.

Two positions are often considered for the relative pronoun in a free relative construction: the DP in the main clause and the SpecCP in the embedded clause ([Bresnan & Grimshaw 1978](#); [Groos & van Riemsdijk 1981](#)). These options originate from the comparison between headed relative constructions and free relative constructions, as these are the positions of the antecedent and the relative pronoun in a headed relative clause. A syntactic structure of a headed relative clause is shown in (29).



Consider the headed relative clause in (30a) and its free relative counterpart in (30b).

- (30)
- a. I like the book that you have finished reading.
 - b. I like what you have finished reading.

If one assumes that headed and free relative constructions have the same underlying syntax, the question that follows is whether *what* corresponds to the antecedent *the book* (the DP in the main clause) or to the relative pronoun *that* (in the SpecCP) in (29). The evidence that I discuss below suggests it should be in both.

Bresnan & Grimshaw (1978) argue that the relative pronoun is part of the main clause. One of the arguments she provides is that the relative pronoun triggers number agreement in the main clause, so it should be part of that clause. Himmelreich (2017) shows that this argument Bresnan & Grimshaw use for English also holds in German. In what follows I illustrate their argumentation, and compare a regular main clause, an indirect interrogative clause and a free relative construction.

In a regular main clause as in (31), a plural wh-subject requires plural number agreement.

- (31) Himmelreich (2017: 166)
 Welche Bücher haben/ *hat dir gefallen?
 which book.PL have.PL/ have.SG 2SG.DAT liked
 ‘Which books did you like?’

The construction is only grammatical if the plural subject *welche Bücher* ‘which books’ is able to agree with the plural form of the predicate (*haben* ‘have.PL’), and it is ungrammatical when the predicate has the singular form *hat* ‘have.SG’.

In contrast to that, wh-phrases that occur in embedded clauses (e.g. indirect interrogative clauses) do not affect the number agreement in the main clause, which is illustrated in (32).

- (32) Himmelreich (2017: 167)
 Welche Bücher ihm gefallen, ist/ *sind unklar.
 which book.PL 3SG.DAT like, be.SG/ be.PL unclear
 ‘It is unclear which books he likes.’

Welche Bücher ‘which books’ does not agree in number with the predicate in the main clause: the construction that contains the agreeing plural form *sind* ‘be.PL’ is ungrammatical, and the sentence becomes grammatical if the singular form of the predicate *ist* ‘be.SG’ is used. Thus, forms that are part of the embedded clause do not affect verbal agreement in the main clause.

If the relative pronoun patterns with the wh-element in a regular main clause as in (31) and shows agreement with the main clause verb, this is an indication that it is part of the main clause. If the relative pronoun does not

show agreement with the verb in the main clause, and it patterns with the wh-element in indirect interrogative clauses as in (32), this indicates that it is part of the embedded clause. The data show that the relative pronoun patterns with the wh-element in a regular main clause: in free relative constructions with a plural (complex) wh-phrase, plural agreement is required.¹⁵ *Welche Bücher* ‘which books’ in (33) has to agree in number with *haben* ‘have.PL’, and the use of the singular form (*habe* ‘have.SG’) renders an ungrammatical result.

- (33) Himmelreich (2017: 167)
 Welche Bücher ich auch immer gelesen habe, haben/ *hat
 which book.PL 1SG.NOM ever read have, have.PL/ have.SG
 mir gefallen.
 1SG.DAT liked
 ‘I liked whatever books I read.’

This suggests that the relative pronoun is part of the main clause.

Note here though that this is positive evidence for the relative pronoun being part of the main clause, and not negative evidence indicating that the relative pronoun is not part of the embedded clause. In other words, (33) excludes the possibility that the relative pronoun is only part of the embedded clause and not of the main clause. This argument is compatible with the relative pronoun being simultaneously part of both the main and embedded clause, which is what I argue for, following Van Riemsdijk (2006a).

Groos & van Riemsdijk (1981) argue that the relative pronoun should be in the embedded clause. One of the arguments they use comes from relative clause extraposition. They examine the positional behavior of the DP in the main clause and the relative clause in headed relative clauses, and compare this to the position of the relative pronoun in free relative constructions. The headed relative clauses that Groos & van Riemsdijk discuss are given in (34).

- (34) Groos & van Riemsdijk (1981: 185)
 a. Der Hans hat das Geld, das er gestohlen hat, zurückgegeben.
 the Hans has the money which he stolen has returned
 ‘Hans has returned the money that he has stolen.’

¹⁵ Himmelreich gives examples of complex wh-phrases (*welche Bücher* ‘which books’) in German, since simple wh-phrases (e.g. *was* ‘what’) always have singular number agreement. In Spanish, number agreement with relative pronouns also occurs with simple plural wh-phrases (Himmelreich 2017: 168).

- b. Der Hans hat das Geld zurückgegeben, das er gestohlen
 the Hans has the money returned which he stolen
 hat.
 has
 ‘Hans has returned the money that he has stolen.’
- c. * Der Hans hat zurückgegeben, das Geld, das er gestohlen
 the Hans has returned the money which he stolen
 hat.
 has
 ‘Hans has returned the money that he has stolen.’

The example in (34a) shows a headed relative clause with the DP *das Geld* ‘the money’ in the main clause and the relative clause *das er gestohlen hat* ‘which he has stolen’ in base position. In (34b), the relative clause is extraposed to the right edge of the sentence, and the DP in the main clause remains behind. This is possible in German and the sentence is grammatical. In (34c), both the relative clause and the DP in the main clause are extraposed, and the sentence is ungrammatical. The conclusion is that only the relative clause can be extraposed, but the DP from the main clause cannot.

The question is what happens to the relative pronoun if a relative clause in a free relative construction is extraposed. If the relative pronoun were part of the main clause, the relative pronoun would be expected to take the position of the DP in the main clause: it should be possible to be stranded on its own in the main clause (as in (34b)), and it should be impossible to extrapose to the right edge of the clause (as in (35)).

- (35) Groos & van Riemsdijk (1981: 185)
 Der Hans hat zurückgegeben, was er gestohlen hat.
 the Hans has returned what he stolen has
 ‘Hans has returned what he has stolen.’

However, (36) shows that a sentence is ungrammatical if the relative pronoun is stranded, and (35), in which *was* ‘what’ is extraposed to the right edge of the clause, together with the rest of the relative clause, is grammatical.

- (36) Groos & van Riemsdijk (1981: 185)
 * Der Hans hat was zurückgegeben, er gestohlen hat.
 the Hans has what returned he stolen has
 ‘Hans has returned what he has stolen.’

This suggests that the relative pronoun is part of the embedded clause. To summarize, there is evidence that the relative pronoun is part of the main clause, and there is evidence that it is part of the embedded clause. Given these observations (and because relative pronouns seem to take case requirements from the main and embedded clause into account, see Section 1), different proposals have been made to let the relative pronoun simultaneously be the DP in the main clause and in the SpecCP of the embedded clause. These proposals can be grouped into two categories: (1) having a single element in each syntactic position, and realizing only one of them phonologically, or (2) having a single syntactic element that is part of both clauses because of a sharing relation (cf. multidominance or grafting).

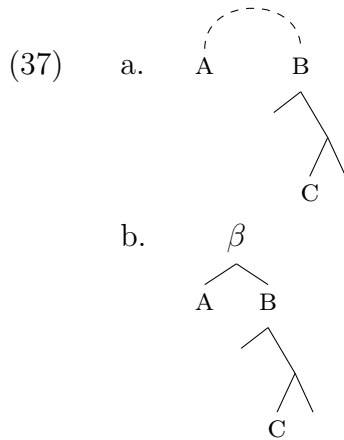
An example of the first type of proposal is the one by [Himmelreich \(2017\)](#). She argues that there are two elements (one in the main clause and one in the embedded clause) that bear the same syntactic feature values. The sharing of features comes about by several non-standard Agree relations. The two elements are always present, and one of the elements is always phonologically empty. In order to avoid having non-standard Agree relations and having to stipulate the presence of a phonologically empty element, I do not adopt [Himmelreich \(2017\)](#)'s approach. A proposal that fits into the second category is [Asarina \(2011\)](#)'s account for right node raising in Russian. She proposes that a case conflict can be resolved if conflicting case features on a single node can be realized by the same lexical entry. Her proposal does not extend to free relatives that are sensitive to more or less complex case. For these cases, there is not a single underspecified lexical entry available that corresponds to two cases. In the system of [Asarina \(2011\)](#) these sentences are predicted to crash, which is not what happens in German. However, [Asarina \(2011\)](#)'s and my analysis share the idea of having a single syntactic element that is simultaneously part of both the main and embedded clause via a sharing configuration. In my proposal, I adopt [Van Riemsdijk \(2006a\)](#)'s proposal of grafting, on which I elaborate in the next section.¹⁶

¹⁶ An anonymous reviewer raised the questions what the motivation is for adopting grafting and not (any other type of) multidominance. It goes beyond the scope of the paper to discuss the differences and similarities between sharing accounts such as multidominance and grafting. The intuition that I adopt for this paper is that embedded syntactic structure can be remerged into a different clause (external remerge), which can be achieved by both grafting and (at least some versions of) multidominance. For expository reasons, I frame this proposal using [Van Riemsdijk \(2006a\)](#)'s grafting approach.

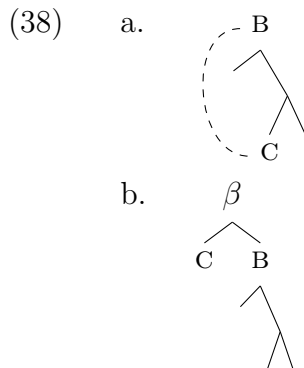
3.2 Grafting

Van Riemsdijk (2006a) has argued for a grafting analysis, in which the relative pronoun is simultaneously the DP in the main clause and in the SpecCP of the embedded clause. In his proposal embedded features in one structure are remerged into a different structure. He argues that this special type of merge must exist, when all logical combinations of internal and external merge are taken into account. Grafting essentially combines properties of internal and external merge. The reasoning in Van Riemsdijk (2006a) goes as follows.

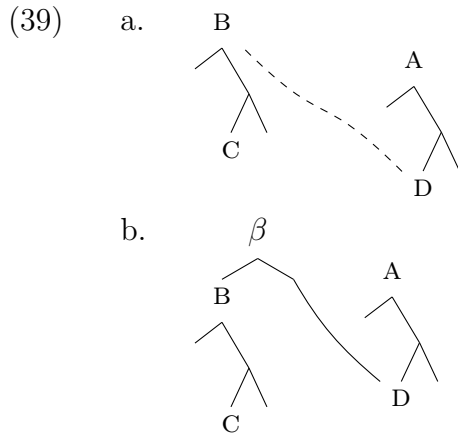
In (37a), A and B are combined with external merge. The two distinct structures are taken and combined to form the structure in (37b).



Internal merge takes a subpart of an existing structure as one of the two objects. In (38a), a subpart of a structure called C is combined with B via internal merge. The result is its movement, as shown in (38b).



In grafting, the properties of internal and external merge are combined. Just like in external merge, two distinct structures are combined, and, like in internal merge, a subpart of an existing structure is one of the merging objects. In (39a), merge applies to B and D. D is a subpart of an existing structure and it remerges with the distinct structure B (i.e. it is grafted). In (39b), D is the element that is shared between the two structures. It is a sister of B but still preserves the structural relations within its own structure (Van Riemsdijk 2006a: 22).



3.3 Grafting and nanosyntactic structures

In this section, I show the analysis of a free relative construction in which the case requirements of the two predicates match. This derivation is identical (apart from some simplifications) to what is proposed in Van Riemsdijk (2006b), except for the fact that the relative pronoun consists of a complex syntactic structure rather than a single syntactic node. Just like Van Riemsdijk, I let the derivation proceed in three steps.¹⁷

- (40) Derivational steps for matching free relatives in German
- a. **Step 1:** the relative pronoun is externally merged with the predicate in the embedded clause
 - b. **Step 2:** the relative pronoun is internally remerged to the left edge of the clause (into the SpecCP position)

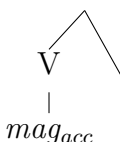
¹⁷ Non-spellout driven movement, such as the movement of the relative pronoun to the SpecCP position, falls outside the scope of this paper. See De Clercq 2019: 21 for an approach in which syntactic movement is motivated by spellout. The idea is that a feature can (right after being merged) attract a constituent from the derivation to its specifier, if it provides the feature with a spellout. This movement precedes spellout-driven movement operations.

- c. **Step 3:** the predicate in the main clause externally remerges (grafting) with the highest case node

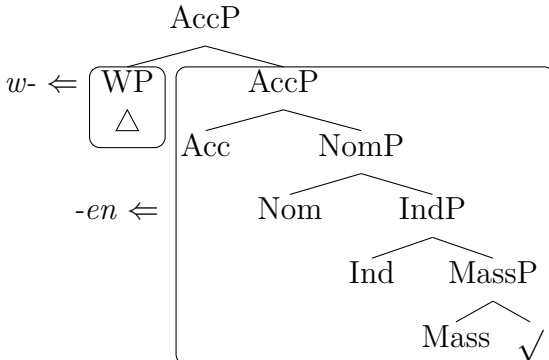
The sentence under examination is given in (41), repeated from the introduction. Both *lade ein* ‘invite’ and *mag* ‘likes’ require their objects to be in accusative case.

- (41) Vogel (2001: 344)
 Ich lade ein, wen auch Maria mag.
 I invite_{acc} who.ACC also Maria likes_{acc}
 ‘I invite whoever Maria also likes.’

The derivation starts with the embedded clause. *Mag* ‘likes’ combines with an accusative, as shown in (42).¹⁸

- (42)
- 

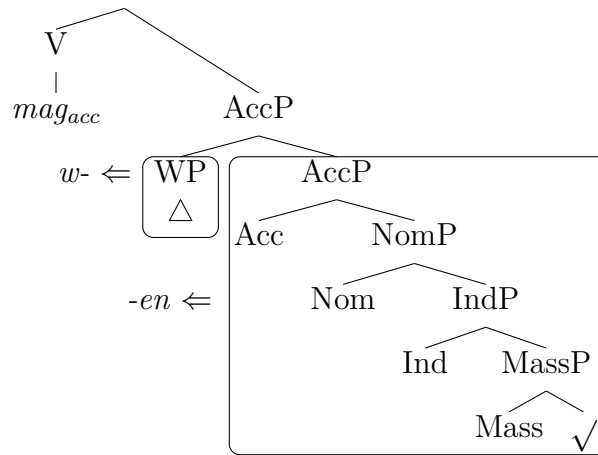
The accusative relative pronoun in (41) has an individuating mass type interpretation, so this structure needs to be built. This happens in a similar way to how *was* ‘what’ was built in Section 2.3. I leave out the derivation of the pronoun *wen* ‘who.ACC’, and I give the result in (43).

- (43)
- 

In Step 1, the predicate *mag* ‘likes’ merges with the accusative relative pronoun (the AccP), as shown in (44).

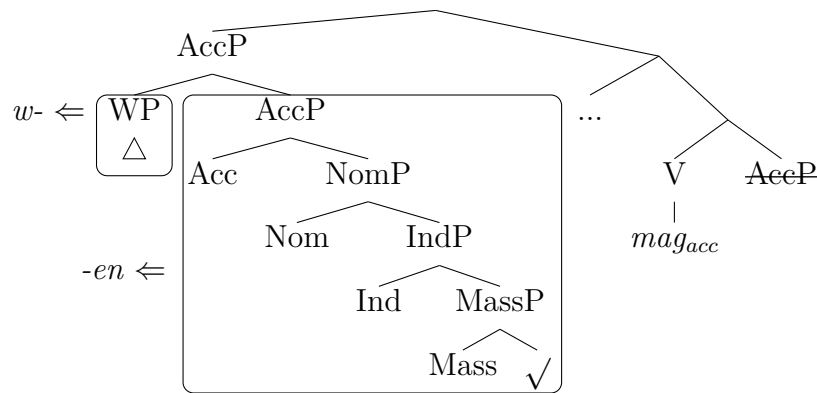
¹⁸ In this paper I do not discuss argument selection. For now I assume that some part of the syntactic structure associated with the predicate selects for the case it requires, and merges with this particular case node in the syntax. In this paper I abstract away from this, and the predicate is simply merged directly with the required case node.

(44)



I ignore the construction of the rest of the structure, and continue with the movement of the AccP to the left edge of the clause (Step 2). The dots in (45) refer to the material between the leftmost position in the clause and the predicate. The position where the relative pronoun is moved from is *AccP*.

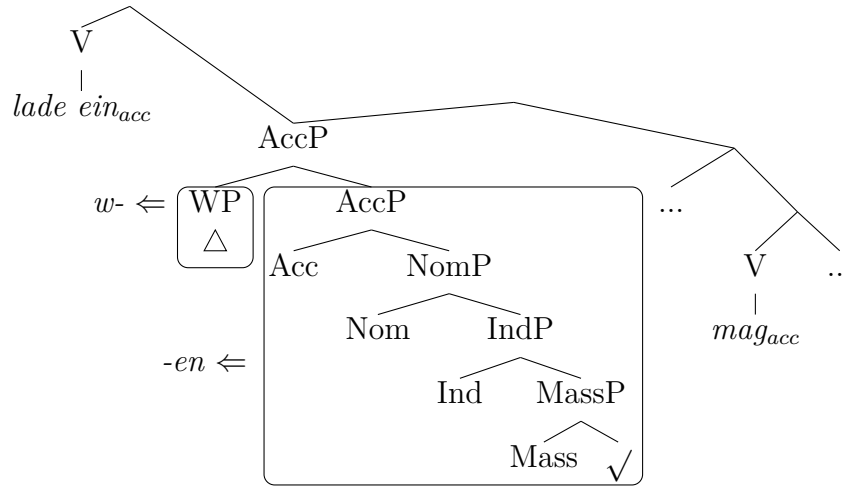
(45)



Lade ein ‘invite’ requires its object to be in accusative, so it has to combine with the AccP. Step 3, grafting, occurs: the AccP externally remerges with the predicate in the main clause, as shown in (46). As a result, *wen* ‘who.ACC’ is part of both the main and embedded clause.¹⁹

¹⁹ There are some issues that need to be resolved, such as the linearization of these structures and theta role assignment. I do not have anything to offer here, and leave it open to future research.

(46)



In Section 3, I discussed the external syntax of free relative constructions, arguing for a grafting approach (Van Riemsdijk 2006a). I showed how nanosyntactic structures can be grafted to account for a matching free relative. With the background from the last two sections in mind, I derive the mismatching free relatives in the next section.

4 Deriving the patterns

In this section, I outline my analysis, accounting for the patterns in Table 1, repeated in Table 5.

Table 5: Grammaticality pattern for German.

	case in embedded clause	
	more complex	less complex
distinct forms	✓	*
syncretism	✓	✓

I propose that mismatching free relatives are derived in the three steps described in (40): external merge of the relative pronoun, movement of the relative pronoun to the edge of the clause, grafting. If the predicate in the embedded clause requires a more complex case than the predicate in the main clause (the left column in Table 5), the required embedded case node is grafted into the main clause. I go through the derivations in Section 4.1. If this case node is not available, an additional step is needed before Step 3, grafting, can

take place. I suggest that there is an option to insert additional structure on the syntactic structure of the relative pronoun. This insertion of structure is subject to certain restrictions, which correctly rule out non-syncretic forms and predict the syncretic forms to be grammatical. I elaborate on these restrictions and discuss the relevant derivations (those of the configurations in the right column in Table 5) in Section 4.2.

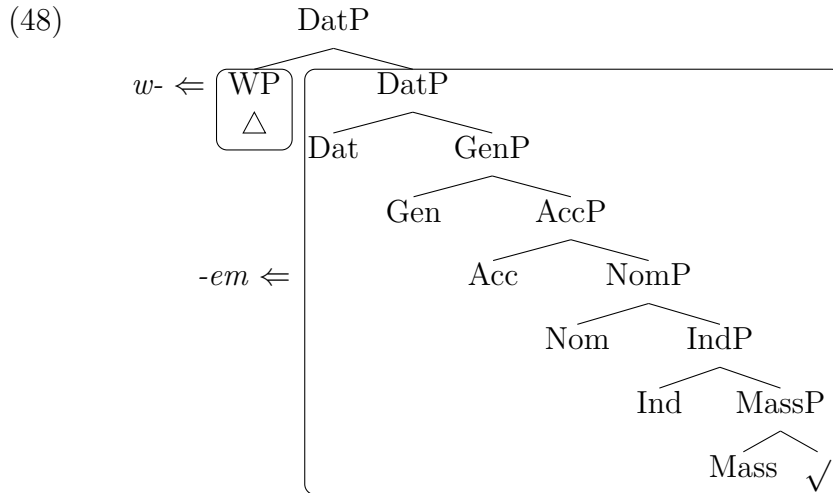
4.1 Grafting a less complex case

I start by discussing free relative constructions in which the case required in the embedded clause is more complex than the case required in the main clause. These constructions are grammatical, independent of whether the forms corresponding to the cases are syncretic or not.²⁰ However, in the case of non-syncretic forms, the relative pronoun needs to appear in the form that corresponds to the more complex case, as shown again in (47). If *wem* ‘who.DAT’ is used, the sentence is grammatical, but if *wen* ‘who.ACC’ is used, it is not.

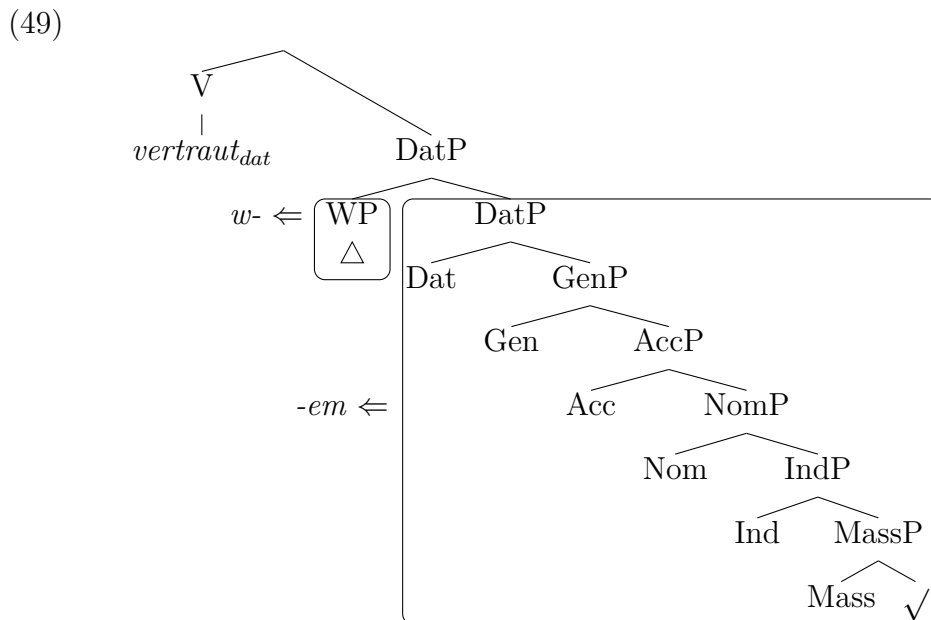
- (47) Vogel (2001: 344)
- a. Ich lade ein, wem auch Maria vertraut.
 I invite_{acc} who.DAT also Maria trusts_{dat}
 ‘I invite whoever Maria also trusts.’
 - b. * Ich lade ein, wen auch Maria vertraut.
 I invite_{acc} who.ACC also Maria trusts_{dat}
 ‘I invite whoever Maria also trusts.’

The derivation starts again with the embedded clause. *Vertraut* ‘trusts’ in (47a) combines with a relative pronoun with an individuating mass type interpretation in dative case. This relative pronoun is built as shown in (48).

²⁰ I first discuss the examples with non-syncretic forms. Then, I show how the same analysis derives the syncretic variant.

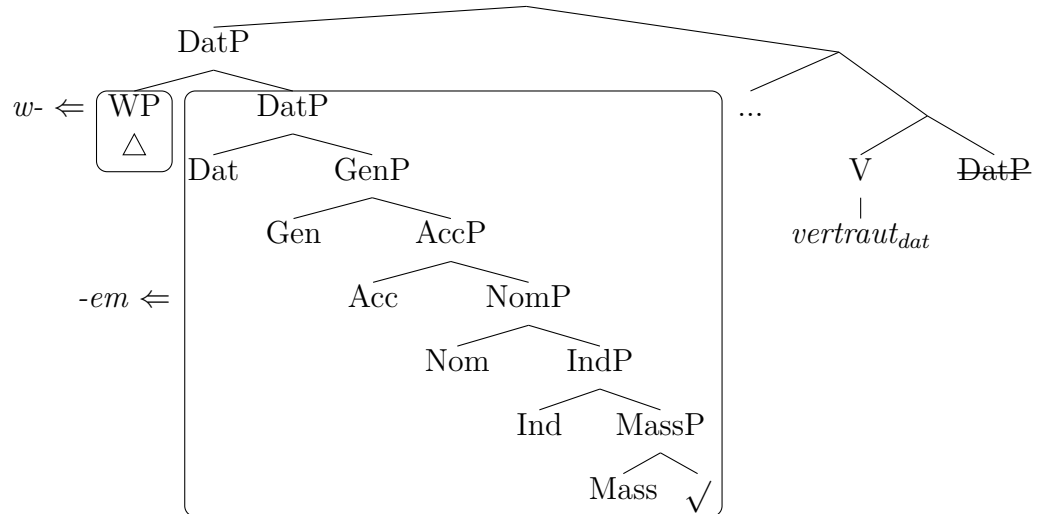


It becomes clear why the accusative relative pronoun *wen* ‘who.ACC’ cannot be used in this configuration, and (47b) is ungrammatical: *wen* ‘who.ACC’ has been overwritten by *wem* ‘who.DAT’ during the creation of the dative relative pronoun. Step 1 occurs: the predicate *vertraut* ‘trusts’ combines with the DatP, as shown in (49).



In Step 2, the DatP is moved to the left edge of the clause, as shown in (50).

(50)

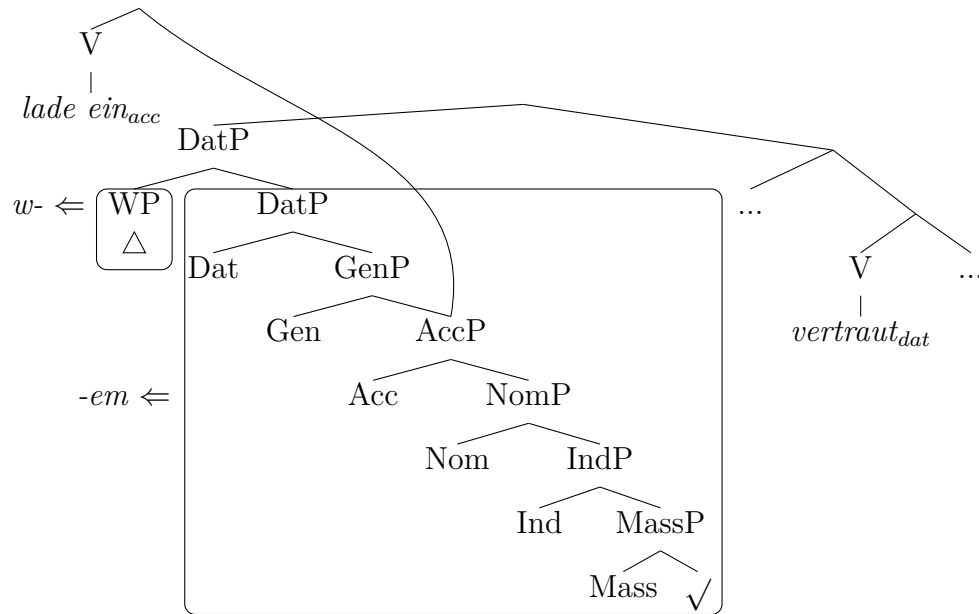


In the next step, Step 3, the relative pronoun is externally remerged with the main clause predicate. The predicate in the main clause is *lade ein* ‘invite’, which requires its object to be in accusative. Therefore, it is not the highest node, the DatP, that is externally remerged, but it is the AccP, an embedded case node. Grafting targets embedded features; as DatP and AccP are both embedded features, this operation remains the same. The formulation of Step 3 of the derivational steps, however, needs to be adjusted, as shown in (51). In Section 5 I show that it is language-specific whether grafting can take place only with the highest case node or also with an embedded case node. German groups with languages that allow for grafting an embedded case node.

- (51) Derivational steps for non-matching free relatives in German (to be revised)
- Step 1:** the relative pronoun is externally merged with the predicate in the embedded clause
 - Step 2:** the relative pronoun is internally remerged to the left edge of the clause (into the SpecCP position)
 - Step 3:** the predicate in the main clause externally remerges (grafting) with the highest case node, or with a case node it contains

What is crucial here is that the DatP always contains the AccP in the fseq (Caha 2009). This is the reason why the DatP can also satisfy an accusative case requirement. The revised Step 3 is illustrated in (52): AccP is grafted into the main clause.

(52)

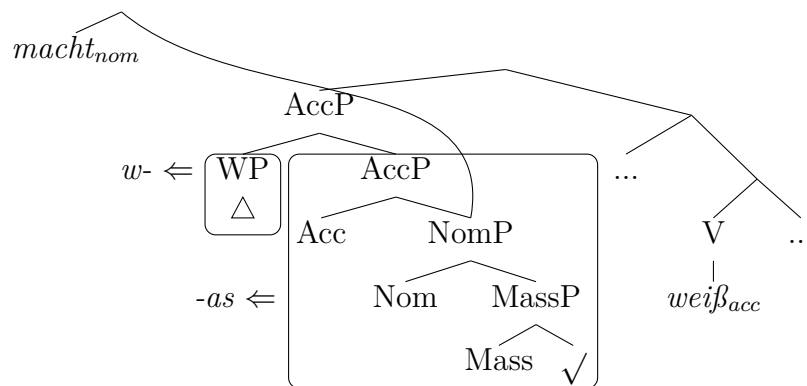


For completeness, I also include the analysis for the syncretic variant in the left column of Table 5. Again, the more complex case is required in the embedded clause, but now a syncretic form corresponds to the different cases, as in (53).

- (53) Vogel (2001: 363)
Was ich nicht weiß, macht mich nicht heiß.
What.NOM/ACC I not know_{acc} makes_{nom} me not hot
'What I don't know doesn't excite me.'

The analysis is identical to the one described in this section, illustrated in (54).

(54)



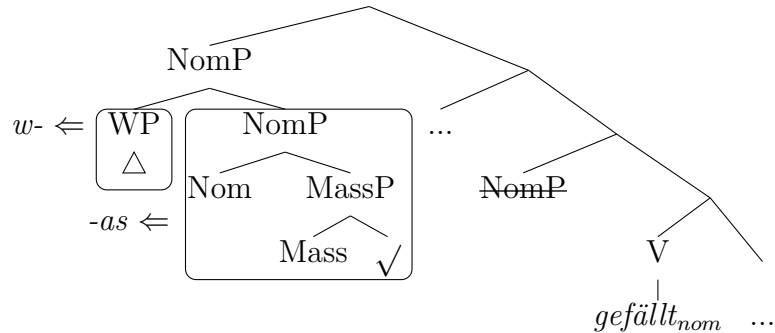
In Step 1, *weiß* ‘know’ combines with the AccP. In Step 2, the AccP is moved to the left edge of the clause. In Step 3, *macht* ‘makes’ externally remerges with the NomP (which is contained in the AccP).

4.2 Grafting a more complex (inserted) case

In the previous section I discussed configurations in which the predicate in the embedded clause requires a more complex case than the predicate in the main clause. This section discusses configurations that are the other way around: the predicate in the embedded clause requires a less complex case than the predicate in the main clause. Step 1 and Step 2 in (40) can proceed as in the previous section, but Step 3, the external remerge of the relative pronoun with the predicate in the main clause, is not possible. To illustrate this, consider the example and structure in (55). In (55a), the embedded clause predicate *gefällt* ‘pleases’ combines with a nominative subject, and the main clause predicate *erzähle* ‘tell’ combines with an accusative object. The derivation starts in the embedded clause, where *gefällt* ‘pleases’ merges with the NomP (Step 1), and the NomP moves to the left edge of the clause (Step 2). (55b) shows the structure after Step 2.

- (55) a. Vogel (2001: 344)
 Ich erzähle, was immer mir gefällt.
 I tell_{acc} what.NOM/ACC ever me pleases_{nom}
 ‘I tell whatever pleases me.’

b.



In Step 3, *erzähle* ‘tell’ is supposed to externally remerge with an AccP. However, as can be seen in (55b), there is no AccP available in the structure (NomP does not contain AccP).

What I propose is that Step 3 can still take place after inserting some additional syntactic structure to the relative pronoun. This insertion of features is restricted by two factors: (1) the choice of which features are inserted and

(2) the consequences of the insertion for the phonological form. The choice of which features are inserted is limited by the fseq: only features that follow the fseq can be inserted. This originates in the idea in cartography and nanosyntax that all structure building follows a universal hierarchy of features (cf. [Baunaz & Lander 2018](#)). The insertion of features I describe here has to adhere to this restriction as well. The second restriction concerns the consequences for the phonological form. Normally, the Principle of Cyclic Override applies if new features are merged and they need to be spelled out. In this case, however, the element is used again, but it also remains active as the element it was formerly. It seems that in this type of situation (a grafting situation), Cyclic Override needs to be restricted. In Section 5 I show that it is language-specific whether the phonological form can be overridden or not. German groups with languages that does not allow overriding. The two restrictions described here can be summarized as in (56).

- (56) Restrictions constraining which additional features may be inserted
- a. **Follow fseq**: only features that follow the fseq may be added
 - b. **Keep spellout**: the inserted phonological form needs to be kept the same

As I pointed out in Section 2.1, syncretic forms (forms that have the same phonological form) have a single lexical entry that spells them out, and lexical trees in lexical entries are determined by the fseq. Therefore, (56) can be rephrased informally as ‘stay within the boundaries of a lexical entry’. The optional insertion of features is added as a step to the derivational steps, as shown in (57).

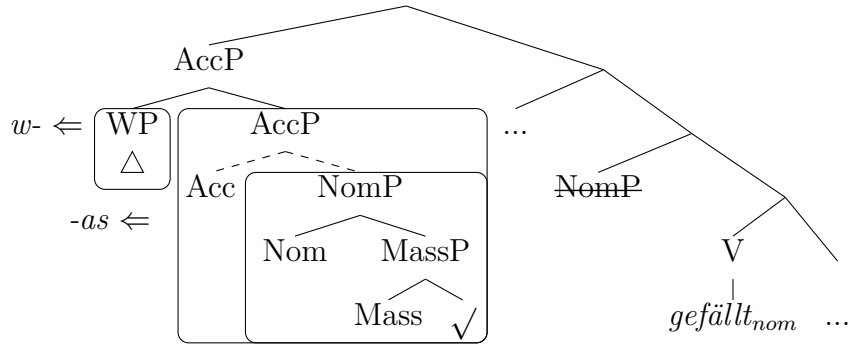
- (57) Derivational steps for non-matching free relatives in German
- a. **Step 1**: the relative pronoun is externally merged with the predicate in the embedded clause
 - b. **Step 2**: the relative pronoun is internally remerged to the left edge of the clause (into the SpecCP position)
 - c. **Step 3**: if required, additional case features that follow the fseq are inserted, within the boundaries of the inserted lexical entry
 - d. **Step 4**: the predicate in the main clause externally remerges (grafting) with the highest case node, or with a case node it contains

In the remainder of this section I show how the revised derivational steps make the correct predictions for the configurations with syncretic and non-syncretic forms.

4.2.1 Syncretic forms

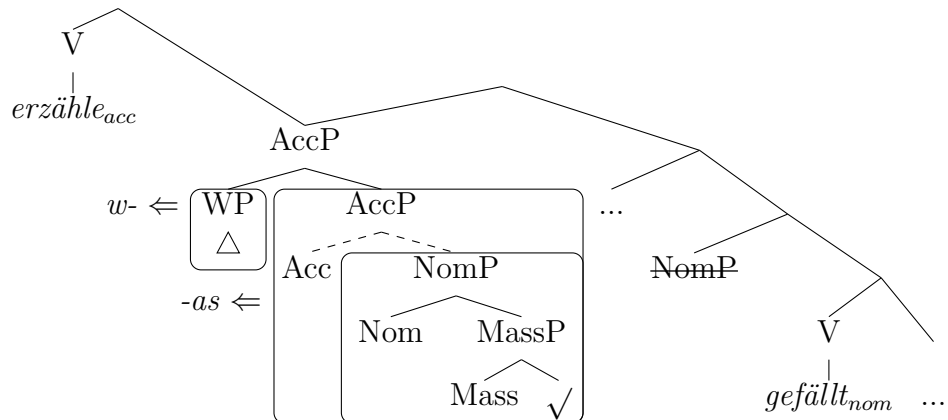
As I pointed out in the previous section, the grafting step cannot take place directly for the syncretic mismatching free relative in (55a). The new Step 3, inserting syntactic features, changes this situation. The required case node is AccP, so accusative case features need to be inserted. (58) shows a representation of the structure after the accusative features are inserted. The inserted structure is marked by dotted lines.

(58)



Inserting the AccP obeys the restrictions stated in (56). First, inserting the AccP above the NomP follows the fseq. Second, the nominative and accusative unbounded mass are both spelled out as *-as*, so the spellout of the nominative is not affected. In other words, the NomP and the AccP correspond to the same lexical entry (*-as* in (23)). With these inserted features in place, Step 4 (earlier Step 3) takes place, and *erzähle* ‘tell’ externally remerges with the AccP.

(59)

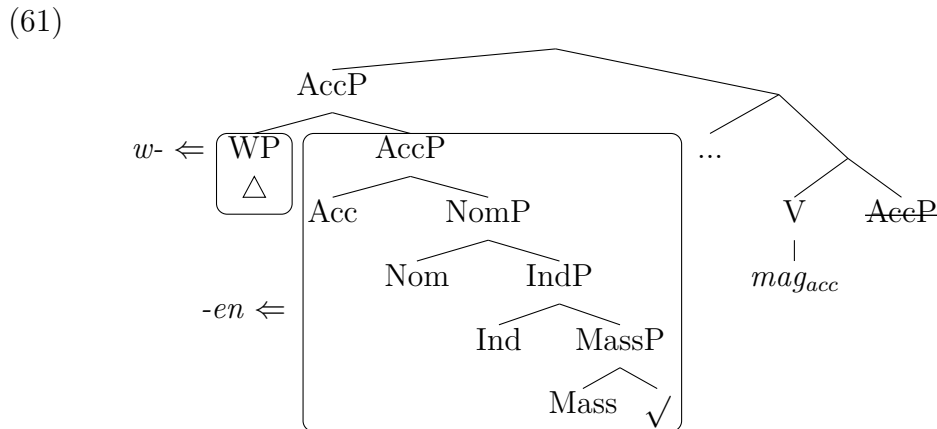


4.2.2 Non-syncretic forms

In the previous section I discussed the example in which the predicate in the embedded clause requires a less complex case, and there is a syncretic form for both required cases (the lower right cell in Table 5). This section discusses the last example in which the embedded clause predicate requires a less complex case than the main clause predicate, and the phonological forms that correspond to the two cases differ. I repeat the example in (60).

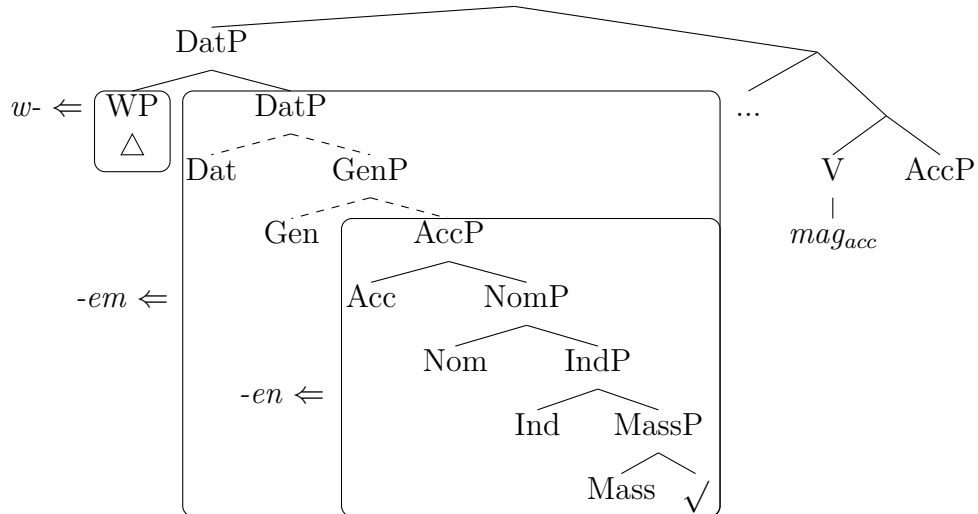
- (60) Vogel (2001: 345)
 * Ich vertraue, wen/ wem auch Maria mag.
 I trust_{dat} who.ACC/ who.DAT also Maria likes_{acc}
 ‘I trust whoever Maria also likes.’

Again, up to Step 2, the derivation proceeds normally. The derivation starts in the embedded clause. In Step 1, *mag* ‘likes’ merges with the AccP, and the relative pronoun is moved to the left edge of the clause (Step 2). (61) shows the structure after Step 2.



In Step 4, *vertraue* ‘trust’ is supposed to externally remerge with a DatP. However, as can be seen in (61), there is no DatP available in the structure (AccP does not contain DatP). The required case node is DatP, so dative and genitive case features need to be inserted (as part of Step 3). (62) shows a representation of the structure after the genitive and dative features are inserted.

(62)



Different from the previous case, inserting the required case node obeys only one of the two restrictions in (56). First, adding GenP and DatP on top of AccP follows the fseq (56a). However, the second restriction is not met. The phonological form that corresponds to the DatP is *-em* and not *-en*, as it was for the AccP. Therefore, the insertion of the features is not permitted, the derivation cannot continue, and Step 4 cannot take place.

In this section I showed that satisfying two different case requirements happens in four steps. First, the relative pronoun is merged with the predicate in the embedded clause. Second, the relative pronoun is internally remerged to the left edge of the clause. Step 3 is not necessary for derivations in which the embedded clause requires a more complex case than the main clause. However, for derivations in which the embedded clause requires a less complex case than the main clause, Step 3 is necessary. Additional case features that follow the fseq are inserted, within the boundaries of the inserted lexical entry. The restriction on keeping the same lexical entry gives the attested pattern: it lets the derivation of syncretic forms continue, but it causes the derivation of the non-syncretic forms to crash. Finally, for all derivations, grafting takes place in Step 4: the predicate in the main clause externally remerges (grafting) with the highest case node, or with a case node it contains.

5 Cross-linguistic differences

In the previous section I showed how the grammaticality pattern of German can be captured using case containment and grafting. In this section I discuss

patterns that appear in other languages. First, I briefly return to the point that syncretism resolving case conflicts seems to be universal. Then, I switch to non-syncretic forms, and I identify two parameters that are responsible for cross-linguistic differences. I illustrate how three other languages can be analyzed using the mechanics laid out in this paper, making use of the two parameters.

In Section 4.2.1, I showed how the German *was* ‘what.NOM/ACC’ can satisfy nominative case requirement from the embedded clause and an accusative case requirement from the main clause. I argued that this is possible due to the fact that additional features can be inserted as long as they do not change the phonological form, and stay within the boundaries of a lexical entry. This possibility to freely insert features within the boundaries of a lexical entry is not specific to German. The examples from (6), repeated here in (63), show that syncretism is able to resolve feature conflicts in free relatives cross-linguistically.

- (63) a. *Russian*, Levy & Pollard (2002: 222)
 Kogo ja iskal, ne bylo doma.
 who.ACC/GEN I sought_{acc} not was_{gen} home
 ‘Who I was looking for wasn’t at home.’
- b. *conversational Bulgarian*, Izvorski (1997: 279)
 Šte celuna kojto dojde prâv.
 will kiss_{acc} who.NOM/ACC comes_{nom} first
 ‘I will kiss whoever comes first.’
- c. *Polish*, Citko (2013)
 Jan unika kogokolwiek wczoraj obraził
 Jan avoids_{gen} whoever.ACC/GEN yesterday offended_{acc}
 ‘Jan avoided whoever he offended yesterday.’

However, looking at non-syncretic forms indicates that some parts of the proposal for the German data do not hold cross-linguistically, but seem to vary between languages. Two aspects of the proposal can be identified as parameters for cross-linguistic variation. Varying these two parameters generates three differently behaving languages: Polish, Gothic and Greek. The remainder of this section discusses the two parameters and how the differences between the languages arise. I incorporate the parameters into the four steps of the derivation, and illustrate how each of the languages follows these steps.

In Section 1, I mentioned that Polish (and a different variety of German) requires a stricter form of matching than the variety of German I discussed in

this paper.²¹ In this type of language, a more complex case in the embedded clause cannot license a less complex case in the main clause. This is illustrated by the example in (64). The predicate *dokucza* ‘teases’ in the embedded clause requires a dative object, and *lubi* ‘likes’ requires an accusative in the main clause. Although the dative is more complex than the accusative, the sentence is ungrammatical, independent of which relative pronoun is used.

- (64) *Polish*, Himmelreich (2017: 17)
 * Jan *lubi* kogokolwiek/komukolwiek *dokucza*.
 Jan likes_{acc} whoever.ACC/whoever.DAT teases_{dat}
 ‘Jan likes whoever he teases.’

This is a crucial difference between Polish and German: the sentence is ungrammatical in Polish but its German counterpart is grammatical (see (47b)). The grammaticality pattern for Polish is shown in Table 6.

Table 6: Grammaticality pattern for Polish.

	case in embedded clause	
	more complex	less complex
distinct forms	*	*

Formulated in terms of the analysis put forward in this paper, it seems that Polish does not allow grafting with an embedded case node, but only with the highest case node. Assuming this is the case, it follows that the left cell of Table 6 is ruled out. The derivation proceeds as follows. In Step 1, the predicate in the embedded clause merges with the more complex case, the DatP. In Step 2, the relative pronoun moves to the left edge of the clause. There are no additional features inserted in Step 3, because the required case node (the AccP) is already part of the syntactic structure (it is embedded in the DatP). In Step 4, the AccP should be externally remerged with the predicate in the main clause. However, assuming that Polish does not allow for grafting an embedded case node (AccP), but only the highest one (DatP), it follows that grafting is impossible. This means that the AccP cannot be externally remerged with the predicate in the main clause and that the derivation crashes.²² In sum, the first parameter is whether only the highest case feature or also embedded

²¹ The generalizations regarding the Polish data originates in Himmelreich (2017).

²² As shown in (63c), syncretism saves a case conflict in Polish. At first sight, the restriction of only merging with the highest case node seems to rule out the syncretic case when the embedded clause requires a more complex case than the main clause. There are several possibilities to account for this. First, as a counterpart to the insertion of features, there is also a possibility to delete features. The restrictions on this option should be identical

case features can be grafted. This parameter comes into play in Step 4 of the derivational steps, as shown in (65).

- (65) Derivational steps for non-matching free relatives (to be revised)
- a. **Step 1:** the relative pronoun is externally merged with the predicate in the embedded clause
 - b. **Step 2:** the relative pronoun is internally remerged to the left edge of the clause (into the SpecCP position)
 - c. **Step 3:** if required, additional case features that follow the fseq are inserted, within the boundaries of the inserted lexical entry
 - d. **Step 4:** the predicate in the main clause externally remerges (grafting) with the highest case node
 - (i) and not a node it contains (Polish)
 - (ii) or with a case node it contains (German)

This parameter determines whether a free relative that requires a more complex case in the embedded clause than in the main clause is grammatical (the upper-left cell in Table 5 and the left column in Table 6).

With respect to configurations in which the embedded clause predicate requires a less complex case than the main clause predicate, Polish patterns with German (see the upper-right cell in Table 5 and the right column in Table 6). In Section 4.2.2 I argued for German that this is due to the fact that German does not allow the inserted phonological form to be overridden. An anonymous reviewer suggested that this ban on overriding does not seem to hold for languages with case attraction, such as Gothic.²³ In Gothic, the relative pronoun takes the case of the more complex predicate, independent of whether it is the main clause or the embedded clause that requires it.²⁴ (66a) gives an example of a predicate requiring a more complex case in the embedded clause, and a predicate requiring a less complex one in the main clause. *Lag*

to the ones in (56): the remaining syntactic structure should still follow the fseq (and not delete features in the middle of an fseq) and the phonological form cannot be changed (so the structure still corresponds to the same lexical entry). A second possibility concerns the nature of the element that is merged with the predicate of the main clause. The concept that keeps reoccurring in the discussion about syncretic forms is ‘the same lexical entry’. In the case of a syncretism, the selected phonological form in the embedded clause is ambiguous: it can be either the biggest case it corresponds to, or the smaller one. If it would be only the phonological form that is available for remerge in the main clause, there is no way of telling whether it was the bigger case or the smaller case that was required in the embedded clause. In a sense, the syncretic form is able to ‘fool’ the predicate in the main clause. I leave determining which of these options is more viable for future research.

²³ I thank the anonymous reviewer for this suggestion.

²⁴ The generalizations regarding Gothic originate in Caha 2014.

‘lay’ takes a dative in the embedded clause, and *ushafjands* ‘picking up’ takes an accusative in the main clause. In (66b), the case requirements are reversed: *qibip* ‘say’ takes an accusative in the embedded clause and *taujaui* ‘do’ takes a dative in the main clause. In both (66a) and (66b) the dative relative pronoun is used.

- (66) *Gothic*, Harbert (1978: 339,434)
- a. *ushafjands ana þamm-ei lag*
 picking up_{acc} on DAT-compl lay_{dat}
 ‘picking up that on which he lay’
 - b. *hva nu wileip ei taujaui þamm-ei qibip þiudan Iudaie?*
 what now want that do_{dat} DAT-compl say_{acc} king of Jews
 ‘What now do you wish that I do to him whom you call King of the Jews?’

Gothic behaves like German (and not like Polish) when the embedded clause predicate requires a more complex case than the main clause predicate: these configurations are grammatical. Gothic is different from both German and Polish if the embedded clause predicate requires a less complex case than the main clause: in Gothic the configuration is grammatical and in German and Polish it is not. The grammaticality pattern for Gothic is shown in Table 7.

Table 7: Grammaticality pattern for Gothic.

	case in embedded clause	
	more complex	less complex
distinct forms	✓	✓

Regarding the configuration with the predicate requiring a more complex case in the embedded clause (the left column in Table 7 and (66a)), the derivation for Gothic is like the one for German described in Section 4.1. Just like German, Gothic allows for the main clause predicate to graft an embedded case node. However, Gothic also seems to have a looser restriction with respect to the change of spellout. After the insertion of additional features, Gothic allows for a change in phonological form. The derivation for the (66b) (the right column in Table 7) goes as follows. In Step 1, *qibip* ‘say’ combines with an accusative. In Step 2, the accusative relative pronoun moves to the left edge of the clause. In Step 3, additional case features up to the DatP are added, as *taujaui* ‘do’ requires a dative (and an AccP does not contain a DatP). Assuming that Gothic does not prohibit the overriding of the inserted phonological form, the spellout of the dative relative pronoun overrides by the

spellout of the accusative relative pronoun. Finally, Step 4 takes place: the main clause externally remerges the DatP of the relative pronoun.

Summing up, the second parameter is whether it is permitted to override the phonological form of the relative pronoun.²⁵ This parameter comes into play in Step 3 of the derivational steps, as shown in (65).

- (67) Derivational steps for non-matching free relatives
- a. **Step 1:** the relative pronoun is externally merged with the predicate in the embedded clause
 - b. **Step 2:** the relative pronoun is internally remerged to the left edge of the clause (into the SpecCP position)
 - c. **Step 3:** if required, additional case features that follow the fseq are inserted,
 - (i) within the boundaries of the inserted lexical entry (German, Polish)
 - (ii) also outside the boundaries of the inserted lexical entry (Gothic)
 - d. **Step 4:** the predicate in the main clause externally remerges (grafting) with the highest case node
 - (i) and not a node it contains (Polish)
 - (ii) or with a case node it contains (German, Gothic)

By bringing Gothic and Polish into the picture, I have introduced two parameters for cross-linguistic variation. The first one is whether grafting can only take place with the highest case feature or also with embedded ones. The second one is whether the inserted phonological form has to remain the same, or whether the spellout it may be overridden. Gothic allows for grafting with embedded case features, and it allows spellout to be overridden. Polish does not allow for either: only the highest case node can be grafted, and the phonological form has to remain the same. German allows for one but not the other: grafting embedded case features is permitted, but overriding the spellout of the relative pronoun is not. A prediction that follows is that there should also be a language that allows for overriding of spellout but not for grafting with embedded features. An example of this type of language is Greek, as described by Daskalaki (2011). First, Greek patterns with Gothic in that it allows the phonological form of the relative pronoun to be overridden. Therefore, a Greek free relative construction is grammatical if the embedded clause requires a less complex case than the main clause, and the more complex relative pronoun is

²⁵ In (67) ‘not changing the phonological form’ is formulated as ‘stay within the boundaries of a lexical entry’ to allow syncretic forms to be grammatical.

used. (68) illustrates this. In the embedded clause, *voíθise* ‘helped’ requires a nominative, and the main clause predicate *eðósa* ‘gave’ requires a genitive recipient. If the relative pronoun appears in genitive case (the most complex and main clause case), the sentence is grammatical. If the relative pronoun appears in nominative case (the less complex and embedded clause case), the sentence is ungrammatical.

- (68) *Greek*, Daskalaki (2011: 79-80)
 Eðósa leftá ópju/ *ópjos me voíθise.
 gave.1SG_{gen} money who.GEN/ who.NOM CL.1SG.ACC helped.3SG_{nom}
 ‘I gave money to whoever helped me.’

The derivation for this example is like the one described for Gothic earlier in this section. Greek differs from Gothic (and German) but patterns with Polish in that it does not allow for grafting an embedded case feature; only the highest case feature in a relative pronoun can be grafted. However, unlike Polish, Greek has a way of generating a grammatical sentence nevertheless, as illustrated in (69). In (69a), *ðósi* ‘given’ takes a recipient in genitive case in the embedded clause, and *efχarístisan* ‘thanked’ requires nominative case in the main clause. Neither the use of *ópjon* ‘who.GEN.PL’ nor *ópji* ‘who.NOM.PL’ provides a grammatical result (see (69a)). Instead, the combination of the less complex case (nominative *ópji* ‘who.NOM.PL’) and a genitive clitic (*tus* CL.3PL.GEN) should be used, as shown in (69b).

- (69) *Greek*, Daskalaki (2011: 79-80)
- a. * Me efχarístisan ópjon/ ópji ίχα
 CL.1SG.ACC thanked.3PL_{nom} who.GEN.PL/ who.NOM.PL had.1SG_{gen}
 ðósi leftá.
 given money
 ‘Whoever I had given money to, thanked me.’
- b. Me efχarístisan ópji tus ίχα
 CL.1SG.ACC thanked.3PL_{nom} who.NOM.PL CL.3PL.GEN had.1SG_{gen}
 ðósi leftá.
 given money
 ‘Whoever I had given money to, thanked me.’

Just like Polish, the more complex relative pronoun cannot be used, but the combination of the less complex case and a clitic is grammatical. I argue that Greek can have this repair strategy because it allows the phonological form of the relative pronoun to be overridden. As illustrated by (68), Greek sentences in which the embedded clause predicate requires a less complex case than the

main clause predicate are grammatical. This is also due to the fact that Greek allows the phonological form of the relative pronoun to be overridden (just like Gothic). The grammaticality pattern for Greek is shown in Table 8.

Table 8: Grammaticality pattern for Greek.

	case in embedded clause	
	more complex	less complex
distinct forms	$RP_{lesscomplex} + CL$	✓

The derivation for the (69b) goes as follows. In Step 1, *δóσι* ‘given’ combines with a GenP, and this form is spelled out as genitive relative pronoun *όρjon* ‘who.GEN.PL’. In Step 2, the relative pronoun moves to the left edge of the clause. In Step 3, no additional features are merged, because the case node required by *εφχαρίstisan* ‘thanked’ (NomP) is contained in the GenP. In Step 4, *εφχαρίstisan* ‘thanked’ needs to externally remerge the NomP node. Assuming it is not allowed in Greek to graft embedded case features, this is not an option. However, it is permitted in Greek to override the spellout of the relative pronoun.²⁶ I assume that the genitive relative pronoun and the combination of the nominative relative pronoun and the genitive clitic spell out the same set of features. What seems to happen is that what spells out the nominative relative pronoun is moved from within the genitive relative pronoun, leaving behind what is spelled out as a genitive clitic. Consequently, the NomP is the highest case node, and it can be externally remerged with the main clause predicate.

Summing up, the different types of languages I discussed are given in Table 9.

Table 9: Cross-linguistic variation.

	keep spellout	override spellout
graft only highest case	Polish	Greek
graft also embedded case	German	Gothic

In Polish, it is not allowed to override the spellout of the relative pronoun, and grafting occurs only with the highest case node. German also requires to keep its spellout, but allows grafting with embedded case nodes. Gothic allows the spellout of the relative pronoun to be overridden, and it allows for grafting

²⁶ This seems to indicate that the possibility to override spellout is not restricted to spelling out newly inserted features. Also features that are already present in the derivation may receive a different spellout.

with embedded case nodes. In Greek, it is allowed to override the spellout of the relative pronoun, but grafting can only target the highest case node.

6 Conclusion

This paper started out with the observation that case mismatches in German free relative constructions are permitted under two types of circumstances. First, if the case required in the embedded clause is more complex than the case in the main clause, and the relative pronoun has the form of the more complex case (cf. Pittner 1991; 1995; Vogel 2001; Grosu 2003). Second, when the form that corresponds to the two different required cases is syncretic (cf. Groos & van Riemsdijk 1981; Zaenen & Karttunen 1984; Dyta 1984; Pullum & Zwicky 1986; Ingria 1990; Dalrymple & Kaplan 2000; Sag 2003). Mismatching free relatives are ungrammatical when the predicate in the embedded clause requires the less complex case, and there are two distinct relative pronouns for the required cases.

I provided an analysis for these two patterns by taking case containment (Caha 2009) as a point of departure, and combining it with Van Riemsdijk's (2006a) grafting (or external remerge). This made it possible to make a distinction between more and less complex cases in the syntax. It no longer comes as a surprise that a relative pronoun can satisfy the case requirement of a predicate which is less complex than what the relative pronoun is marked for. Cases are organized in a containment structure and more complex cases by definition contain less complex cases. Therefore, at the point in the derivation that the less complex case is required, the main clause predicate can merge with the case node contained in the more complex case. When the embedded clause requires a less complex case than the main clause, the required node cannot be merged, because the (more complex) required case node is not contained in the available (less complex) case node. I proposed that there is a possibility to insert additional features, as long as the inserted features follow the fseq and correspond to the same phonological form. It follows that syncretic forms are grammatical, as they use the same lexical entry (and therefore have the same phonological form). The derivation crashes when cases that have to be spelled out by a lexical entry that is not yet part of the derivation are inserted. This is what happens for non-syncretic forms. This paper adds to the claim that case is internally complex. Moreover, it shows that cases can have two roles at the same time: they fulfill the role of the case they surface in, and the role of a case they contain. In this type of situation, it is always the most complex case that surfaces, as has also been shown in Caha 2015.

Section 5 identified two aspects of the analysis of German as parameters that differ between languages. The first parameter is whether the main clause is allowed to graft an embedded case feature or only the structurally highest case node. The second one is whether the spellout of the relative pronoun can be overridden or not. Putting the two parameters in the analysis for the German relative pronouns provides the picture as shown in (70).

- (70) Derivational steps for non-matching free relatives
- a. **Step 1:** the relative pronoun is externally merged with the predicate in the embedded clause
 - b. **Step 2:** the relative pronoun is internally remerged to the left edge of the clause (into the SpecCP position)
 - c. **Step 3:** if required, additional case features that follow the fseq are inserted,
 - (i) within the boundaries of the inserted lexical entry (German, Polish)
 - (ii) also outside the boundaries of the inserted lexical entry (Gothic, Greek)
 - d. **Step 4:** the predicate in the main clause externally remerges (grafting) with the highest case node
 - (i) and not a node it contains (Polish, Greek)
 - (ii) or with a case node it contains (German, Gothic)

The grammaticality patterns of German, Polish, Gothic and Greek follow from these four derivational steps, taking the two parameters into account. Future research should identify other constructions with similar mechanisms in which the same parameters surface, which could help understand the underlying motivations behind the identified parameters.

Abbreviations

1, 2, 3 = 1, 2, 3 person, NOM = nominative, ACC = accusative, GEN = genitive, DAT = dative, N = neuter, M = masculine, SG = singular, PL = plural, CL = clitic

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