CASE COMPETITION IN HEADLESS RELATIVES

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List of abbreviations

1	first person
2	second person
3	third person
ABS	absolutive
ACC	accusative
AN	animate
AOR	aorist
AUX	auxiliary
CL	clitic
CMPR	comparative
COMP	complementizer
DAT	dative
DEF	definite
DEM	demonstrative
DET	determiner
ELH	extra light head
ERG	ergative
EXT	external case
F	feminine
GEN	genitive
INAN	inanimate
INF	infinitive
INT	internal case
MOD	modal marker
M	masculine

NMLZ	nominalization
NOM	nominative
N	neuter
OBJ	object
OPT	optative
PASS	passive
PL	plural
POSS	possessive
PRES	present tense
PRET	preterite
PROG	progressive
PST	past tense
PTCP	participle
REL	relative marker
RP	relative pronoun
SBJV	subjunctive mood
SG	singular
SUBJ	subject

Chapter 1

Introduction

This dissertation is about case competition, a situation in which two cases are assigned but only one of them surfaces. One of the constructions in which case competition appears is relative clauses that lack a head, i.e. headless relatives.

Free relatives? I use the neutral descriptive term headless relatives, because free has this free choice interpretation connotation.

In this introduction I first introduce what I mean exactly with case competition in headless relatives. Then I introduce the topics I discuss in this dissertation.

1.1   Decomposing the title

Languages can use case to mark the grammatical role of a noun phrase in a clause (**moravcsik2009**). Consider the two Modern German sentences in (1). What can descriptively be called the subject of the predicate *mögen* 'to like' is marked as nominative. What can be described as the object of *mögen* 'to like' is marked as accusative. The case marking of the noun phrases is reflected on the determiner in the noun phrase. In (1a), *der* in *der Lehrer* 'the teacher' appears in nominative case, because it is the descriptive subject in the clause. *Den* in *den Schüler* 'the pupil' appears in accusative case, because it is a descriptive object of *mögen* 'to like'. In (1b), the grammatical roles are reversed: *der* in *der Schüler* 'the pupil' appears in nominative case, because it is the descriptive subject in the clause. *Den* in *den Lehrer* 'the teacher' appears in accusative case, because it is the descriptive object of *mögen* 'to like'.

(1)   a.   Der   Lehrer mag den   Schüler.
           the.NOM teacher likes the.ACC student
           'The teacher likes the pupil.'
      b.   Der   Schüler mag den   Lehrer.
           the.NOM student likes the.ACC teacher
           'The pupil likes the teacher.'

Not only full noun phrases, but also other elements can be marked for case, such as relative pronouns. Modern German marks relative pronouns, just like full noun phrases, for the grammatical role they have in the clause. Consider the two sentences in (2). These two sentences both contain a main clause that is modified by a relative clause. In (2a), the relative clause *der nach draußen guckt* 'that looks outside' modifies *den Schüler* 'the pupil'. *Schüler* 'pupil' is called the head (noun) or the antecedent of the relative clause. *Den* in *den Schüler* 'the pupil' appears in accusative case, because it is the descriptive object of *mögen* 'to like' in the main clause. The relative pronoun *der* 'RP.SG.M.NOM' appears in nominative case, because it is the descriptive subject of *mögen* 'to like' in the relative clause.

In (2b), the relative clause *den er beim Verstecktspiel sucht* 'that he is searching for playing hide-and-seek' modifies *den Schüler* 'the pupil'. *Den* in *den Schüler* 'the pupil' appears again in accusative, because it is the descriptive object of *mögen* 'to like' in the main clause. The relative pronoun *den* 'RP.SG.M.ACC' appears in accusative case, because it is the descriptive object of *suchen* 'to search' in the relative clause.

(2)   a.   Der   Lehrer mag den   Schüler, der   nach draußen
          the.NOM teacher likes the.ACC student RP.SG.M.NOM to   outside

          guckt.
          looks
          'The teacher likes the pupil that is looking outside.'

       b.   Der   Lehrer mag den   Schüler, den   er beim
          the.NOM teacher likes the.ACC student RP.SG.M.ACC he at the

          Versteckspiel   sucht.
          hide-and-seek game searches
          'The teacher likes the pupil that he is searching for playing hide-and-seek.'

Compare the two sentences in (2). In both sentences the head is marked as accusative because it is the descriptive object in the main clause. The case of the relative pronoun in (2b) is also accusative, because it is the descriptive object in the relative clause. The case of the relative pronoun in (2a) is nominative, because it is the descriptive subject in the relative clause. So, the case of the relative pronoun in (2a) differs from the case of the head.

The focus of this dissertation lies on headless relatives. As the name suggests, this type of relative clause lacks a head.[1] Even though Modern German also has case

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[1] This 'missing noun' has been interpreted in two different ways. Some researchers argue that the noun is truly missing, it is absent, cf. **citko2005**; **vanriemsdijk2006**. Others claim that there is actually a head, but it is phonologically zero, **bresnan1978**; **groos1981**; **grosu2003**. At this point in the discussion this distinction is not relevant. I return to the issue in Chapter III.

competition in headless relatives, I turn to Gothic now. The patterns among the two languages differ slightly, and the first part of the dissertation can be illustrated best with Gothic.

I give an example of a headless relative in Gothic in (3). There is no head that this relative clause modifies, because it is a headless relative. This is different from the examples from German I gave above, which each had a head. The predicate *arman* 'to pity' takes accusative objects, as indicated by the subscript on the gloss of the verb. The predicate *gaarman* 'to pity' also takes accusative objects, indicated again by the subscript. The relative pronoun *þan(a)* 'RP.SG.M.ACC' appears in accusative case.[2]

(3) gaarma   þan   -ei   arma
     pity.PRES.1SG$_{[ACC]}$ RP.SG.M.ACC -COMP pity.PRES.1SG$_{[ACC]}$
     'I pity him whom I pity' (Gothic, Rom. 9:15, adapted from **harbert1978**: 339)

Where does this accusative case come from? Logically speaking, there are two possible sources: the predicate in the main clause *gaarman* 'to pity', the predicate in the relative clause *arman* 'to pity'. From now on, I use the terms internal and external case to refer to these two possible case sources. Now there are three logical possibilities for the source of the accusative case on *þan(a)* 'RP.SG.M.ACC' in (3): the internal case, the external case, or both.

Internal case refers to the case associated with the relative pronoun internal to the relative clause. More precisely, it is the case, which is associated with the grammatical role that the relative pronoun has internal to the relative clause. In (3), the relative pronoun is the descriptive object of *arman* 'to pity'. The predicate *arman* 'to pity' takes accusative objects. So, the internal case is accusative.

External case refers to the case associated with the missing head in the main clause, which is external to the relative clause. Concretely, it is the case which is associated with the grammatical role that the missing head has external to the relative clause. In (3), the missing head is the descriptive object of *gaarman* 'to pity'. The predicate *gaarman* 'to pity' takes accusative objects. In (3), the external case is accusative.

Now I return to the question where *þan(a)* 'RP.SG.M.ACC' in (3) got its case from. In the remainder of this section I show evidence for the claim that the relative pronoun is sensitive to both the internal and the external case. This is easy to imagine for the internal case: the internal case reflects the grammatical role of the relative clause. It is a bit more complicated for the external case. The external case is associated with the grammatical role of the missing head in the main clause. The idea is going to be that the external case cannot be reflected on a non-existing head. Indirectly, it ap-

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[2]The relative pronoun without the complementizer *-ei* is *þana*. Therefore, I refer to the relative pronoun as *þan(a)*.

pears on the relative pronoun.[3] This means that the internal and external case come together on the relative pronoun. In other words, there is case competition going on in headless relatives. (3) is indeed the first example I gave of case competition in a headless relative. It is an uninteresting one, because the two competing cases are identical.

Consider the example in (4), in which the internal case is accusative and the external case is nominative. The internal case is accusative. The predicate *frijon* 'to love' takes accusative objects, as indicated by the subscript on the predicate. The external case is accusative. The predicate *wisan* 'to be' takes nominative subjects, indicated by the subscript on the predicate. The relative pronoun *þan(a)* 'RP.SG.M.ACC' appears in accusative. This accusative can only come from the predicate *frijon* 'to love', which is the internal case here. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause.

(4) **þan**   **-ei** **frijos**   siuks ist
     RP.SG.M.ACC -COMP love.PRES.2SG.[Acc] sick   be.PRES.3SG[NOM]
     'the one whom you love is sick'
                                  (Gothic, John 11:3, adapted from **harbert1978**: 342)

The conclusion that follows is that the relative pronoun can take the internal case. At this point it remains unclear what happened to the external nominative case.

Now consider the example in (5), in which the internal case is nominative and the external case is accusative. The internal case is nominative. The predicate *wisan* 'to be' takes nominative subjects, as indicated by the subscript on the predicate. The external case is accusative. The predicate *ussiggwan* 'to read' takes accusative objects, as indicated by the subscript on the predicate. The relative pronoun *þo* 'RP.SG.N.ACC' appears in the accusative case. This accusative can only come from the predicate *ussiggwan* 'to read', which is the external case here. The relative pronoun is not marked in bold, just like as the main clause, showing that the relative pronoun patterns with the main clause.

(5) jah þo   **-ei** **ist**   **us** **Laudeikaion** jus
     and RP.SG.N.ACC -COMP be.PRES.3SG[NOM] from Laodicea   2PL.NOM
     ussiggwaid
     read.[ACC]
     'and you read the one which is from Laodicea'
                                  (Gothic, Col. 4:16, adapted from **harbert1978**: 357)

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[3]Later on I will argue that this indirect process is actually a deletion operation.

The conclusion that follows is that the relative pronoun can take the external case. At this point it remains unclear what happened to the internal nominative case.

The examples in (4) and (5) have shown that the relative pronoun in headless relatives can take either the internal or the external case. In the examples, the predicates take nominative and accusative, and in both cases, the relative pronoun appeared in accusative case. In other words, there was a competition between nominative and accusative, and accusative won.

In the next section, I discuss the content of this dissertation. Before that, I comment on two notational conventions I use throughout this dissertation. First, I place subscripts on the glosses of the predicates. They indicate what the internal or external case is. The subscript on the predicate in the relative clause indicates the internal case. The subscript on the predicate in the main clause indicates the external case. This subscript can mean different things. For *frijon* 'to love' in (4) the subscript indicates which case the complement of the verb appears in. The subscript on *wisan* 'to be' in (4) refers to the case the descriptive subject appears in. A subscript can also refer to the case of the indirect object of a predicate, a possibility that arises in the next chapter. In other words, the subscript can refer several elements: a subject, direct object or indirect object of a predicate. There is no overarching theoretical notion that the subscript makes reference to. The subscript simply indicates which case is required within the (main or relative) clause.

Second, I write the relative clause in bold. When the relative pronoun takes the internal case, I mark it in bold as well, as shown in (4). When the relative pronoun takes the external case, I leave it black, indicating it patterns with the main clause. An example of that is (5).

1.2 The content of this dissertation

In the previous section I introduced the notion of case competition, and I illustrated how it appears in headless relatives. This dissertation discusses two question regarding this phenomenon. The first one is which case is going to win the case competition, i.e. which case surfaces. I discuss this in Part I. The second question is whether both competitors are able to compete in the competition, i.e. whether one of the cases is surfacing or both are ungrammatical. I discuss this in Part II. For both I will show that morphology is leading. What we observe in syntax is a reflex of the morphology.

1.3 The scope of this dissertation

1.3.1 Case attraction

Case attraction in headed relatives seems related, but I will not account for it.

(6) unde ne wolden níet besên den mort   den   dô   was geschên
     and not wanted not see   the murder.ACC that.ACC there had happened
     'and they didn't want to see the murder that had happened.'
                         (MHG, Nib. 1391,14, **behaghel1923**: 756, after **pittner1995**: 198)

(7) Den   schilt   den   er vür bôt der   wart schiere zeslagen
     the.ACC shield.ACC which.ACC he held_ACC, that.NOM was quickly shattered_NOM
     'The shield he held was quickly shattered'   Iwein 6722f., Lenerz 1984: 116)

OHG has case attraction in headed relatives, Gothic does not, but both show case
competition in headless relatives. So, there does not seem to be a one-to-one con-
nection there. I leave it for further research.

1.3.2 Syncretism

For a long time it has been noted that syncretism seems to resolve case conflicts.
–references–

    A language like Polish, that normally doesn't allow for any case mismatches,
even allows for it. In this dissertation I do not offer a detailed account for what a
derivation looks like.

(8) Jan unika   kogokolwiek   wczoraj obraził.
     Jan avoid.3SG_[GEN] RP.SG.M.ACC/GEN yesterday offend.3SG.PST_[ACC].
     'Jan avoided whoever he offended yesterday.'

I won't talk about the details.

1.3.3 The genitive

In Gothic headless relatives, there is data available of the genitive in case competition
with the accusative. The genitive wins in this competition. I give an example in
which the internal case is accusative and the external case is genitive in (9). The
relative clause is marked in bold, the relative pronoun is not. The internal case is
accusative. The predicate *gasehvun* 'saw' takes accusative objects. The external case
is genitive. The noun *waiht* 'thing' combines with a genitive. The relative pronoun
þiz(e) 'what.GEN' appears in the external case: the genitive.

(9) ni waiht   þiz   **-ei** **gasehvun**
     not thing_[GEN] what.GEN -COMP saw_[ACC]
     'not any of (that) which they saw'
                                    (Gothic, Luke 9:36, adapted from **harbert1978**: 340)

If the internal case is genitive and the external case is accusative, the genitive wins as well. Crucially, there are no attested examples in Gothic of genitives in case competition with nominatives or datives.

The same holds for the two other main languages discussed in this thesis: Modern German and Old High German. In Modern German, case competitions have been reported between all possible case combinations, so also between genitives and nominatives, between genitives and accusatives, and between genitives and datives (**vogel2001**). The genitive wins over the nominative and the accusative. In a competition between the genitive and the dative neither of them gives a grammatical result. Old High German might show some examples of case competition between genitives and accusatives and genitives and nominative. In these cases, the genitive always wins. No examples of datives against genitives are attested (**behaghel1923**). In sum, the genitive does not appear in all possible case competition combinations in all three languages, and is therefore excluded.

What do I predict for the genitive? Starke: S-acc — S-dat — gen — B-acc — B-dat

hierarchies for each language individually. Gothic syncretisms: acc-dat, acc-nom, nom-gen(!). Modern German: nom-acc-dat-gen? Old High German: ?

then the predictions would be..

The genitive differs from the other cases in a particular way. That is, nominative, accusative and dative are dependents of the verb (or prepositions). Genitives can be dependents of verbs, or they can be dependents of nouns, as possessors or partitives. Consider the example in (9). The genitive relative pronoun *þiz(e)* 'what.GEN' is a dependent of the noun *waiht* 'thing'. Most of the examples in headless relatives contain genitives that depend on nouns and not those that depend on verbs. The (genitive) possessor is also placed far away from the other three cases in **keenan1977**'s (**keenan1977**) relativization hiearchy.

more: in middle high german only the genitive shows case attraction in headed relatives. again, it is different from the others.

I leave it for future research..

Part I

Case competition

Chapter 2

A recurring pattern

This chapter introduces the pattern that forms the focus of the first part of the dissertation. In Section 2.1 I show that case competition in headless relatives adheres to the case scale in (1).

(1)   NOM < ACC < DAT

Then I show that this pattern is not unique to headless relatives. It appears in more syntactic and morphological phenomena. Section 2.2 discusses two implicational hierarchies that show the same case ordering. The hierarchies concern agreement and relativization in different languages. Section 2.3 shows that the case scale also appears in morphology. It can be observed in patterns of syncretism and in morphological containment.

2.1   In headless relatives

As the name suggests, headless relatives are relative clauses that lack an (overt) head. The internal case, the case from the relative clause, and the external case, the case from the main clause, compete to surface on the relative pronoun. In this section I first discuss examples in which the internal case and the external case match, and then examples in which they differ.

If the internal case and the external case are one and the same case, the relative pronoun simply surfaces in that case. I illustrate this with examples from headless relatives in Gothic. The cases I discuss are nominative, accusative and dative.

The description of Gothic is mostly based on (**harbert1978**). The spelling of the examples follows the Wulfila Project website.[1] The glossing comes from the detailed tagging on that same website. The translations are my own.

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[1] <http://www.wulfila.be>

Consider the example in (2), in which the internal nominative case competes against the external nominative case. The internal case is nominative, as the predicate *matjan* 'to eat' takes nominative subjects. The external case is nominative as well, as the predicate *ga-dauþnan* 'to die' also takes nominative subjects. The relative pronoun *sa* 'RP.SG.M.NOM' appears in the internal and external case: the nominative.

(2) ei **sa** **-ei** þis **matjai**, ni gadauþnai

COMP RP.SG.M.NOM -COMP DEM.SG.M.GEN eat.OPT.3SG[NOM] not die.OPT.3SG[NOM]

'that the one, who eats of this may not die'

(Gothic, John 6:50, after **harbert1978**: 337)

Consider the example in (3), repeated from the introduction. In this example, the internal accusative case competes against the external accusative case.

The internal case is accusative, as the predicate *arman* 'to pity' takes accusative objects. The external case is accusative as well, as the predicate *ga-arman* 'to pity' also takes accusative objects. The relative pronoun *þan(a)* 'RP.SG.M.ACC' appears in the internal and external case: the accusative.

(3) gaarma **þan** **-ei** **arma**

pity.1SG[ACC] RP.SG.M.ACC -COMP pity.1SG[ACC]

'I pity him, whom I pity'   (Gothic, Rom. 9:15, after **harbert1978**: 339)

Consider the example in (4), in which the internal dative case competes against the external dative case. The internal case is dative, as the predicate *manwjan* 'to prepare' takes dative indirect objects. The external case is dative as well, as the predicate *giban* 'to give' also takes dative indirect objects. The relative pronoun *þaim)* 'RP.SG.M.DAT' appears in the internal and external case: the dative.

(4) nist mein du giban, alja **þaim** **-ei**

is not 1SG.POSS.NOM to give.INF[DAT] except for RP.SG.M.DAT -COMP

manwiþ **was**

prepare.PTCP be.PRET.3SG[DAT]

'it is not mine to give except for to the one, for whom it was prepared'

(Gothic, Mark 10:49, after **harbert1978**: 339)

These findings can be summarized as in Table 2.1. The left column shows the internal case (INT) between square brackets. The upper row shows the external case (EXT) between square brackets. The other cells indicate the case of the relative pronoun. The top-left to bottom-right diagonal corresponds to the examples I have given so far in which the internal and external case match. The nominative marked in light gray corresponds to (2), in which the internal nominative case competes ains] the exter-

nal nominative case, and the relative pronoun surfaces in the nominative case. The accusative marked in dark gray corresponds to (3), in which the internal accusative case competes against the external accusative case, and the relative pronoun surfaces in the accusative case. The unmarked dative corresponds to (4), in which the internal dative case competes against the external dative case, and the relative pronoun surfaces in the dative case.

Table 2.1: Gothic headless relatives (matching)

INT ᴱˣᵀ	[NOM]	[ACC]	[DAT]
[NOM]	NOM		
[ACC]		ACC	
[DAT]			DAT

In Table 2.1, six cells remain empty. These are the cases in which the internal and the external case differ. It has been argued in the literature that the two competing cases always adhere a to particular case scale (**harbert1978**; **pittner1995**; **vogel2001**; **grosu2003**; **caha2019**; **bergsma2019**). This is the scale I gave in the introduction of this chapter, repeated here in (5). Elements more to the right on this scale win over elements more to the left on this scale.[2]

(5)   NOM < ACC < DAT

This can be reformulated as follows. In a competition, accusative wins over nominative, dative wins over nominative, and dative wins over accusative. In this section I illustrate this scale with examples. When two differing cases compete, the relative pronoun always appears in the case more to the right on the case scale. It does not matter whether it is the internal or the external case.

I start with the competition between the accusative and the nominative. Following the case scale in (5), the relative pronoun appears in the accusative case and never in the nominative.

Consider the example in (6), repeated from the introduction. In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *frijon* 'to love' takes accusative objects. The external case is nominative, as the predicate *wisan* 'to be' takes nominative subjects. The

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[2]In the literature about headless relatives, the genitive is often discussed together with the nominative, accusative and dative (**harbert1978**; **pittner1995**). In this dissertation I do not discuss the genitive. The reason is that I restrict myself to cases that appear in all possible case competition combinations. As the genitive does not fulfill that requirement, it is therefore excluded. I discussed the genitive briefly in Section 1.3.3.

relative pronoun *þan(a)* 'RP.SG.M.ACC' appears in the internal case: the accusative. The relative pronoun is marked in bold, just like as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is accusative, the external case is nominative and the relative pronoun appears in the nominative case are unattested.

(6) **þan**   **-ei** **frijos**   siuks ist
     RP.SG.M.ACC -COMP love.PRES.2SG.[ACC] sick   be.PRES.3SG[NOM]
     'the one whom you love is sick'
                                    (Gothic, John 11:3, adapted from **harbert1978**: 342)

Consider the example in (7), repeated from the introduction. In this example, the the internal nominative case competes against the external accusative case. The internal case is nominative, as the predicate *wisan* 'to be' takes nominative subjects. The external case is accusative, as the predicate *ussiggwan* 'to read' takes accusative objects. The relative pronoun *þo* 'RP.SG.N.ACC' appears in the external case: the accusative. The relative pronoun is not marked in bold, just like as the main clause, showing that the relative pronoun patterns with the main clause. Examples in which the internal case is nominative, the external case is accusative and the relative pronoun appears in the nominative case are unattested.

(7) jah þo   **-ei** **ist**   **us Laudeikaion** jus
     and RP.SG.N.ACC -COMP be.PRES.3SG[NOM] from Laodicea   2.PL.NOM
     ussiggwaid
     read.[ACC]
     'and you read the one which is from Laodicea'
                                    (Gothic, Col. 4:16, adapted from **harbert1978**: 357)

The two examples in which the nominative and the accusative compete are showed in Table 2.2. Within the newly filled out cells, two cases are given. The case in the bottom-left corner stands for the relative pronoun in the internal case. The case in the top-right corner stands for the relative pronoun in the external case. The grammatical examples are marked in light and dark gray. The unattested examples are preceded by an asterix and are unmarked.[3]

The light gray marking corresponds to (6), in which the internal accusative wins the case competition over the external nominative, and the relative pronoun surfaces in the accusative case. The dark gray marking corresponds to (7), in which the external accusative wins the case competition over the internal nominative, and the

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[3]Throughout this dissertation * stands for 'not found in natural language'. For extinct languages this means that there are no attested examples. For non-extinct languages it means that the examples are ungrammatical.

relative pronoun surfaces in the accusative case. The instances of *NOM that appear in the same cells indicate that there are no examples, in which the nominative and the accusative compete and the relative pronoun appears in the nominative case.

Table 2.2: Gothic headless relatives (NOM — ACC)

EXT INT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC *NOM	
[ACC]	*NOM ACC	ACC	
[DAT]			DAT

I continue with the competition between the dative and the nominative. Following the case scale in (5), the relative pronoun appears in the dative case and never in the nominative.

Consider the example in (8), in which the internal dative case competes against the external nominative case. The internal case is dative, as the predicate *fraletan* 'to forgive' takes dative objects. The external case is nominative, as the predicate *frijon* 'to love' takes nominative subjects. The relative pronoun *þamm(a)* 'RP.SG.M.DAT' appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is dative, the external case is nominative and the relative pronoun appears in the nominative case are unattested.

(8) iþ **þamm -ei leitil fraletada** leitil frijod
     but RP.SG.M.DAT -COMP little forgive.PASS.PRES.3SG[DAT] little love[NOM]
     'but the one whom little is forgiven loves little'
                              (Gothic, Luke 7:47, adapted from **harbert1978**: 342)

Consider the example in (9), in which the internal nominative case competes against the external dative case. The internal case is nominative, as the predicate *wisan* 'to be' takes nominative subjects. The external case is dative, as the predicate *fraþjan* 'to think about' takes dative indirect objects. The relative pronoun *þaim* 'RP.PL.N.DAT' appears in the external case: the dative. The relative pronoun is not marked in bold, just like as the main clause, showing that the relative pronoun patterns with the main

clause. Examples in which the internal case is nominative, the external case is dative and the relative pronoun appears in the nominative case are unattested.

(9)   þaim   **-ei   iupa sind**   fraþjaiþ
      RP.PL.N.DAT -COMP above be.PRES.3PL$_{[NOM]}$ think about.OPT.PRES.2PL$_{[DAT]}$
      'think about those which are above'

                                               (Gothic, Col. 3:2, adapted from **harbert1978**: 339)

The two examples in which the nominative and the dative compete are showed in Table 2.3. The light gray marking corresponds to (8), in which the internal dative wins the case competition over the external nominative, and the relative pronoun surfaces in the dative case. The dark gray marking corresponds to (9), in which the external dative wins the case competition over the internal nominative, and the relative pronoun surfaces in the dative case. The instances of *NOM that appear in the same cells indicate that there are no examples, in which the nominative and the dative compete and the relative pronoun appears in the nominative case.

Table 2.3: Gothic headless relatives (NOM — DAT)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC *NOM	DAT *NOM
[ACC]	*NOM ACC	ACC	
[DAT]	*NOM DAT		DAT

   I end with the competition between the dative and the accusative. Following the case scale in (5), the relative pronoun appears in the dative case and never in the accusative.

   Consider the example in (10), in which the internal dative case competes against the external accusative case. The internal case is dative, as the preposition *ana* 'on'

takes dative complements.[4,5] The external case is accusative, as the predicate *ushafjan* 'to pick up' takes accusative objects. The relative pronoun *þamm(a)* 'RP.SG.N.DAT' appears in the internal case: the dative. The relative pronoun is marked in bold, just like as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is dative, the external case is accusative and the relative pronoun appears in the accusative case are unattested.

(10) ushafjands **ana þamm -ei** lag
     pick up.PRES.PTCP[ACC] on[DAT] RP.SG.N.DAT -COMP lie.PRET.3SG
     'picking up that what he lay on'
                  (Gothic, Luke 5:25, adapted from **harbert1978**: 343)

Consider the example in (11), in which the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *insandjan* 'to send' takes accusative objects. The external case is dative, as the predicate *galaubjan* 'to believe' takes dative objects. The relative pronoun *þamm(a)* 'RP.SG.M.DAT' appears in the external case: the dative. The relative pronoun is not marked in bold, just like as the main clause, showing that the relative pronoun patterns with the main clause. Examples in which the internal case is accusative, the external case is dative and the relative pronoun appears in the accusative case are unattested.

(11) ei galaubjaiþ þamm **-ei insandida**
     that believe.OPT.PRES.2PL[DAT] RP.SG.M.DAT -COMP send.PRET.3SG[ACC]

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[4]The example in (10) differs from the other examples of headless relatives. In this example, it is a preposition that assigns a particular case to the relative pronoun. So far, I have only given examples in which it is a verbal predicate that assigns a case to the relative pronoun (or the absent head). The reason for that is to keep the data set as homogenous as possible. **harbert1978** reports there is no such example with the dative as internal case and the accusative as external case. My own research reaches the same conclusion. The absence of a headless relative with an internal dative case and an external accusative case (both assigned by verbal predicates) is not surprising, mainly for two reasons. First, the headless relative construction is infrequent to begin with. **harbert1978** reports of some case competition combinations only a single or a few occurrences. Second, Gothic only has a few verbs that take dative complements.

There is reason to believe that this missing occurrence is due to the above mentioned reasons rather than a meaningful gap in the paradigm. Datives often appear after prepositions. There are instances in which the internal dative case is assigned by a preposition and the external accusative case is assigned by a verbal predicate. In each of these instances, the relative pronoun surfaces in the internal dative case and not in the external accusative case (as in (10)). For the other way around holds the same: with an accusative internal case assigned by a verbal predicate and a dative external predicate assigned by a preposition, the relative pronoun surfaces in the dative and not in the accusative. Therefore, the system that I set up later in this dissertation is able to generate the dative as internal case and accusative as external case which are both assigned by verbal predicates.

[5]*Ana* 'on' takes dative complements when the PP is interpreted as locational. *Ana* 'on' takes accusative complements when the PP is interpreted as directional. *Ana þammei* 'on that' in (10) refers to a location.

jains

DEM.SG.M.NOM

'that you believe in him whom he sent'   (Gothic, John 6:29)

The two examples in which the accusative and the dative compete are showed in Table 2.4. The light gray marking corresponds to (10), in which the internal dative wins the case competition over the external accusative, and the relative pronoun surfaces in the dative case. The dark gray marking corresponds to (11), in which the external dative wins the case competition over the internal accusative, and the relative pronoun surfaces in the dative case. The instances of *ACC that appear in the same cells indicate that there are no examples, in which the accusative and the dative compete and the relative pronoun appears in the accusative case.

Table 2.4: Gothic headless relatives (ACC — DAT)

EXT / INT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC / *NOM	DAT / *NOM
[ACC]	*NOM / ACC	ACC	DAT / *ACC
[DAT]	*NOM / DAT	*ACC / (DAT)	DAT

Table 2.5 is a simplified version of Table 2.4. The data in the table can be divided into three sets: (1) a set of three unmarked cells in the top-left to bottom-right diagonal, (2) a set of three light gray marked cells in the bottom-left corner and (3) a set of three dark gray marked cells in the top-right corner. The unmarked three cells in the diagonal are situations in which the internal and the external case match. The three cells in the bottom-left corner, marked in light gray, are the situations in which the internal case surfaces when it wins the competition. In these situations, the relative pronoun appears in the internal case. They correspond to the examples (6), (8) and (10). The three cells in the top-right corner, marked in dark gray, are the situations in which the external case surfaces when it wins the competition. In these situations, the relative pronoun appears in the external case. They correspond to the examples in (7), (9) and (11).

To sum up, case competition in headless relative is subject to the case scale, repeated from the introduction of this chapter in (12).

Table 2.5: Summary of Gothic headless relatives

INT \\ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	(DAT)	DAT

(12)   NOM < ACC < DAT

If two cases compete, the dative wins over the accusative and the nominative, and the accusative wins over the nominative. In this section I gave examples from Gothic that illustrate this. As I mentioned in the introduction of this section, this case scale is not specific for Gothic, but it holds across languages (cf. see **pittner1995** for Modern and Old High German and **grosu2003**; **kakarikos2014** for Ancient Greek).[6]

In the remainder of this chapter I show that headless relatives are not the only place where the case scale appears. Instead, it appears with more syntactic phenomena. Moreover, exactly this scale is also reflected in morphology.

2.2   In syntax

In this section I discuss two additional syntactic phenomena that reflect the NOM < ACC < DAT scale. The first one is an implicational hierarchy that concerns agreement. The second one is an implicational hierarchy about relativization.

2.2.1   Agreement

Agreement can be seen as "a systematic covariance between a semantic or formal property of one element and a formal property of another" (**steel1978**). Put differently, the shape of one element changes according to some properties of an element it relates to. In this section I discuss the agreement between a predicate and its arguments.

It differs per language with how many of its arguments a predicate agrees. However, it is not random with which agreement takes place. Instead, there is an implicational hierarchy that is identical to the one observed for headless relatives: NOM < ACC < DAT. First I formulate the implicational hierarchy in terms of grammatical

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[6]Modern German differs from Gothic and the other languages in that it is subject to an additional constraint. That is, it does not allow the internal and the external case to win case competitions. Modern German only allows the internal case to do so. If the external case is more to the right on the case scale, the headless relative is ungrammatical. This topic is the main focus of Part II of this dissertation.

function (following **moravcsik1978**). Later I show that a reformulation in terms of case is actually more accurate (following **bobaljik2006**).

moravcsik1978 formulated the implicational hierarchy in terms of grammatical functions subject, direct object and indirect object.[7] The hierarchy is schematically represented in Figure 2.1. It should be read as follows: if a language allows the predicate to agree with the argument in a particular circle, it also allows the predicate to agree with the argument in the circle around it.
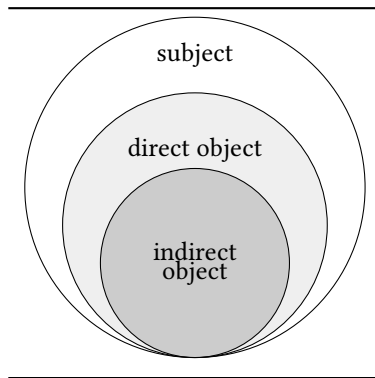

Figure 2.1: Agreement hierarchy

Then, there are four types of languages possible: first, a language that does not show any agreement; second, a language that shows agreement only with the subject and not with the direct and indirect object; third, a language that shows agreement with the subject and direct object but not with the indirect object; and fourth, a language that shows agreement with the subject, the direct object and the indirect object.

The implicational hierarchy holds for languages, not for sentences. That is, it is not the case that in a language of a particular type all instances of the grammatical function show agreement. To be more precise, in a language of the second type that only shows agreement with the subject, not all subjects have to show agreement. Particular types of subject, such as experiencer subjects often do not show any agreement.

Japanese is an example of a language that does not show any agreement on the predicate. An example is given in (13). The predicate *okutta* 'sent' does not agree with the subject *Tarooga* 'Taro', with the direct object *nimotuo* 'package' or with the indirect object *Hanakoni* 'Hanako'.

---

[7]**moravcsik1978** also included adverbs on the lowest end of the hierarchy. I leave them out here, because they are not relevant for the discussion.

(13) Taroo-ga Hanako-ni nimotu-o okutta.
      Taro-NOM Hanako-DAT package-ACC sent
      'Taro sent Hanako a package.' (Japanese, **miyagawa2004**: 5)

German is an example of a language that shows agreement with the subject of the
clause. An example is given in (14). The predicate *gibst* 'give' contains the morpheme
-st, marked in bold. This morpheme is the agreement morpheme for second person
singular subjects (in the present tense). The predicate *gibst* 'give' agrees in person
and number with the subject *du* 'you'. There is no agreement with the direct object
das Buch 'the book' or the indirect object *mir* 'me'.

(14) Du   gib **-st**   mir   das Buch.
      you.NOM give -PRES.2SG I.DAT the book.ACC
      'You give me the book.' (German)

Hungarian is an example of a language that shows agreement with the subject and
the direct object of a clause. An example is given in (15). The predicate *adom* 'give'
contains the morpheme *-om*, marked in bold. This is a portmonteau morpheme for
a first person singular subject and a third person object agreement. The predicate
adom 'give' agrees with the subject *én* 'I' and the direct object *a könyvet* 'the book'.
There is no agreement with the indirect object *neked* 'you'. Agreement with the the
first person singular subject *én* 'I' and second person singular indirect object *neked*
'you.DAT.SG' is ungrammatical, as indicated by the ungrammaticality of *-lak*.

(15) (Én) neked   ad   **-om**/   *-lak   a   könyv-et
      I   you.DAT give -1SG.SUBJ>3.OBJ -1SG.SUBJ>2.OBJ the book-ACC
      'I give you the book.' (Hungarian, András Bárány p.c.)

Basque is an example of a language that shows agreement with the subject, the direct
object and the indirect object. Basque is an ergative-absolutive language, so in tran-
sitive clauses subjects are marked as ergative and objects are marked as absolutive.
An example from the Bizkaian dialect is given in (16). The stem of the auxiliary *aus*
combines with the morphemes *d-*, *-ta* and *-zu*, marked in bold. The morpheme *d-* is
the agreement morpheme for third person singular as direct objects, which is here
liburua 'the book'. The morpheme *-ta* is the agreement morpheme for first person
singular indirect objects, which is here *niri* 'me'. The morpheme *-zu* is the agreement
morpheme for second person singular ergative subjects, which is here *zuk* 'you'.

(16) Zu-k   ni-ri liburu-a   emon **d**   -aus **-ta**   **-zu**.
      you-ERG I-DAT book-DEF.ABS given ABS.3SG -AUX -DAT.1SG -ERG.2SG
      'You gave me the book.' (Bizkaian Basque, adapted from **arregi2004**: 45)

Putting the languages in **moravcsik1978**'s (**moravcsik1978**) schema gives the result as shown in Figure 2.2.
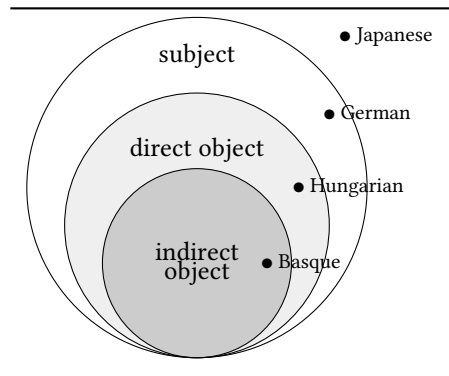

Figure 2.2: Agreement hierarchy with languages

gilligan1987 performed a typological study among 100 genetically and areally diverse languages, which confirms the picture. The results are shown in Table 2.6. There are 23 languages that do not show any agreement, like Japanese. There are 31 languages that show agreement only with the subject and not with the direct and indirect object, like German. There are 25 languages that show agreement with the subject and direct object but not with the indirect object, like Hungarian. There are 23 languages that show agreement with the subject, the direct object and the indirect object, like Basque.

Table 2.6: Typology for agreement hierarchy

	agreement with			
subject	direct object	indirect object	number of languages	example
*	*	*	23	Japanese
✓	*	*	31	German
✓	✓	*	25	Hungarian
✓	✓	✓	23	Basque
✓	*	✓	(1)	-
*	✓	✓	0	-
*	x	*	0	-
*	*	✓	0	-

So far I have discussed the implicational hierarchy in terms of grammatical func-

tion. In what follows, I discuss how it actually should be formalized in terms of the case scale that has also been observed for case competition in headless relatives.

bobaljik2006 argues that the implicational hierarchy is more accurate if it is stated in terms of case rather than grammatical function. In these situations, case seem to capture the facts for the implicational hierarchy, and grammatical function does not. It is often the case that subjects appear in the nominative case, and that direct objects appear in accusative. However, this is not always the case. Subjects can be non-nominative and direct objects can be non-accusative. **bobaljik2006** gives examples of two types of situations in which this is the case: non-nominative subjects in Icelandic and ergative-absolutive languages. In these situations, case seem to capture the facts for the implicational hierarchy, and grammatical function does not. I go through both situations **bobaljik2006** describes.

Icelandic is a language that has dative subjects. It is like German in that it only shows agreement with a single argument. If agreement takes place with the grammatical subject, it is expected that the dative subject agrees with the predicate. This is not what happens, as illustrated in (17). The dative subject *morgum studentum* 'many students' is plural. The sentence is ungrammatical with the predicate *líka* 'like' inflecting for plural as well. So, the dative subject does not agree in number with the predicate. In other words, it is not the grammatical subject that shows agreement.

(17) *Morgum studentum líka   verkið.
      many   students.DAT like.PL job.NOM
      'Many students like the job.'   (**harley1995**: 208)

Instead, it is the nominative object that agrees with the verb. This is illustrated in (18). The dative subject *konunginum* 'the king' is singular. The nominative object *ambáttir* 'slaves' is plural. The predicate *voru* 'were' is inflected for plural, agreeing with the nominative object. This is expected if morphological case determines agreement: it is the nominative that shows agreement. The grammatical role, the fact that this nominative is an object, does not influence agreement.

(18) Um veturinn voru   konunginum   gefnar ambáttir
      In   the winter were.PL the king.SG.DAT given   slave.PL.NOM
      'In the winter, the king was given (female) slaves.'   (**zaenen1985**: 112)

The second type of evidence that **bobaljik2006** gives comes from ergative-absolutive languages. Ergative-absolutive languages differ in their alignment from nominative-accusative languages. In nominative-accusative languages, the subject of an intransitive verb (S) has the same marking as the subject of a transitive verb (A), namely nominative. The object of a transitive verb (O) has its own marking, namely accusative. This is schematically shown in 2.3.
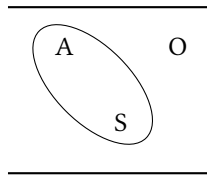
Figure 2.3: Nominative-accusative alignment

In ergative-absolutive languages, the alignment is different. The subject of an intransitive verb (S) has the same marking as the object of the transitive verb (O), namely absolutive. The subject of the transitive verb (A) has its own marking, namely ergative. This is schematically shown in 2.4.
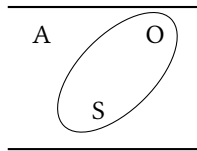

Figure 2.4: Ergative-absolutive alignment

Note here that nominative-accusative languages use the same case marking for the same grammatical function (nominative for subjects, accusative for objects), but ergative-absolutive languages do not (absolutive for objects in transitive clauses or subjects in intransitive clauses, ergative for subjects in transitive clauses).

bobaljik2006 describes how absolutives and ergatives behave with respect to whether they show agreement. There are languages that show agreement with both absolutives and ergatives. There are also languages that show only agreement with absolutives. Crucially, there is no language that shows only agreement with ergatives. Absolutives are a heterogenous set with respect to grammatical function, i.e. They are subjects of intransitive verbs and objects of transitive verbs. However, with respect to showing agreement absolutives behave the same, and this behavior is different from ergatives. This indicates that it is morphological case and not grammatical function that is the decisive factor.

bobaljik2006 (following **marantz2000**) combines nominative-accusative and ergative-absolutive languages in the following way: accusative and ergative are dependent cases, and nominative or absolutive are unmarked case. Reformulating Figure 2.2 in terms of case instead of grammatical function gives the schema in Figure 2.5.

This formulation in terms of case rather than grammatical function works as follows for the examples I gave earlier. First, Japanese is a language that does not show any agreement, as shown in (13). There is no agreement with the unmarked case (here the nominative), not with the dependent case (here the accusative) and not with the dative case. Second, German is a language that shows agreement only with
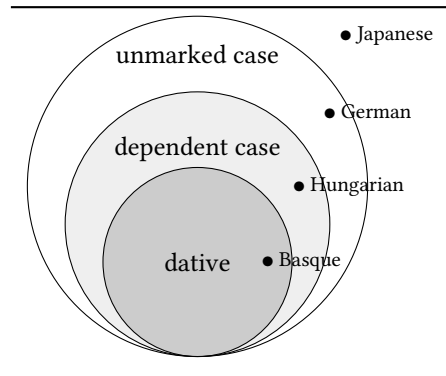
Figure 2.5: Agreement hierarchy (case)

the unmarked case, as shown in (14). The morpheme *-st* on the predicate agrees with the element in unmarked nominative case *du* 'you'. There is no agreement with the dependent accusative case or with the dative case. Third, Hungarian is a language that shows agreement with the unmarked and the dependent case, as shown in (15). The portmanteau morpheme *-om* on the predicates agrees with the element in unmarked nominative case *én* 'I' and the element in dependent accusative case *a könyvet* 'the book'. Last, Basque is a language that shows agreement with the unmarked, the dependent and the dative case, as shown in (16). The morpheme *-zu* on the auxiliary agrees with the element in dependent ergative case *zuk* 'you'. The morpheme *d-* on the auxiliary agrees with the element in unmarked absolutive case *liburua* 'the book'. The morpheme *-ta* on the auxiliary agrees with the element in the dative case *niri* 'me'.

In the languages I discuss in this dissertation, I focus on languages that have nominative as unmarked case and accusative as dependent case, so Figure 2.6 suffices.
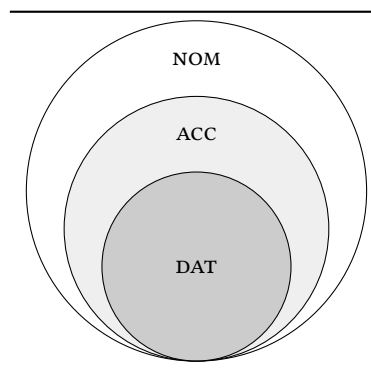

Figure 2.6: Agreement hierarchy (NOM/ACC/DAT)

In sum, this section has shown that agreement follows the same implicational hierarchy as the case scale in headless relatives: NOM < ACC < DAT.

2.2.2 Relativization

Relativization refers to the process in which a relative clause is derived from a non-relative clause. An example of the non-relative clause is given in (19a). The relative clause derived from that is shown in (19b). The head of the relative clause is *woman* and precedes the clause. The relative pronoun follows the head. The head of the head does not appear in the relative clause anymore.

(19)   a.   You like the woman.
       b.   **the woman**, who you like

In (19b), it is the object of the clause that is relativized. It differs per language which elements can be relativized with a particular strategy. Just like the distribution was not random for agreement, it is not random which elements can be relativized. Instead, there is an implicational hierarchy that is identical to the one observed for the case scale: NOM < ACC < DAT.

    keenan1977 formulated the implicational hierarchy in terms of the grammatical functions subject, direct object and indirect object.[8] The implicational hierarchy is schematically represented in Figure 2.7. It should be read as follows: if a language allows a particular relativization strategy of the grammatical function in a particular circle, it also allows this relativization strategy of the grammatical function of the circle around it. The languages in the figure give examples of the circles they are in.
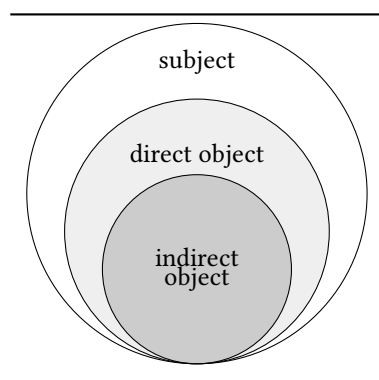

Figure 2.7: Relativization hierarchy

    There are four types of languages possible: first, a language that allows only the subject to be relativized with a particular strategy and not the direct and indirect object; second, a language that allows the subject and direct object to be relativized with a particular strategy but not the indirect object; and third, a language that allows

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[8]**keenan1977** also included obliques, possessives and objects of comparison on the lowest end of the hierarchy. I leave them out here, because they are not relevant for the discussion.

the subject, the direct object and the indirect object to be relativized with a particular strategy.

Malagasy is an example of a language that allows subjects to be relativized using a particular strategy, but not direct and indirect objects. (20) is an example of a declarative sentence in Malagasy. It is a transitive sentence that contains the subject *ny mpianatra* 'the student' and the direct object *ny vehivavy* 'the woman'.

(20)   Nahita ny vehivavy ny mpianatra.
           saw   the woman   the student
           'The student saw the woman.'   (Malagasy, **keenan1977**: 70)

In (21), the subject from the declarative sentence, marked in bold, is relativized. The subject *ny mpianatra* 'the student' appears in the first position of the clause. It is followed by the invariable relativizer *izay* 'that'. After that, the rest of the relative clause follows, in this case *nahita ny vehivavy* 'saw the woman'.

(21)   **ny mpianatra** izay nahita ny vehivavy
           the student   that saw   the woman
           'the student that saw the woman'
                              (Malagasy, **keenan1977**: 70, my boldfacing)

The object of (20) cannot be relativized in the same way, as shown in (22). Here the object *ny vehivavy* 'the woman', marked in bold, appears in the first position of the clause. It is again followed by the relativizer *izay* 'that' and the rest of the relative clause, which is here *nahita ny mpianatra* 'saw the student'. This example is ungrammatical.

(22)   *__ny vehivavy__ izay nahita ny mpianatra
           the woman   that saw   the student
           'the woman that the student saw'
                              (Malagasy, **keenan1977**: 70, my boldfacing)

Later in this section I draw the parallel between subject and nominative, direct object and accusative and indirect object and dative (**caha2009**). As Malagasy does not have any overt morphological system, it does not hold that the subject corresponds to the nominative in this case. German is another example of a language that allows subjects to be relativized using a particular strategy, but not direct and indirect object. This strategy is the participle construction (**keenan1977**). This strategy is a secondary strategy that exist besides the main strategy that can be used to relativize direct and indirect objects. (23) is an example of a declarative sentence in German. It is a transitive sentence that contains the subject *die Frau* 'the woman' and the object *der Mann* 'the man'.

(23)   Die Frau   küsst den Mann.
        the woman kisses the man
        'The woman is kissing the man.'   (German)

The subject from the declarative in (23), sentence *die Frau* 'the woman', is relativized
in (24). The predicate from the declarative clause *küsst* 'kisses' is turned in into the
participle *küssende* 'kissing'. The participle appears at the end of the reduced relative
clause *den Mann küssende* 'the man kissing'. The reduced relative clause directly
precedes the noun of the subject, creating distance between the determiner *die* 'the'
and *Frau* 'woman', which are both marked in bold.

(24)   **die** den Mann küssende **Frau**
        the the man   kissing   woman
        'the woman who is kissing the man'   (German)

The object from the declarative sentence in (23), *den Mann* 'the man', cannot be rel-
ativized like the subject, as shown in (25). Again, the predicate from the declarative
clause *küsst* 'kisses' is turned in into the participle *küssende* 'kissing'. The participle
appears at the end of the relative clause *die Frau küssende* 'the woman kissing'. The
reduced relative clause directly precedes the noun of the object, creating distance
between the determiner *der* 'the' and *Mann* 'man', which are both marked in bold.
This example is ungrammatical.

(25)   ***den** die Frau   küssende **Mann**
        the the woman kissing   man
        intended: 'the man that the woman is kissing'   (German)

Malay is an example of a language that has a relativization strategy for subjects and
direct objects, but not for indirect objects. (26) shows an example in which the object
is relativized. The object here is *ayam* 'chicken', marked in bold. It is followed by
the relativizer *yang* 'that'. After that, the rest of the relative clause *Aminah sedang
memakan* 'Aminah is eating' follows. The same strategy works to relativize subjects,
which is not illustrated with an example.

(26)   Ali bunoh **ayam**   yang Aminah sedang memakan.
        Ali kill   chicken that Aminah PROG   eat
        'Ali killed the chicken that Aminah is eating.'
                                        (Malay, **keenan1977**: 71, my boldfacing)

Indirect objects cannot be relativized using the same strategy. (27) is an example of
a ditransitive sentence in Malay. The indirect object *kapada perempuan itu* 'to the
woman' cannot be relativized using *yang*.

(27)   Ali beri ubi kentang itu kapada perempuan itu.
        Ali give potato   the to   woman   the
        'Ali gave the potato to the woman.'   (Malay, **keenan1977**: 71)

This is illustrated by the examples in (28). In (28a), the direct object *perempuan ka-pada* 'to the woman', marked in bold, appears in the first position of the clause. It is followed by the relativizer *yang* 'that' and the rest of the relative clause *Ali beri ubi kentang itu kapada* 'Ali gave the potato to'. This example in ungrammatical. The example in (28b) differs from (28a) in that the preposition *kapada* 'to' has been moved such that it precedes the relativizer *yang* 'that'. This example is ungrammatical as well, indicating this was not the reason for the ungrammaticality.

(28)   a.   *__perempuan__ yang Ali beri ubi kentang itu kapada
                woman   that Ali give potato   the to

        b.   *__perempuan kapada__ yang Ali beri ubi kentang itu
                woman   to   who Ali give potato   that
                                           (Malay, **keenan1977**: 71, my boldfacing)

Later in this section I draw the parallel between subject and nominative, direct object and accusative and indirect object and dative (**caha2009**). As Malay does not have any overt morphological system, it does not hold that the subject corresponds to the nominative and the object to the accusative.

Finnish is another example of a language that allows subjects and direct objects to be relativized using a particular strategy, but not indirect objects. This strategy places the relative clause prenominally, does not use a relativization marker, and puts the predicate in the relative clause in the non-finite form (**keenan1977**).

(29) shows how examples of relativized subjects and direct objects. (29a) is an example of a subject relative: *poika* 'boy' has been relativized from the clause in which it was the subject of *tanssinut* 'danced'. The head of the relative clause is *poika* 'boy', marked in bold, is preceded by the relative clause *pöydällä tanssinut* 'who had danced on the table'. The predicate of the relative clause appears in the non-finite form: *tanssinut* 'having danced'. (29b) is an example of a subject relative: *poika* 'boy' has been relativized from the clause in which it was the subject of *näkemäni* 'saw'. The head of the relative clause is *poika* 'boy', marked in bold, is preceded by the relative clause *näkemäni* 'that I saw'. The predicate of the relative clause appears in the non-finite form: *näkemäni* 'having seen'.

(29)   a.   Pöydällä tanssinut   __poika__ oli sairas.
              on-table having-danced boy   was sick
              'The boy who had danced on the table was sick.'

b.   Näkemäni   **poika** tanssi pöydällä.
     I-having-seen boy   danced on-table
     'The boy that I saw danced on the table.'   (Finnish, **keenan1977**: 71)

Basque is an example of a language that has a particular relativization strategy for subjects, direct objects and indirect objects. (30) is an example of a declarative ditransitive sentence in Basque. The sentence contains the subject *gizonak* 'the man', the direct object *liburua* 'the book' and the indirect object *emakumeari* 'the woman'.

(30)   Gizon-a-k   emakume-a-ri   liburu-a   eman dio.
         man-DEF-ERG woman-DEF-DAT book-DEF.ABS give   has
         'The man has given the book to the woman.'   (Basque, **keenan1977**: 72)

A relative clause in Basque appears in the prenominal position and it is marked by the invariable marker -*n*.[9] (31a) shows the three relativizations that are derived from (30). In (31a), the ergative subject *gizonak* 'the man' from (30) is relativized. The head *gizona* 'the man', marked in bold, has lost its ergative marker -*k*, and follows the relative clause *makumeari liburua eman dio* 'who has given the book to the woman'. The suffix -*n* is attached to the relative clause. In (31b), the absolutive direct object *liburua* 'the book' from (30) is relativized. The head *liburua* 'the book', marked in bold, follows the relative clause *gizonak emakumeari eman dion* 'that the man has given to the woman'.[10] The suffix -*n* is attached to the relative clause. In (31c), the dative indirect object *emakumeari* 'the woman' from (30) is relativized. The head *emakumea* 'the man', marked in bold, has lost its dative marker -*ri*, and follows the relative clause *gizonak liburua eman dion* 'that the man has given the book to'. The suffix -*n* is attached to the relative clause.

(31)   a.   emakume-a-ri   liburu-a   eman dio-n   **gizon-a**
              woman-DEF-DAT book-DEF.ABS give   has-REL man-DEF
              'the man who has given the book to the woman'
         b.   gizon-a-k   emakume-a-ri   eman dio-n   **liburu-a**
              man-DEF-ERG woman-DEF-DAT give   has-REL book-DEF
              'the book that the man has given to the woman'
         c.   gizon-a-k   liburu-a   eman dio-n   **emakume-a**
              man-DEF-ERG book-DEF.ABS give   has-REL woman-DEF
              'the woman that the man has given the book to'
                                     (Basque, **keenan1977**: 72, my boldfacing)

---

[9]Additionally, the relativized positions do not appear in verbal agreement anymore, but this not visible in the example, because they are all phonologically zero.

[10]The absolutive direct object *liburua* 'the book' does not have an additional overt absolutive marker, so this difference cannot be observed when it is relativized.
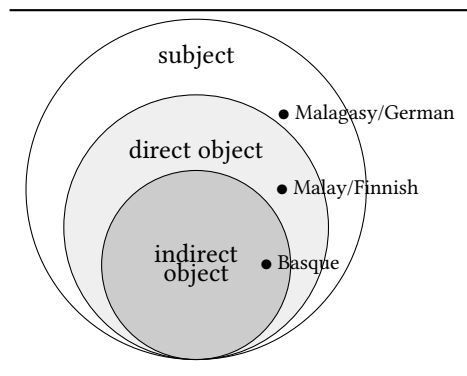
Figure 2.8: Relativization hierarchy with languages

caha2009 argues that the implicational hierarchy is more accurate if it is stated in terms of case rather than grammatical function. The main argument comes from ergative-absolutive languages, which was also one of **bobaljik2006**'s (**bobaljik2006**) argument with the implicational hierarchy for agreement.

According to **keenan1977**, ergative-absolutive languages form a counterexample to their hierarchy. It turns out that in some languages ergative subjects cannot be relativized, while absolutive subjects and absolutive objects can. This indicates that absolutive subjects and objects form a natural class to the exclusion of ergative subjects. In other words, it is not the grammatical function that is decisive, but morphological case. Dyirbal is an example of a language in which absolutive subjects and objects can be relativized, but ergative subjects cannot (**dixon1972**: 100).

(32) shows an intransitive and transitive sentence in Dyirbal. In the intransitive sentence in (32a), the subject *balan ḍugumbil* 'the woman' is marked absolutive. In the transtive sentence in (32b), the subject *ŋaḍa* 'I' is marked ergative, and the object *balan ḍugumbil* 'the woman' is marked absolutive.

(32) a. balan   ḍugumbil ɲina-ɲu
     DET.ABS woman.ABS sit-PASS
     'The woman is sitting down.'

   b. ŋaḍa balan   ḍugumbil buṛa-n
     I.ERG DET.ABS woman.ABS see-PRES/PST
     'I am watching the woman.' (Dyirbal, **dixon1972**: 100, my boldfacing)

A relative clause in Dyirbal follows its head, and marks the predicate of the relative clause with the relative suffix *-ŋu.*. In (33a), the absolutive subject *ḍugumbil* 'woman' from (32a) is relativized. The head *ḍugumbil* 'woman', marked in bold, precedes the relative clause *ɲina-ŋu* 'who is sitting down'. The predicate in the relative clause *ɲina* 'sit' is followed by the relative suffix *-ŋu*. In (33b), the absolutive object *ḍugumbil* 'woman' from (32b) is relativized. The head *ḍugumbil* 'woman', marked in bold,

precedes the relative clause *ŋaḍa buṛa-ŋu* 'whom I am watching'. The predicate in the relative clause *buṛa* 'see' is followed by the relative suffix *-ŋu.*

(33) a. ŋaḍa balan **ḍugumbil** ɲina-ŋu buṛa-n
         I.ERG DET.ABS woman.ABS sit-REL see-PRESPST
         'I am watching the woman who is sitting down.'
                              (Dyirbal, **dixon1972**: 100, my boldfacing)
      b. balan **ḍugumbil** ŋaḍa buṛa-ŋu ɲina-ŋu
         DET.ABS woman.ABS I see-REL sit-PASS
         'The woman whom I am watching is sitting down.'
                              (Dyirbal, **dixon1972**: 100, my boldfacing)

Ergatives (for instance the ergative subject *ŋaḍa* 'I' in (32b)) cannot be directly relativized. They have to be promoted to absolutives first, creating a passive-like structure. In other words, only relativization of absolutives is possible, ergatives cannot be relativized.

In conclusion, just like the agreement hierarchy, the relativization hierarchy is formalized best in terms of morphological case (**caha2009**). Reformulating Figure 2.2 in terms of case instead of grammatical function gives the schema in Figure 2.6.
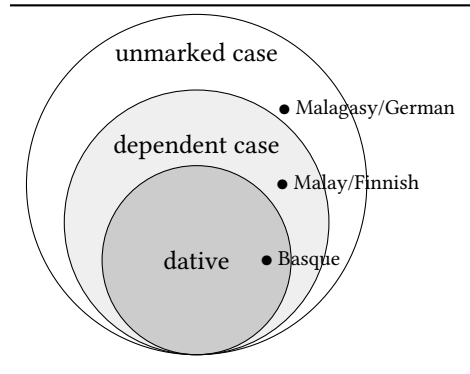

Figure 2.9: Relativization hierarchy (case)

This formulation in terms of case rather than grammatical function works as follows for the examples I gave earlier.

First, German is a language that has a particular relativization strategy for the unmarked case, as shown in (24). The unmarked nominative case can be relativized with a reduced relative clause, but the dependent accusative case and the dative case cannot. Second, Finnish is a language that has a particular relativization strategy for unmarked and dependent case, as shown in (29). The unmarked nominative case and the dependent accusative case can be relativized with a reduced relative clause, but the dative case cannot. Last, Basque is a language that has a particular relativization

strategy for unmarked, dependent and dative case, as shown in (31). The unmarked ergative, dependent absolutive and dative case can be relativized by extraposing the head, and marking it with the invariable marker *-n*.

In the languages I discuss in this dissertation, I focus on languages that have nominative as unmarked case and accusative as dependent case, so Figure 2.10 suffices.
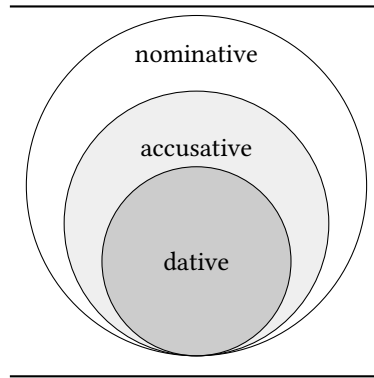

Figure 2.10: Relativization hierarchy (NOM/ACC/DAT)

In sum, this section has shown that relativization follows the same implicational hierarchy as agreement and as the case scale in headless relatives: NOM < ACC < DAT.

2.3 In morphology

In the two previous sections I showed that the case scale NOM < ACC < DAT can be observed in three syntactic phenomena. First, it appears in case competition in headless relatives. Second, the case scale forms the basis for the implicational hierarchy observed in agreement across languages. Third, the same implicational holds for relativization strategies cross-linguistically.

In this section, I show that this same case scale can be observed in morphology. First, syncretism only targets continuous regions on the case scale. Second, several languages show morphological containment that mirrors the case scale.

2.3.1 Syncretism

Syncretism refers to the phenomenon whereby two or more different functions are fulfilled by a single form (**baerman2002**). In this section I discuss literature that shows that syncretism patterns among nominative, accusative and dative are not random. Instead, they pattern along the case scale NOM < ACC < DAT.

It has widely been observed that syncretism is restricted by the linear sequence NOM — ACC — DAT (**baerman2005**; **caha2009**; **zompi2017**) (and see **mcfadden2018**; **smith2019** for similar claims concerning root suppletion). That is,

if one orders cases in this linear sequence, only contiguous regions in the sequence
turn out to be syncretic. Following that, four possible patterns are attested crosslin-
guistically. First, all three cases are syncretic. Second, nominative and accusative
are syncretic and the dative is not. Third, the accusative and the dative are syncretic
and the nominative is not. Fourth, all cases are non-syncretic.

There is one pattern that is not attested crosslinguistically. This pattern does
not target continuous regions, but non-contiguous ones: nominative and dative are
syncretic and accusative is not. In other words, what does not exist is an ABA pattern,
in which a form B intervenes between the two identically formed As (**bobaljik2012**).

Table 2.7 shows examples for each of these possible patterns. I give an exam-
ple of three distinct forms from Faroese. The second person singular is *tú* 'you' for
nominative, *teg* 'you' for accusative and *tær* 'you' for dative (**lockwood1977**: 70).
I give an example of a complete syncretism for nominative, accusative and dative
from Dutch. The second person plural pronoun is *jullie* 'you.PL' is syncretic between
all three cases. I give an example of a syncretism between accusative and dative
but not nominative from Icelandic. The first person singular plural is *okkur* 'us' is
syncretic between accusative and dative. The nominative has a separate form: *við*
'we' (**einarsson1949**: 68). I give an example of a syncretism between nominative
and accusative but not dative from German. The third person singular feminine *sie*
'she/her' is syncretic between nominative and accusative. The dative has a separate
form: *ihr* 'her'. Crucially, to the best of my knowledge, there is no language in which
the nominative and the dative are syncretic but the accusative is not.

Table 2.7: Syncretism patterns

pattern	NOM	ACC	DAT	translation	language
A B C	tú	teg	tær	2SG	Faroese
A A A	jullie	jullie	jullie	2PL	Dutch
A B B	við	okkur	okkur	1PL	Icelandic
A A B	sie	sie	ihr	3SG.F	German
A B A					not attested

In sum, case syncretism follows the ordering of the case scale in headless rela-
tives: NOM < ACC < DAT.

2.3.2 Morphological case containment

This section shows a second way in which NOM < ACC < DAT is reflected in mor-
phology: morphological case containment (**smith2019**; **zompi2017**; **caha2010**). In
some languages, the form that is used for the accusative literally contains the form

that is used for the nominative. In turn, the forms for the dative contains the form for the accusative. I illustrate this phenomenon with examples from Khanty.

Khanty (or Ostyak) shows morphological case containment in some of its pronouns (**nikolaeva1999**: 16 after **smith2019**). Three examples are given in Table 2.8.

The nominative form for the first person singular is *ma* 'I'. The form for the accusative is *ma:ne:m* 'me'. This is the form for the nominative *ma* plus the accusative marker *-ne:m*. The form for the dative is *ma:ne:mna* 'me'. This is the form for the accusative *ma:ne:m* plus the dative marker *-na*. So, dative formally contains the accusative, and the accusative formally contains the nominative.

The third person singular and first person plural show the same pattern. The accusative forms *luwe:l* 'him/her' and *muŋe:w* 'us' contain the nominative forms *luw* and the *muŋ* plus the accusative marker *-e:l* or *-e:w*. The dative forms *luwe:lna* 'him/her' and *muŋe:wna* 'us' contain the accusative forms *luwe:l* and *muŋe:w* plus the dative marker *-na*. Again, the dative formally contains the accusative, which in turn contains the nominative.

Table 2.8: Morphological case containment in Khanty

	1SG	3SG	1PL
NOM	ma	luw	muŋ
ACC	ma:-**ne:m**	luw-**e:l**	muŋ-**e:w**
DAT	ma:-**ne:m-na**	luw-**e:l-na**	muŋ-**e:w-na**

Other languages that show this phenomenon are West Tocharian (**gippert1987**) and Vlakh and Kalderaš Romani (respectively **friedman1991** and **boretzky1994**).

In sum, some languages morphologically look like NOM-ACC-DAT. This exactly reflects the case scale NOM < ACC < DAT.

2.4 Summary

Case competition in headless relatives adheres to the case scale in (34). If the internal and external case differ, cases more on the right of the scale win over cases more to the left on the case.

(34)   NOM < ACC < DAT

This case scale is not only found in case competition in headless relatives. Implicational hierarchies regarding two syntactic phenomena appear across languages. The first one concerns agreement. If a language shows agreement with datives, it also shows agreement with accusatives and nominatives. If a language shows agreement

with accusatives, it also shows agreement with nominatives. The second implicational hierarchy concerns relativization. If a dative in a language can be relativized with a particular strategy, an accusative and a nominative can be too using the same strategy. If an accusative can be relativized with a particular strategy, so can a nominative with this strategy.

The case scale can also be observed in morphological patterns. First, if the cases are ordered according to the case scale, syncretism only target continuous forms, no ABA pattern appears. Second, some languages show that the dative formally contains accusative, and that the accusative formally contains the nominative.

These phenomena show that the pattern observed in headless relatives is not something that stands on itself. The scale is a pattern that recurs across languages and across phenomena. Therefore, it should not be treated as an special process with its own stipulated rule. Instead, it is something general that should also follow from general processes in languages.

The next chapter shows how features of the nominative, accusative and dative are organized. The syntax fact presented in this chapter can be derived from the organization of these features.

Chapter 3

Case decomposition

At the beginning of the previous chapter I showed that the case scale NOM < ACC < DAT appears in headless relatives. In most accounts for headless relatives (**pittner1995**; **vogel2001**; **grosu2003**; **harbert1978**, an exception to this is **himmelreich2017**) the case scale is stipulated. Headless relatives simply obey to that hierarchy. **pittner1995** (**pittner1995**: 201:fn.4) makes this explicit: "One of the reviewers notes that an explanation in terms of a Case hierarchy is rather stipulative. However, as far as I know, nobody has suggested a nonstipulative explanation for these facts."

What I showed as well in the previous chapter is that the case scale NOM < ACC < DAT is a wide-spread phenomenon: it recurs in several phenomena across different languages. The scale can be observed in at least two more syntactic phenomena: agreement and relativization.[1] The case scale also appears within morphology in syncretism patterns and morphological case containment. **pittner1995** (**pittner1995**: 201:fn.4) makes this link to morphology as well: "Furthermore, the Case hierarchies receive some independent support by morphology as shown by the various inflectional paradigms."

I am not after a theory in which the case hierarchy is something construction specific, and syntax and morphology both have their own case hierarchy. I argue that there is a single trigger that is responsible for the case scales in different subparts of language (**caha2019**). Specifically, I show that the observed case scale naturally follows on the assumption that the case hierarchy is deeply anchored in syntax. The case scales in morphology and syntax are merely reflexes of how case is organized in language.[2]

This chapter is structured as follows. First, I introduce a specific case decomposition (**caha2009**). In the two following sections, I show how this case decomposition

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[1] In this dissertation I do not work out accounts for these two syntactic phenomena. They merely serve as an illustration that the pattern is reflected in other syntactic phenomena as well.

[2] **himmelreich2017** works this intuition out in a different way.

is able to derive the syncretism and morphological case containment facts from the previous chapter. I make this concrete in the framework Nanosyntax (**starke2009**). Finally, I show how the case decomposition translates to the case scale observed in headless relatives.

3.1   The basic idea

caha2009; **caha2013** (followed by **starke2009**; **bobaljik2012**; **mcfadden2018**; **smith2019**; **vanbaal2018**) has extensively argued that case should be decomposed into privative features. Specifically, the decomposition is cumulative: each case has a different number of case features, and the number grows one by one. This is illustrated in Table 3.1. Accusative has all the features that nominative has (here F1) plus one extra (here F2). Dative has all the features accusative has (F1 and F2) plus one extra (F3).

Table 3.1: Case decomposed

case	features
NOM	F1
ACC	F1, F2
DAT	F1, F2, F3

The case scale, repeated in (1), actually indicates containment. Nominative corresponds to a set of features (namely F1) that is contained in the set of features of accusative (which is namely F1 and F2). Similarly, nominative corresponds to a set of features that is contained in the set of features of dative (which is namely F1, F2 and F3). Lastly, accusative corresponds to a set of features (F1 and F2) that is contained in the set of features of dative (F1, F2 and F3).

(1)   NOM < ACC < DAT

The decomposition in Table 3.1 forms the basis to derive the case scale effects observed in the previous chapter. The next sections show how morphological case containment and syncretism effects follow naturally. After that, I show how the decomposition also derives the case competition facts in headless relatives.

3.2   Deriving syncretism

Case syncretism follows the ordering of the case scale NOM < ACC < DAT. Along this scale, only contiguous regions in the sequence are syncretic. In this section I

show how case syncretism patterns can be derived from the case decomposition in Table 3.1. In Table 3.2 I repeat from Table 2.7 examples that shows the possible and impossible syncretism patterns.

Table 3.2: Syncretism patterns (repeated)

pattern			NOM	ACC	DAT	translation	language
A	B	C	tú	teg	tær	2SG	Faroese
A	A	A	jullie	jullie	jullie	2PL	Dutch
A	B	B	við	okkur	okkur	1PL	Icelandic
A	A	B	sie	sie	ihr	3SG.F	German
A	B	A					not attested

Table 3.2 shows that if one orders cases in the linear sequence NOM — ACC — DAT, only contiguous regions in the sequence turn out to be syncretic. First, all three cases can be non-syncretic, as in Faroese. Second, all three cases can be syncretic, as in Dutch. Third, the accusative and the dative can be syncretic and the nominative not, as in Icelandic. Fourth, nominative and accusative can be syncretic and the dative not, as in German. The pattern that is not attested crosslinguistically is the one that targets non-contiguous regions in the table, the ABA pattern (**baerman2005**; **caha2009**; **zompi2017**).

The syncretism facts follow in a system in which the case is decomposed as in Table 3.1 and in which lexicalization relies on containment. The latter means that a phonological form is not only inserted when the lexical specification is identical to the syntax, but also when the syntactic features are a subset of the lexical specification. The intuition is the following. Syncretic forms are realized by a single 'lexical entry' from the 'lexicon'.[3] A lexical entry can be applied if it contains all features, as long as there is no more specific one. This system can generate the patterns ABC, AAA, ABB and AAB, but not ABA.

Before I show how the four attest patterns can be derived (and the one unattested not), I need to make some theoretical assumptions explicit about Nanosyntax, the framework in which this dissertation is worked out. First, I show how the Nanosyntactic system is set up in such a way that morphological patterns (like syncretism, but also morphological containment) can inform us about the way syntax is structured. Therefore, I briefly discuss the general architecture of Nanosyntax, its postsyntactic lexicon, and the content and shape of lexical entries. Lastly, I discuss how multiple features (like F1, F2 and F3 from Table 3.1) can be spelled out by a single phonological element, i.e. phrasal spellout.

[3]I return to the terms lexical entry and lexicon shortly.

In Nanosyntax, syntax starts with atomic features, and it builds complex syntactic trees. Specifically, there are no 'feature bundles' (from a pre-syntactic lexicon) that enter the syntax. The only way complex feature structures come to exist is a a result of merge. After syntax (actually, each instance of merge), the syntactic structure is matched against the lexicon for pronunciation. The lexicon 'translates' between lexical trees (i.e. syntactic representations) on the one hand and phonology (PF) and concepts (CF) on the other hand.[4]

In Nanosyntax, the lexicon contains lexical entries, which are links between lexical trees, phonological representations and conceptual representations (**starke2014**).[5] I leave the conceptual representation out of discussion for now, as it is not relevant for the discussion here. The fact that only syntax can create complex feature structures also has a consequence for lexical entires in the lexicon. Syntactic structures are constrained by certain principles, such that only well-formed syntactic structures exist. Since lexical entries in the lexicon link lexical trees to phonological and conceptual representation, these lexical trees are constrained by the same principles as syntactic structures are. As a result, the lexicon only contains well-formed lexical trees. The lexicon does not contain unstructured 'feature bundles', because they could never be created by syntax.

Following this logic, a feature bundle as in (2) cannot exist. It cannot have entered syntax, because syntax starts with atomic features. It can also not be created by syntax, because complex structures can only be created with merge.

(2)   [F1, F2, F3]

Instead, a possible lexical tree looks as in (3). The features are merged one by one in a binary structure.

(3)   DATP
            ╱   ╲
          F3   ACCP
                 ╱   ╲
                F2   F1
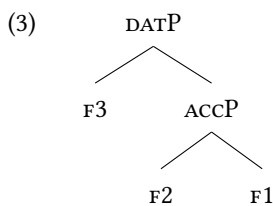
This structure leads to the concept of phrasal spellout: not terminals but multiple syntactic heads (phrases) are realized with a single piece of phonology (i.e. a single

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[4]Throughout the dissertation I call the syntactic representations in the lexicon 'lexical trees' in order to distinguish them from syntactic structures in the syntax.

[5]The lexical tree does not have to correspond to both a phonological and a conceptual representation. Lexical trees that only correspond to a conceptual representations and not to phonological representations are (phrasal or clausal) idioms. Lexical trees that only correspond to phonological representations but not to conceptual representations are for instance irregular plurals.

morpheme). Applying this to (3), not the terminals F1, F2 and F3 receive a realization, but AccP and DatP are spelled out. A necessary requirement is that these multiple syntactic heads form a constituent. That means that DatP cannot be spelled out without AccP.

Let me illustrate all of the above with the Faroese pronouns from Table 3.2. I simplify the situation in two respects. First, I do not show the internal complexity of the pronouns, including person and number features. Instead, I give a triangle, indicating that this is a complex syntactic structure. I refer to is as the person-number phrase it refers to, so e.g. 2sgP. Second, in this simplified representation I consider the Faroese pronouns to be monomorphemic. I ignore the fact that all three pronouns have the stem *t* with a suffix following it.

The lexical entry for *tú* is given in (4). The lexical tree consists of the second person singular pronoun (the 2sgP), and F1, making it a NomP. The phonological representation that is linked to the lexical tree is *tú*.[6]
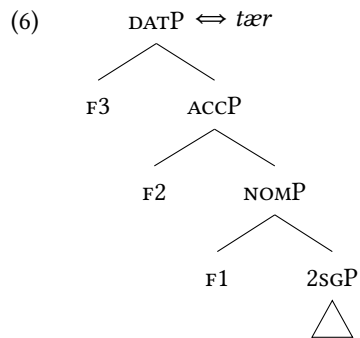
(4)   NomP ⟺ *tú*

        F1   2sgP
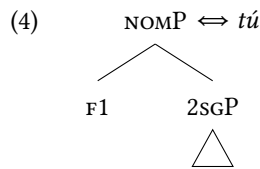
The lexical entry for *teg* is given in (5). The lexical tree consists of all the features of the lexical tree in (4), plus F2, making it an AccP. The linked phonological representation is *teg*.

(5)   AccP ⟺ *teg*

        F2   NomP

                F1   2sgP
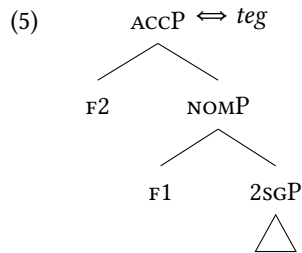
The lexical entry for *tær* is given in (6). The lexical tree consists of all the features of the lexical tree in (5), plus F3, making it an DatP. The linked phonological representation is *tær*.

---

[6]Throughout the dissertation, I use lexical trees and phonological forms connected by a double arrow (⟺) to refer to a lexical entry.

(6)   DATP ⟺ *tær*
          ╱   ╲
        F3   ACCP
               ╱   ╲
             F2   NOMP
                    ╱   ╲
   F1   2SGP
                          △

The lexical trees and their phonological counterparts I gave in (4) to (6) are lexical entries. These lexical entries are used to spell out syntactic structures. I give examples of syntactic structures in (7) to (9).

The lexical tree in (4) is identical to the syntactic structure in (7). Therefore, this syntactic structure is spelled out as *tú*.[7]

(7)   NOMP
           ╱   ╲
         F1   2SGP
                 △

          tú
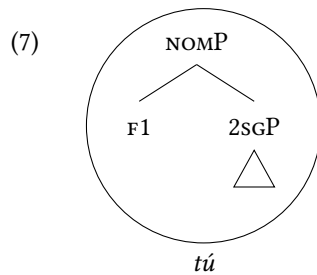
The lexical tree in (5) is identical to the syntactic structure in (8), and it is spelled out as *teg*.

(8)   ACCP
           ╱   ╲
         F2   NOMP
                ╱   ╲
              F1   2SGP
                      △

          teg
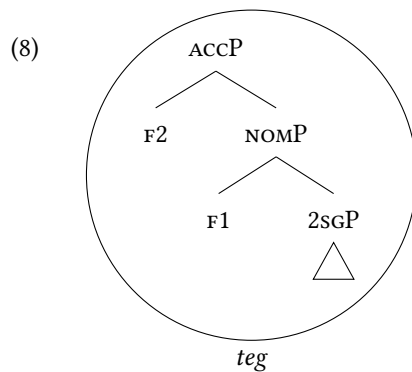
The lexical tree in (6) is identical to the syntactic structure in (9), and it is spelled out as *tær*.

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[7]Throughout this dissertation I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it.

(9)

tær
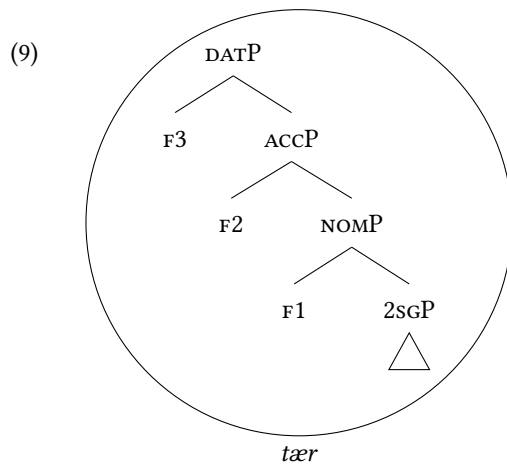
In the Faroese examples above, the syntactic structures are all identical to the lexical trees. However, Nanosyntax assumes that to be a successful match, identity is not a necessary requirement. Instead, matching relies on a containment relation. A lexical entry applies when it contains all features. This is formalized as in (10).
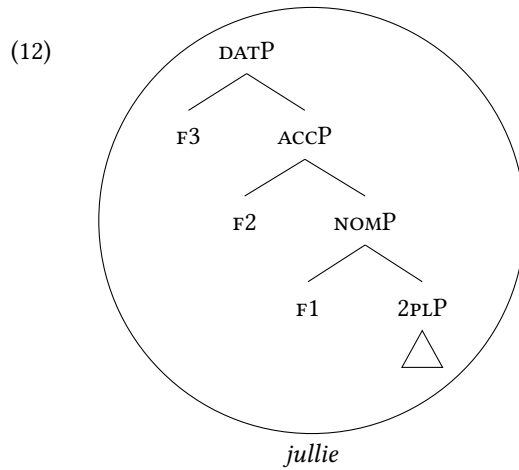
(10)   **The Superset Principle starke2009**:
         A lexically stored tree matches a syntactic node iff the lexically stored tree contains the syntactic node.

Let me illustrate this with the Dutch second person plural pronoun from Table 3.2. This pronoun is syncretic between between the nominative, accusative and dative. The lexicon only contains a single lexical entry, namely (11). The lexical tree consists of the complex lexical tree that corresponds to the second person plural pronoun (the 2PLP), and F1, F2 and F3 making it a DATP. The phonological representation that is linked to the lexical tree is *jullie*. The nominative, the accusative and the dative can all be spelled out with this single lexical entry using the Superset Principle in (10).
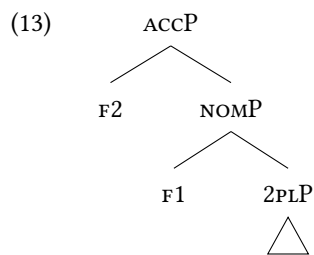
(11)
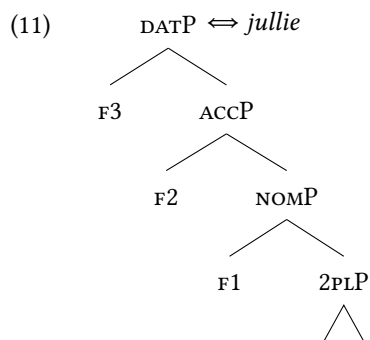
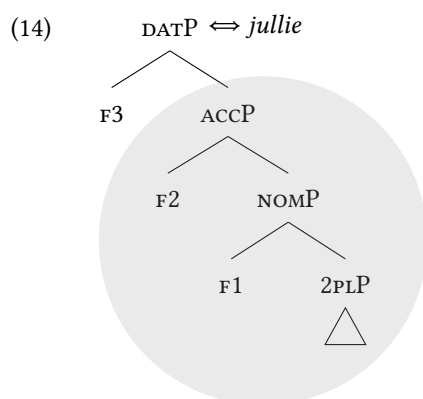The syntactic structure of the dative, given in (12), is the least exciting of the three.

It is identical to the lexical tree (11), and therefore, spelled out as *jullie.*

(12)

```
                    DATP
                   /    \
                 F3     ACCP
                       /    \
                     F2     NOMP
                           /    \
                         F1    2PLP
                                /\
```

jullie

The syntactic structure of the accusative is given in (13).

(13)

```
          ACCP
         /    \
       F2     NOMP
             /    \
           F1    2PLP
                  /\
```
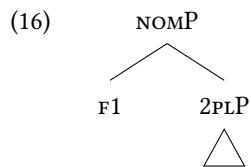
The lexical entry in (11) is not identical to this syntactic structure. However, the lexical tree contains the syntactic structure of the accusative. I repeat the lexical entry for *jullie* in (14), marking the subpart of the tree that matches the syntactic structure in gray.

(14)   DATP ⟺ *jullie*

```
        /    \
      F3     ACCP
            /    \
          F2     NOMP
                /    \
              F1    2PLP
                     /\
```

As a result, the accusative is spelled out as *jullie,* shown in (15).

(15)

AccP
F2   NomP
   F1   2PLP
         △

jullie
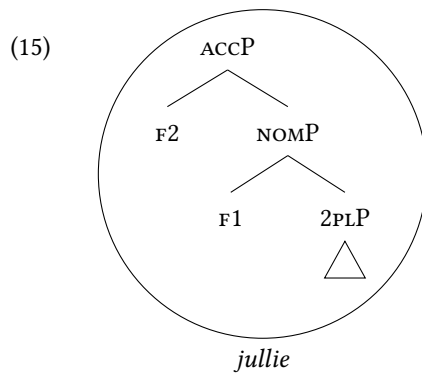
The same holds for the nominative. The syntactic structure is given in (16).

(16)   NomP
   F1   2PLP
            △

The lexical tree in (11) is not identical to this syntactic structure. However, again, the lexical tree contains the syntactic structure of the nominative. I repeat the lexical entry for *jullie* in (17), marking the subpart of the tree that matches the syntactic structure in gray.

(17)   DatP ⟺ *jullie*
   F3   AccP
         F2   NomP
               F1   2PLP
                        △
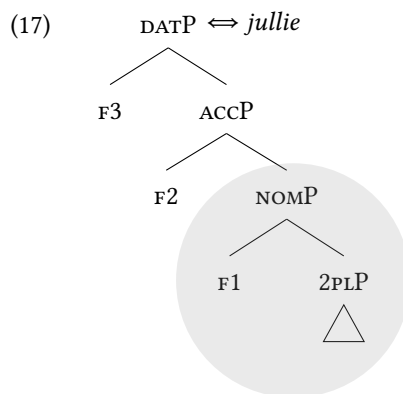
As a result, the nominative is spelled out as *jullie*, as shown in (18).

(18)

```
        NOMP
        /  \
      F1    2PLP
             △
```

jullie
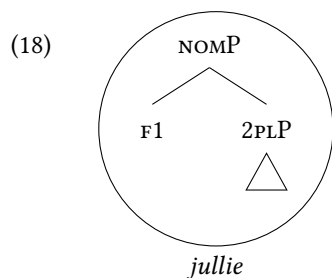
A question arises at this point. Why are the accusative and nominative in Faroese not spelled out by the lexical entry for the dative (and why is the nominative not spelled out by the lexical entry for the accusative)? These syntactic structures are namely contained in the lexical tree for the dative (and the accusative). The reason for that comes from how competition between lexical entries is regulated in Nanosyntax. When two lexical entries compete, the best fit wins. The best fit is the lexical tree with the least features that are not used. This is formalized as in (19).
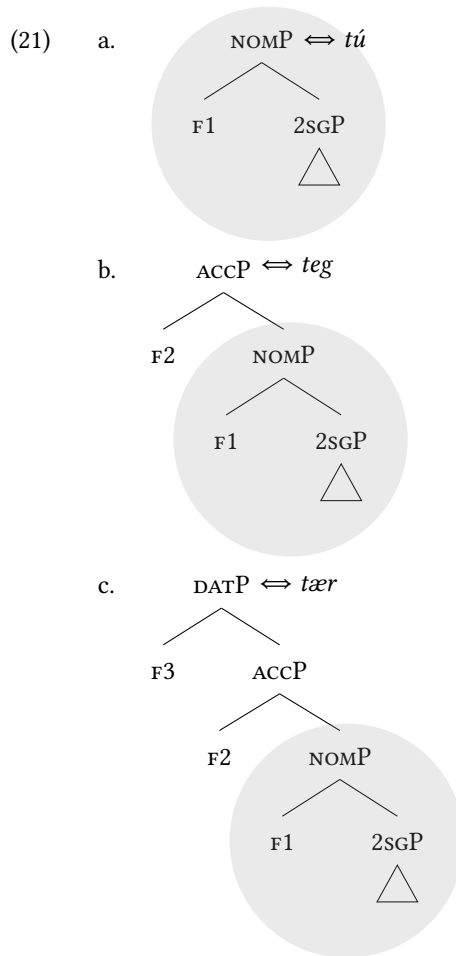
(19)   **The Elsewhere Condition (kiparsky1973**, formulated as in **caha2020**):
        When two entries can spell out a given node, the more specific entry wins. Under the Superset Principle governed insertion, the more specific entry is the one which has fewer unused features.

I show how the Superset Principle and the Elsewhere Condition interact in a competition with the Faroese lexical entries. I only discuss the nominative *tú* and the accusative *teg*, because for the dative *tær* there is only a single candidate that contains all features: the lexical entry *tær*.
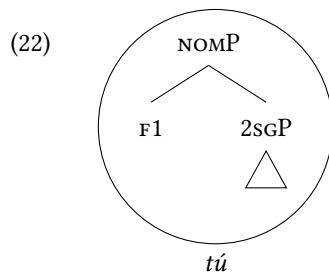
Consider first again the syntactic structure for the nominative in (20), repeated from (7).

(20)

```
        NOMP
        /  \
      F1    2SGP
             △
```
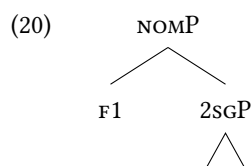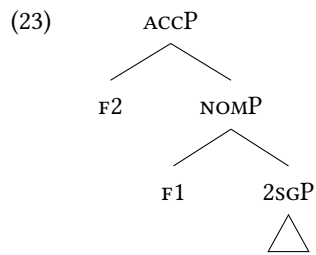
The three lexical entries for *tú* in (4), *teg* in (5) and *tær* in (6) are candidates for this syntactic structure. I repeat the lexical entries for *tú*, *teg* and *tær* in (21), marking the subpart of the tree that matches the syntactic structure in gray.
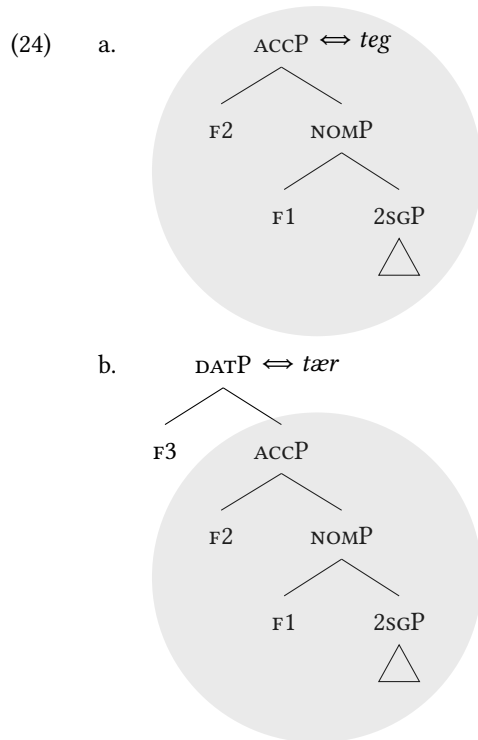
(21) a.

NOMP ⟺ *tú*

F1   2SGP

b.

ACCP ⟺ *teg*

F2   NOMP

F1   2SGP

c.

DATP ⟺ *tær*

F3   ACCP

F2   NOMP

F1   2SGP

The first, (21a), has no unused features. The second, (21b), has one unused feature: F2. The third, (21c), has two unused features: F2 and F3. Because (21a) has the least amount of unused features, it wins the competition, and the syntactic structure is spelled out as *tú*. This is shown in (22).

(22)

NOMP

F1   2SGP

tú

Consider the syntactic structure for the accusative in (23), repeated from (8).

(23)   AccP
            ╱   ╲
         F2   NomP
                   ╱   ╲
                F1   2sgP
                          △

The two lexical entries for *teg* in (5) and *tær* in (6) are candidates for this syntactic structure. The lexical entry for *tú* in (4) is not a candidate here, because it does not contain the complete syntactic structure (i.e. it lacks F2). I repeat the lexical entries for *teg* and *tær* in (17), marking the subpart of the tree that matches the syntactic structure in gray.

(24)   a.   AccP ⟺ *teg*
                    ╱   ╲
                 F2   NomP
                           ╱   ╲
                        F1   2sgP
                                  △

        b.   DatP ⟺ *tær*
                ╱   ╲
             F3   AccP
                       ╱   ╲
                    F2   NomP
                            ╱   ╲
                         F1   2sgP
                                   △

The former, (24a), has no unused features. The latter, (24b), has one unused feature: F2. Because (24a) has fewer unused features than (24b), it wins the competition, and the syntactic structure is spelled out as *teg*. This is shown in (25).

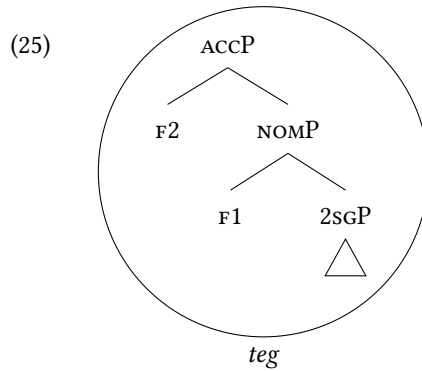(25)

ACCP
／＼
F2   NOMP
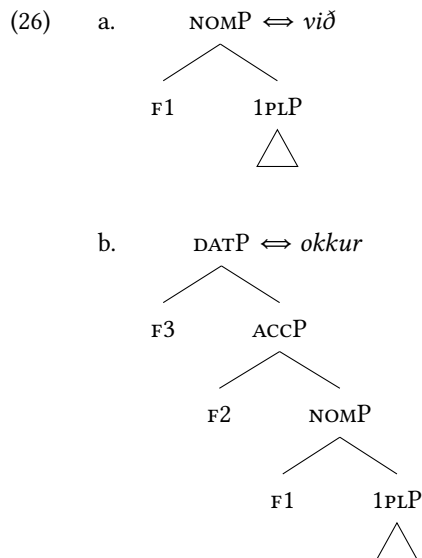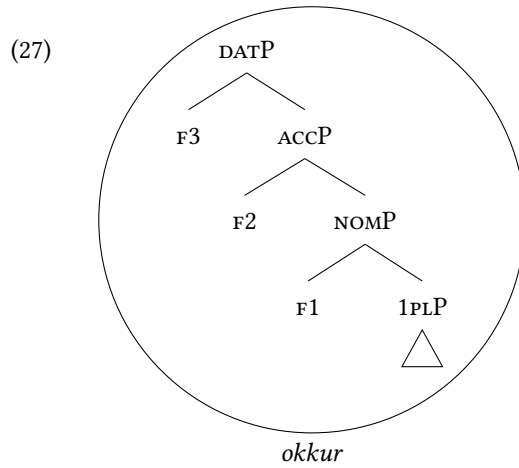　　／＼
　　F1   2SGP
　　　　△

teg

Table 3.2 contains two more attested patterns: the ABB in Icelandic and the AAB in German. In the remainder of this section I show how these two patterns are derived, and that the unattested one cannot be derived. I also show how the system is unable to derive an ABA pattern, which is crosslinguistically unattested (**baerman2005**; **caha2009**; **zompi2017**).

Consider the Icelandic pattern. For the first person plural, Icelandic uses *við* as nominative and *okkur* as accusative and dative. Two lexical entries are needed for that. The first one in (26a) contains pronominal features and F1, and corresponds to the phonology *við*. The second one is given in (26b). It contains in addition to (26a) also the feature F2 and F3. The phonological representation that is linked to it is *okkur*.

(26)   a.   NOMP ⟺ *við*
　　　　　／＼
　　　　F1   1PLP
　　　　　　　△

　　　b.   DATP ⟺ *okkur*
　　　　　／＼
　　　　F3   ACCP
　　　　　　／＼
　　　　　F2   NOMP
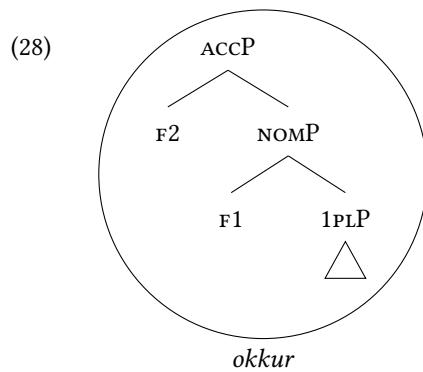　　　　　　　／＼
　　　　　　F1   1PLP
　　　　　　　　△

The syntactic structure for the dative is given in (27). It is contained in the lexical tree in (26b), and therefore, spelled out as *okkur*. The lexical entry in (26a) is not

considered, because it does not contain F2 and F3.

(27)

```
              DATP
             /    \
           F3      ACCP
                  /    \
                F2      NOMP
                       /    \
                     F1      1PLP
                              △
```

okkur

The syntactic structure for the accusative is given in (28). It is contained in the lexical tree in (26b), and therefore, spelled out as *okkur*. The lexical entry in (26a) is not considered, because it does not contain F2.
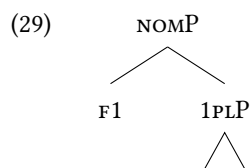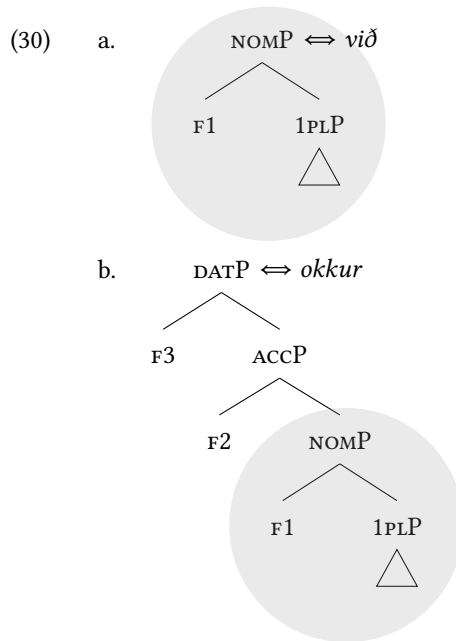
(28)

```
          ACCP
         /    \
       F2      NOMP
              /    \
            F1      1PLP
                     △
```

okkur

The syntactic structure for the nominative is given in (29).

(29)

```
      NOMP
     /    \
   F1      1PLP
            △
```
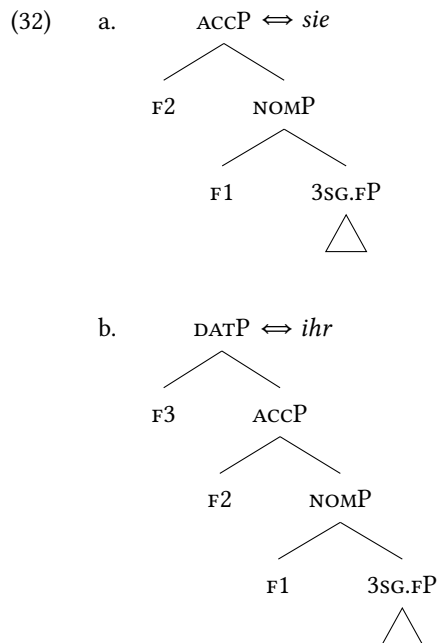
It is contained in the lexical tree for *við* in (26a) and in the one for *okkur* in (26b). I repeat the lexical entries for *við* and *okkur* in (30), marking the subparts of the trees that match the syntactic structure in gray.

(30)   a.

NOMP ⟺ *við*

F1   1PLP

b.

DATP ⟺ *okkur*

F3   ACCP

F2   NOMP

F1   1PLP

The former, (30a), has no unused features. The latter, (30b), has two unused features: F2 and F3. Because (30a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *við*. This is shown in (31).

(31)

NOMP

F1   1PLP

við
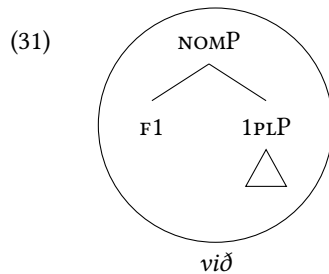
For the third person singular feminine, German uses *sie* as nominative and accusative, and *ihr* as dative. Two lexical entries are needed for that. The first one in (32a) contains pronominal features, F1 and F2. It corresponds to the phonology *sie*. The second one is given in (32b). It contains in addition to *sie* in (32a) also the feature F3. It corresponds to the phonology *ihr*.

(32)   a.   ᴀᴄᴄP ⟺ *sie*
                  ╱   ╲
             ꜰ2   ɴᴏᴍP
                        ╱   ╲
                   ꜰ1   3ꜱɢ.ꜰP
                              △

        b.   ᴅᴀᴛP ⟺ *ihr*
                  ╱   ╲
             ꜰ3   ᴀᴄᴄP
                        ╱   ╲
                   ꜰ2   ɴᴏᴍP
                           ╱   ╲
                      ꜰ1   3ꜱɢ.ꜰP
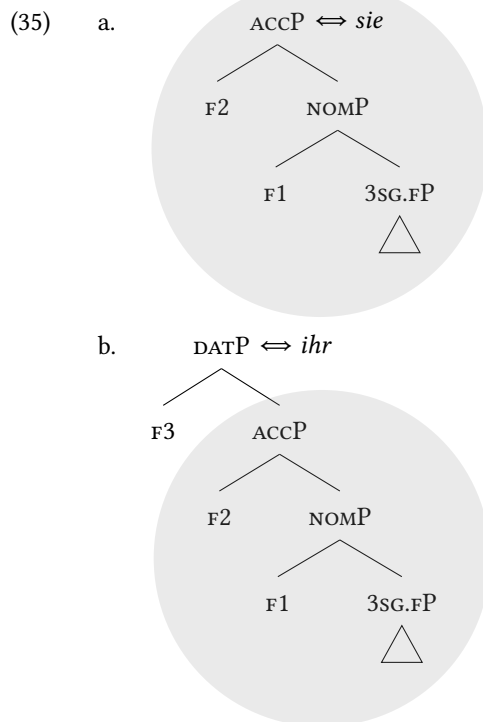   △

The syntactic structure for the dative is given in (33). It is contained in the lexical tree in (32b), and therefore, spelled out as *ihr*. The lexical entry in (32a) is not considered, because it does not contain ꜰ3.

(33)

ihr
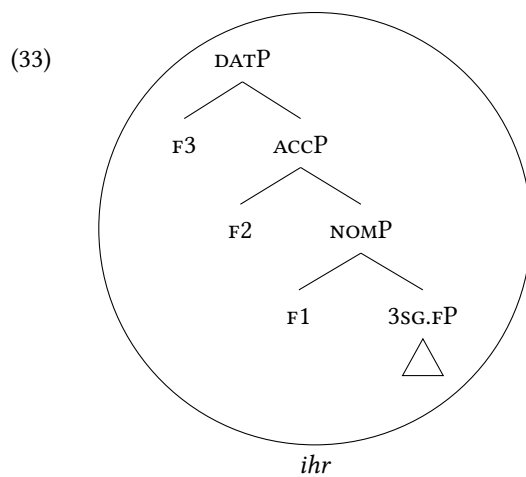
The syntactic structure for the accusative is given in (34).

(34)

```
          ACCP
         /    \
       F2     NOMP
             /     \
           F1      3SG.FP
                     △
```
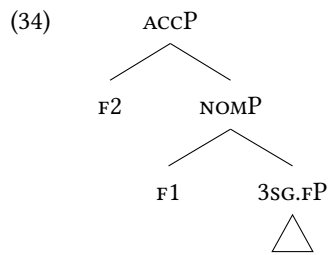
It is contained in the lexical tree for *sie* in (32a) and in the one for *ihr* in (32b). I repeat the lexical entries for *sie* and *ihr* in (35), marking the subparts of the trees that match the syntactic structure in gray.

(35)   a.

```
       ACCP ⟺ sie
      /    \
    F2     NOMP
          /     \
        F1      3SG.FP
                  △
```

   b.

```
       DATP ⟺ ihr
      /    \
    F3     ACCP
          /    \
        F2     NOMP
              /     \
            F1      3SG.FP
                      △
```

The former, (35a), has one no unused features. The latter, (35b), has one unused feature: F3. Because (35a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *sie*. This is shown in (36)

(36)

```
            AccP
           /    \
         F2    NomP
              /    \
            F1    3sg.FP
                    △
             sie
```
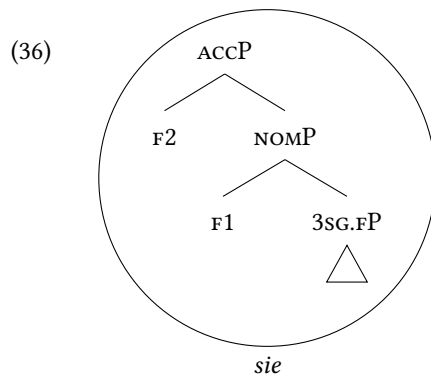
The syntactic structure for the nominative is given in (37).

(37)

```
        NomP
       /    \
     F1    3sg.FP
              △
```
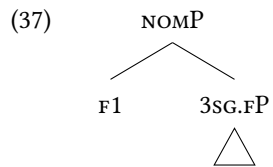
It is contained in the lexical tree for *sie* in (32a) and in the one *ihr* in (32b). I repeat the lexical entries for *sie* and *ihr* in (38), marking the subparts of the trees that match the syntactic structure in gray.
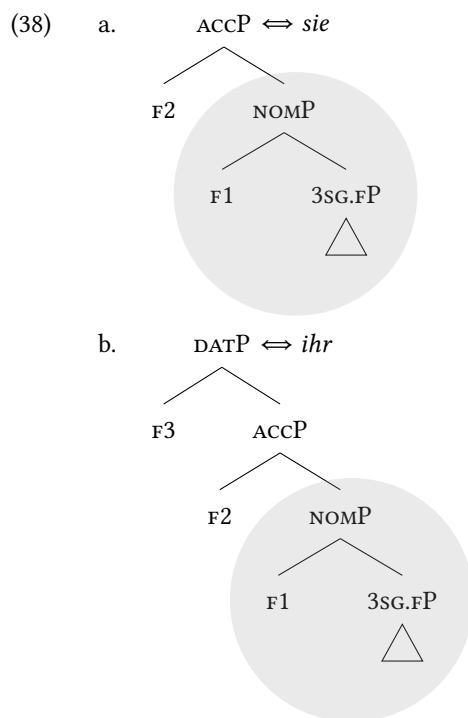
(38)   a.

```
            AccP  ⟺  sie
           /    \
         F2    NomP
              /    \
            F1    3sg.FP
                    △
```

        b.

```
            DatP  ⟺  ihr
           /    \
         F3    AccP
              /    \
            F2    NomP
                 /    \
               F1    3sg.FP
                       △
```

The former, (38a), has one unused feature: F2. The latter, (38b), has two unused features: F2 and F3. Because (38a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *sie*. This is shown in (39).
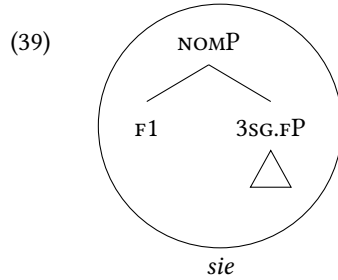
(39)

sie

This last example also illustrates that the laid out system is unable to derive an ABA pattern. The unability of the system to derive such a pattern is a welcome one, since the pattern is unattested cross-linguistically. In an ABA pattern, the nominative and the dative are syncretic, to the exclusion of the accusative. Such a language would be like German but then the nominative would be *ihr* instead of *sie*.

This result could never be derived with the lexical entries given in (32a) and (32b). *Ihr* is inserted for the dative and the cases contained in it (so accusative and nominative), unless a more specific lexical entry is found. *Sie* is the more specific lexical entry that is found from the accusative on. From the accusative on (so for the accusative and nominative), *sie* will be inserted until a more specific entry is found. If no entry is specified for nominative, *sie* will surface. *Ihr* will not resurface, because the lexical entry for *sie* is and will remain to be more specific.

In sum, the cumulative case decomposition from Table 3.1 can derive the observed syncretism patterns.

3.3 Deriving morphological case containment

Some languages morphologically reflect the case scale NOM < ACC < DAT. Khanty is an example of such a language. The phonological form of the accusative literally contains the phonological form of the nominative, and the form of the dative contains the form of the accusative. In this section I show how morphological case containment can be derived from the case decomposition in Table 3.1. I repeat an example from Khanty that shows morphological case containment in Table 3.3 (**nikolaeva1999**: 16).

The intuition is the following. The morphological form of the pronouns mirrors the cumulative feature decomposition given in Table 3.1. That is, the accusative has the morphology that the nominative has (*luw*) plus something extra (*e:l*). Similarly, the accusative also has the features that the nominative has (F1) plus something extra (F2). The dative has the morphology that the accusative has (*luw-e:l*) plus something

Table 3.3: Morphological case containment of 3sg in Khanty

	3sg
NOM	luw
ACC	luw-**e:l**
DAT	luw-**e:l**-na

extra (*na*). Again, similarly, the dative has the features that the accusative has (F1, F2) plus something extra (F3).

Before I show how languages with morphological case containment can be derived, I need to discuss how variation between languages is modeled in Nanosyntax. Crosslinguistic variation is namely explained in terms of differences in the lexicon. In other words, the syntactic structure is identical across languages, but the lexical entries package features together differently.

Let me discuss the differences between synthetic and agglutinative morphology to make this more concrete. Take the accusative, which contains F1 and F2 in all languages. The languages discussed in the previous section, Section 3.2, are all synthetic languages. F2 can only be spelled out in a single lexical entry together with F1. The result is that the examples are syncretic (i.e. formally identical) or suppletive (i.e. formally unrelated). The language I discuss in this section is agglutinative. F2 is not spelled out in the same lexical entry with F1. Instead, the F2 is spelled out by its own lexical entry. The result is that the accusative formally contains the nominative.

Let me illustrate this by deriving the 3sg paradigm in Khanty. First, I give the lexical entry for the nominative third person singular. It contains pronominal features and the feature F1. The phonological form associated with the structure is *luw*. The lexical entry is given in (40).

(40)   NOMP ⟺ *luw*

             F1   3sgP
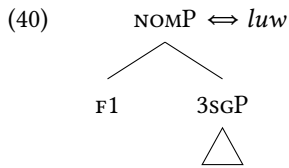
The syntactic structure in for the nominative is given in (41). It is contained in the lexical tree in (41), and the nominative is spelled out as *luw*.

(41)

```
        NOMP
        /  \
      F1    3SGP
             △
```

luw
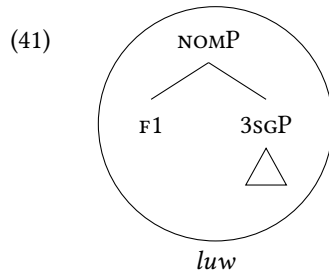
As shown in Table 3.3, the morphological form of the accusative contains the morphological form of the nominative (*luw*) plus an extra morpheme (*e:l*). As shown in Table 3.1, the syntactic features of the accusative contain the syntactic features of the nominative (F1) plus an extra feature (F2). Accordingly, I give the lexical entry for the accusative marker *e:l* in (42).[8]

(42)   ACCP ⟺ *e:l*
          |
         F2
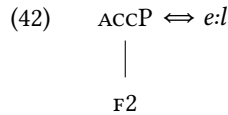
Luw-e:l consists of two morphemes that both correspond to their own piece of syntactic structure: *luw* and *e:l*. But how do these two morphemes combine? This issue brings me to another detour into the Nanosyntactic theory, which is about spellout driven movement.

As discussed in the previous section, spellout in Nanosyntax only targets constituents. That means that it is impossible to let ACCP spell out as *e:l* while it contains NOMP.[9]

(43)

```
        ACCP
        /  \
      F2    NOMP
      e:l   /  \
          F1    3SGP
                 △
```

luw
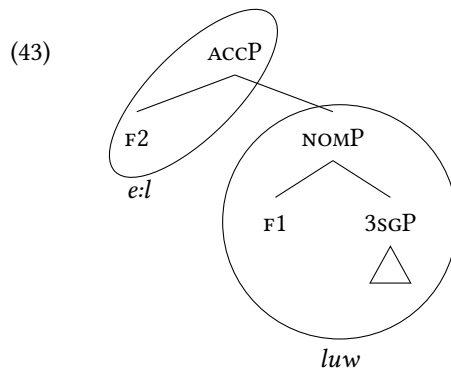
The lexical entry in (42) can only match the syntactic structure if NOMP moves away, leaving the ACCP containing F2 behind. In other words, the syntactic structure needs

---

[8]Note that it is crucial here to have a theory in which the features that form an accusative contain the features that form a nominative. If not, it would be a surprise that the nominative form is contained in the accusative form. The same holds for the accusative and dative.

[9]Notice that this also gives the incorrect order of the morphemes: *e:l-luw* instead of *luw-e:l*.

to be modified in such a way that the complement of F2 is not in the way anymore.

Exactly this movement is one of the two so-called 'evacuation movements' that is part of the spellout procedure in Nanosyntax.[10] I showed in Section 3.2 that lexical entries are matched using the Superset Principle and the Elsewhere Condition. If there is no match in the lexicon for a particular syntactic structure, two types of (evacuation) movement can take place, in a fixed order.[11] The movement types change the syntactic structure in such a way that they generate new constituents that are possible matches for spellout.[12] For the discussion in this section, only the second type of movement is relevant: complement movement. In this type of movement, the complement of a particular feature moves to the specifier of that same feature.

This is exactly the type of movement I described as necessary for the Khanty pronoun. The movement is displayed in (44). The complement of F2, the NOMP, moves to the specifier of ACCP.[13]
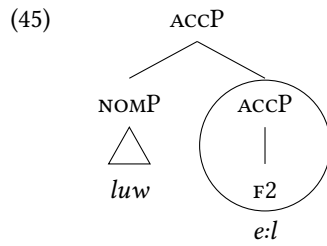
(44)
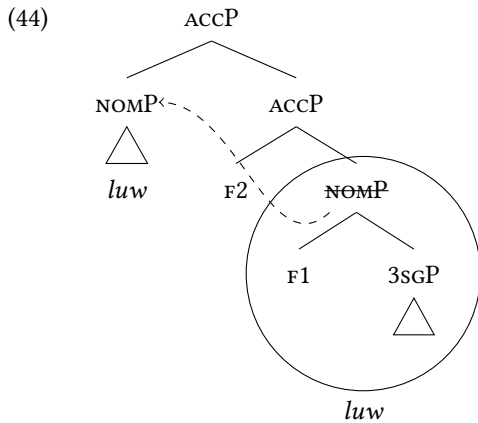
The result of the movement is given in (45). The lexical tree in (42) matches the syntactic structure, and ACCP is spelled out as *e:l*.

---

[10]In Chapter III I introduce the spellout procedure in more detail.

[11]The two types of movement are cyclic movement and snowball movement, also used to derive the possible orders in DEM > NUM > ADJ > N (**cinque2005**).

[12]This type of movement is different from syntactic movement. It is driven by spellout, it does not have any interpretational effects, and it does not leave any traces (**starke2018**). In Chapter III I return to 'regular' syntactic movement in Nanosyntax.

[13]In its landing position the internal structure of the NOMP is no longer shown (to save some space), and its phonological form is placed under the triangle. The strikethrough of the lower NOMP indicates that the complement of F2 disappears.

(45)

```
              ACCP
             /    \
        NOMP      ( ACCP )
         /\       (  |   )
        /  \      (  F2  )
       luw        (     )
                     e:l
```

Just as Khanty has an additional morpheme that shows up in the accusative, it also has a morpheme that shows up in the dative. Similarly, just as the accusative has one more feature than the nominative (F1, F2 vs. F1), the dative has one more feature than the accusative (F1, F2, F3 vs. F1, F2). This leads me to pose the lexical entry in (46).

(46)   DATP $\Longleftrightarrow$ *na*
        |
        F3
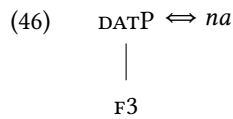
Again, because spellout only targets constituents, F3 cannot be spelled out right after it has been merged, as shown in (47).

(47)

```
            ( DATP )
           (      /\ )
          ( F3  /   \ )
          (    /    ACCP
           ( na )   /    \
                 NOMP    ACCP
                  /\      /\
                 /  \    /  \
                luw      e:l
```

The same complement movement as before has to take place, which is shown in (48). The complement of F3, the ACCP, moves to the specifier of DATP.

(48)

The result of the movement is given in (49). The lexical tree in (46) matches the syntactic structure, and DATP is spelled out as *na*.
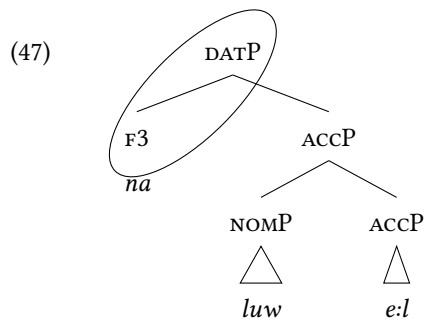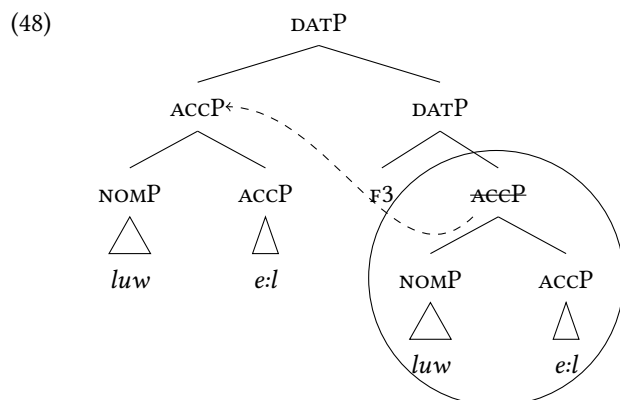
(49)
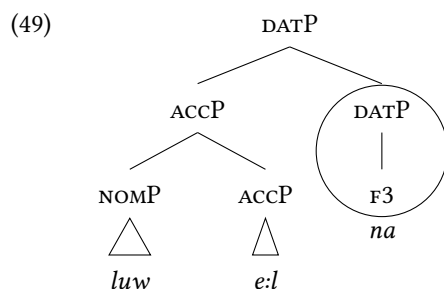
In sum, the cumulative case decomposition from Table 3.1 can derive the morphological case containment facts.

3.4   The intuition for headless relatives

In headless relatives, the internal case and the external case compete to surface on the relative pronoun. The two competing cases adhere to the case scale NOM < ACC < DAT, in which cases more to the right always win over cases more to the left. In this section I show how case competition in headless relatives can be derived from the case decomposition in Table 3.1.

I repeat the summary of the data pattern for Gothic in Table 3.4. I gave the cells different shadings depending on which cases compete. The dark gray cells are the ones in which dative and the accusative compete, and the dative wins. The light gray cells are the ones in which the dative and the nominative compete, and the dative again wins. The uncolored cells are the ones in which the accusative and the nominative compete, and the accusative wins.

The intuition is the following. The headless relatives reflect the cumulative feature decomposition given in Table 3.1. A case wins the competition if it contains

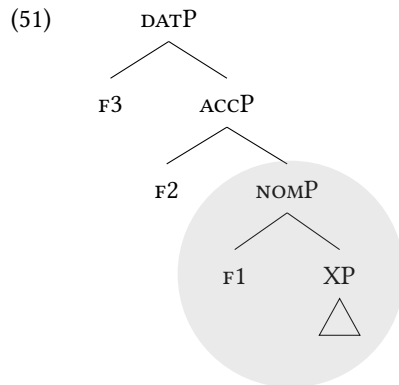Table 3.4: Summary of Gothic headless relative (repeated)

INT ^{EXT}	[NOM]	[ACC]	[DAT]
[NOM]		ACC	DAT
[ACC]	ACC		DAT
[DAT]	DAT	DAT	

all features the other case has. The dative contains all features that the accusative has, so the dative surfaces. Similarly, the dative contains all features the nominative has, and again the dative surfaces. The same holds for the last pair: the accusative contains all features the nominative has, so the accusative surfaces. I illustrate this per case pair.

I start with the competition between dative and accusative, in which dative wins. The corresponding cells are marked dark gray in Table 3.4. In (50) I show the syntactic structure of a dative relative pronoun. For now I let syntactic structure that has to do with being a relative pronoun correspond to a complex XP. I elaborate on the exact content of XP in Chapter III. Following that, a dative relative pronoun contains the XP, F1, F2 and F3. Contained in this structure is an accusative relative pronoun, marked in gray. This consists of the XP, F1 and F2. The bigger structure wins against the smaller structure it contains: the dative wins over the accusative.

(50)
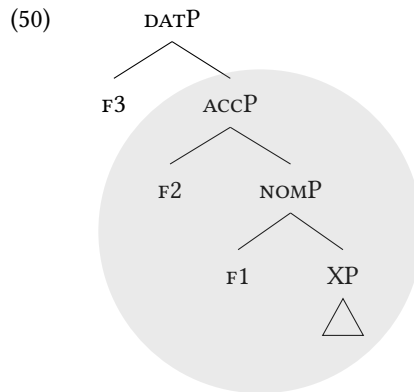
Next is the competition between dative and nominative, in which dative wins. The corresponding cells are marked light gray in Table 3.4. In (51) I show the syntactic structure of a dative relative pronoun. It contains the XP, F1, F2 and F3. Contained in this structure is a nominative relative pronoun, marked in gray. This consists of the XP and F1. The bigger structure wins against the smaller structure it contains: the dative wins over the nominative.

(51)   DATP
          /   \
        F3   ACCP
              /   \
            F2   NOMP
                   /   \
                  F1   XP
                        △

Finally there is the competition between accusative and nominative, in which accusative wins. The corresponding cells are uncolored in Table 3.4. In (52) I show the syntactic structure of an accusative relative pronoun. It contains the XP, F1 and F2. Contained in this structure is a nominative relative pronoun, marked in gray. This consists of the XP and F1. The bigger structure wins against the smaller structure it contains: the accusative wins over the nominative.

(52)   ACCP
          /   \
        F2   NOMP
               /   \
              F1   XP
                    △
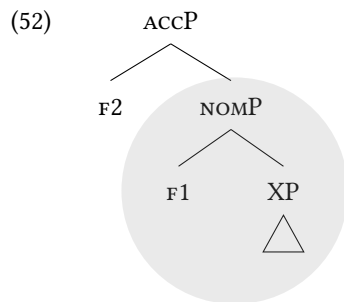
In sum, the cumulative case decomposition from Table 3.1 can derive the case scale observed for case competition in headless relatives.

3.5   Summary

In this section I discussed how a cumulative case decomposition can derive the case scale observed in syncretism patterns, morphological case containment and case competition in headless relatives. Besides the cumulative case decomposition, I assume a Nanosyntactic framework, in which syntactic structures are built from single features, and matched onto lexical entries in the postsyntactic lexicon.

Regarding syncretism, several patterns are attested crosslinguistically (ABC, AAA, AAB and ABB) but one is not: ABA. This follows in a system in which syncretic forms are realized by a single lexical entry. A lexical entry can be applied if it contains all features, as long as there is no more specific one.

Languages with morphological case containment show the cumulative case decomposition in their morphology. The phonological form of the accusative contains the form of the nominative plus an extra morpheme. The phonological form of the dative contains the form of the accusative plus an extra morpheme.

For headless relatives, the idea is that a case wins the competition if it contains all features the other case has. As the dative is the richest in features (it contains F1, F2 and F3), it wins over the accusative (which consists of F1 and F2) and the nominative (which contains only F1). Finally, the accusative wins over the nominative, because the former is richer in features than the latter.

Part II

The typology

Chapter 4

Languages with case competition

In Part I of this dissertation, I discussed a first aspect of case competition in headless relatives. There is a fixed scale that determines which case wins the case competition. This is the same case scale crosslinguistically. I repeat the case scale from Chapter 2 in (1).

(1)   NOM < ACC < DAT

In Chapter 3 within Part I, I argued that a cumulative case decomposition can derive the case scale. This does not only hold for case competition in headless relatives, but also for syncretism patterns and morphological case containment patterns. In a cumulative case composition, the scale in (1) can be interpreted as follows: the accusative contains all features the nominative contains plus one more. Similarly, the dative contains all features the accusative contains plus one. Therefore, the dative can be considered more complex than the accusative, and the accusative more complex than the nominative. In line with that, I refer to cases more to the right on the case scale as being more complex cases than cases more to the left on the scale.

This part of the dissertation, Part II, focuses on a second aspect to headless relatives. This aspect is not stable crosslinguistically, but it differs across languages. Languages differ in whether they allow the internal case (the case from the relative clause) and the external case (the case from the main clause) to surface when either of them wins the case competition. Metaphorically speaking, even though a case wins the case competition, it is a second matter whether it is allowed to come forward as a winner. Four patterns are logically possible for languages: (1) the internal case and the external case are allowed to surface when either of them wins the case competition, (2) only the internal case is allowed to surface when it wins the case competition, and the external case is not, (3) only the external case is allowed to surface when it wins the case competition, and the internal case is not, (4) neither the internal case nor the external case is allowed to surface when either of them wins

the competition.[1] I show in this chapter that one of these logically possible patterns is not attested in any natural language.

In this dissertation I discuss languages of which headless relatives have been described in the literature. As I write about case competition, I only focus on languages that morphologically distinguish between case, specifically the nominative, the accusative and the dative. By no means do I claim that my language sample is representative for the languages of the world. However, they build on independently established facts, which are the case scale from Chapter 2 and the subset requirement of the external head, to be discussed in Chapter III. Therefore, I predict that my generalizations hold for all natural languages.

The next section introduces the patterns that are logically possible with case competition. In Section 4.2 to Section 4.5, I discuss the patterns one by one, and I give examples when the pattern is attested. In Section 5, I make a sidestep to languages that do not show any case competition, and I give a typology of headless relatives.

4.1   Four possible patterns

Case competition has two aspects. The first aspect is the topic of Part I of the dissertation. It concerns which case wins the case competition. This is decided by the same case scale for all languages. The second aspects is the topic of Part II of the dissertation. This one concerns whether the case that wins the case competition is actually allowed to surface. It namely differs per language whether it allows the internal or the external case to do so.

Metaphorically, the second aspect can be described as a language-specific approval committee. The committee learns (from the first aspect) which case wins the case competition. Then it can either approve this case or not approve it. This approval happens based on where the winning case comes from: from inside of the relative clause (internal) or from outside of the relative clause (external). It is determined per language whether it approves the internal case, the external case, both of them or none of them. The approval committee can only approve the winner of the competition or deny it, it cannot propose an alternative winner. In this metaphor, the approval of the committee means that a particular case is allowed to surface. When the case is not allowed to surface, the headless relative as a whole is ungrammatical.

Taking this all together, there are four patterns possible in languages. First, the internal case and the external case are allowed to surface. Second, only the internal case is allowed to surface, and the external case is not. Third, only the external case is allowed to surface, and the internal case is not. Fourth, neither the internal case

---

[1]On the surface, the last pattern cannot be distinguished from a language that does not have case competition and does not allow for any case mismatches. I come back to this matter in 4.1, where I argue that there actually is case competition in play.

nor the external case is allowed to surface when either of them wins the competition. In what follows, I introduce these four possible patterns.

The first possible pattern is that of a language that allows the internal case and the external case to surface when either of them wins the case competition. I call this the unrestricted type of language (**grosu1987**; **cinqueforthcoming**): the internal and external case do not need to match. The pattern might look familiar, because it is the one that Gothic has, which I discussed in Chapter 2. Table 4.1 (repeated from Table 2.5) illustrates what the pattern for such a language looks like.

The left column shows the internal case between square brackets. The top row shows the external case between square brackets. The other cells indicate the case of the relative pronoun. The top-left to bottom-right diagonal corresponds to the examples in which the internal and external case match. The three cells in the bottom-left corner, marked in light gray, are the situations in which the internal case surfaces when it wins the competition. The three cells in the top-right corner, marked in dark gray, are the situations in which the external case surfaces when it wins the competition. All these instances are grammatical.

Table 4.1: Internal and external case allowed

INT ᴱˣᵀ	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

The second possible pattern is that of a language that allows the internal case to surface when it wins the case competition, but it does not allow the external case to do so. In this type of language, the internal case gets to surface when it is more complex than the external one. When the external case is more complex, it is not allowed to surface, and the headless relative construction is ungrammatical. I call this the internal-only type of language: the internal and external case do not need to match, but only the internal case is allowed to surface as a winner.

Table 4.2 illustrates what the pattern for such a language looks like. Compared to the unrestricted type, it has three cells in which there is no grammatical relative pronoun. The top-left to bottom-right diagonal corresponds to the examples in which the internal and external case match. The three cells in the bottom-left corner, marked in light gray, are the situations in which the internal case surfaces when it wins the competition. Just as in the unrestricted type, these six instances are grammatical. The three cells in the top-right corner, marked in dark gray, are the situations in which the external case surfaces when it wins the competition. These

instances are not grammatical for this type of language. The reasoning behind that is that the language does not allow the external case to surface when it wins the case competition.

Table 4.2: Only internal case allowed

INT ᴱˣᵀ	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	*
[ACC]	ACC	ACC	*
[DAT]	DAT	DAT	DAT

The third possible pattern is that of a language that allows the external case to surface when it wins the case competition, but it does not allow the internal case to do so. In this type of language, only the external case gets to surface when it is more complex. When the internal case is more complex, it is not allowed to surface, and the headless relative construction is ungrammatical. I call this the external-only type of language: the internal and external case do not need to match, but only the external case is allowed to surface as a winner.

Table 4.3 illustrates what the pattern for such a language looks like. Comparing this pattern to the second one, the ungrammatical cells are here the three on the other side of the diagonal. The top-left to bottom-right diagonal corresponds to the examples in which the internal and external case match. Just as in the unrestricted type and the 'unrestricted — internal-only' type, these instances are grammatical. The three cells in the bottom-left corner, marked in light gray, are the situations in which the internal case surfaces when it wins the competition. Unlike in the unrestricted type and the 'unrestricted — internal-only' type, these instances are not grammatical for this type of language. The reasoning behind that is that the language does not allow the internal case to surface when it wins the case competition. The three cells in the top-right corner, marked in dark gray, are the situations in which the external case surfaces when it wins the competition. Just as in the unrestricted type but unlike in the 'unrestricted — internal-only' type, these instances are grammatical.

The fourth possible pattern is that of a language that allows neither the internal case nor the external case to surface when either of them wins the competition. In other words, when the internal and the external case differ, there is no grammatical headless relative construction possible. Only when there is a tie, i.e. when the internal and external case match, there is a grammatical result. I call this the matching type of language: the internal and external case need to match.

Table 4.4 illustrates what the pattern for such a language looks like. The top-left to bottom-right diagonal corresponds to the examples in which the internal and ex-

Table 4.3: Only external case allowed

INT ^{EXT}	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	*	ACC	DAT
[DAT]	*	*	DAT

ternal case match. Just as in the other three pattern, these instances are grammatical. The three cells in the bottom-left corner, marked in light gray, are the situations in which the internal case surfaces when it wins the competition. Just as the 'unrestricted — external-only' type, but unlike the unrestricted type and the 'unrestricted — internal-only' type, these instances are not grammatical for this type of language. The three cells in the top-right corner, marked in dark gray, are the situations in which the external case surfaces when it wins the competition. Just as the 'unrestricted — internal-only' type, but unlike the unrestricted type and the 'unrestricted — external-only' pattern, these instances are not grammatical for this type of language. The reasoning behind the ungrammaticality of these six cells is that the language allows neither the internal case nor the external case to surface when either of them wins the competition.

On the surface, this pattern cannot be distinguished from a pattern that does not have case competition and does not allow for any case mismatches. I understand 'a language with case competition' as a language that compares the internal and external case in its headless relatives. If the internal and external case are not compared in this type of language, it would be unclear why the diagonal is different from all the other cells. The source of ungrammaticality for the cells in Table 4.4 can only come from the comparing the internal and external case and concluding that the internal case and the external case differ. The grammaticality of the diagonal follows from the conclusion that the internal and the external case match. In Section 5 I discuss languages in which the internal and external case are not compared to each other.

Table 4.4: Only matching allowed

INT ^{EXT}	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	*
[ACC]	*	ACC	*
[DAT]	*	*	DAT

In this chapter I show that three of these four patterns I introduced are attested crosslinguistically. Section 4.2 shows that the unrestricted type, in which either the internal case or the external case can surface, is exemplified by Gothic (repeated from Chapter 2) and by Old High German. The 'unrestricted — internal-only' type, in which only the internal case can surface, is illustrated by Modern German in Section 4.3. To my knowledge, there is no language in which only the external case can surface when it wins the case competition. This is discussed in 4.4. Section 4.5 shows a language that only allows the case to surface when there is a tie, i.e. when the internal and external case match, namely Polish.

4.2   Internal and external case allowed

This section discusses the situation in which the internal case and the external case are allowed to surface when either of them wins the case competition. I repeat the pattern from Section 4.1 in Table 4.5.

Table 4.5: Internal and external case allowed (repeated)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

Two examples of languages that show this pattern are Gothic and Old High German. In this section, I repeat the summary of the findings from Gothic (from Chapter 2), and I present the data for Old High German, which is the result of my own research.

In Chapter 2, I discussed case competition in Gothic headless relatives, based on the work of **harbert1978**. I repeat the results from Section 2.1 in Table 4.6. In Gothic, the relative pronoun is allowed to surface in the internal case and the external case. The top-left to bottom-right diagonal corresponds to the examples in which the internal and external case match. The three cells in the bottom-left corner, marked in light gray, are the situations in which the internal case surfaces when it wins the competition. The three cells in the top-right corner, marked in dark gray, are the situations in which the external case surfaces when it wins the competition. All these instances are grammatical. The examples corresponding to the cells in Table 4.6 can be found in Section 2.1.

Old High German is another instance of a language in which the relative pronoun is allowed to surface in the internal case and the external case. This conclusion

Table 4.6: Summary of Gothic headless relatives (repeated)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	(DAT)	DAT

follows from my own research of the texts 'Der althochdeutsche Isidor', 'The Monsee fragments', 'Otfrid's Evangelienbuch' and 'Tatian' in ANNIS (**krause2016**).[2] The examples follow the spelling and the detailed glosses in ANNIS. The translations are my own.

First I discuss examples in which the internal and the external case match, and then examples in which they differ. If the internal case and the external case are identical, so there is a tie, the relative pronoun simply surfaces in that case. I illustrate this for the nominative, the accusative and the dative.

Consider the example in (2), in which the internal nominative case competes against the external nominative case. The internal case is nominative, as the predicate *senten* 'to send' takes nominative subjects. The external case is nominative as well, as the predicate *queman* 'to come' also takes nominative subjects. The relative pronoun *dher* 'RP.SG.M.NOM' appears in the internal and external case: the nominative.

(2) quham   **dher**   **chisendit**   **scolda**
     come.PST.3SG$_{[NOM]}$ RP.SG.M.NOM send.PST.PTCP$_{[NOM]}$ should.PST.3SG

     uuerdhan
     become.INF

     'the one, who should have been sent, came'   (Old High German, Isid. 35:5)

Consider the example in (3), in which the internal accusative case competes against the external accusative case. The internal case is accusative, as the predicate *quedan* 'to speak' takes accusative objects. The external case is accusative as well, as the predicate *gihoren* 'to listen to' also takes accusative objects. The relative pronoun

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[2]Old High German is widely discussed in the literature because of its case attraction in headed relatives (**pittner1995**), a phenomenon that seems related to case competition in headless relatives (see Section 1.3.1 for why attraction is not further discussed in this dissertation). A common observation is that case attraction in headed relatives in Old High German adheres to the case scale. The same is claimed for headless relatives. What, to my knowledge, has not been studied systematically is whether Old High German headless relatives allow the internal case and the external case to surface when either of them wins the case competition. This is what I investigated in my work.

thiu 'RP.PL.N.ACC' appears in the internal and external case: the accusative.

(3) gihortut   ir   **thiu**   **ih**   **íu**   **quad**
     listen.PST.2PL[ACC] 2PL.NOM RP.PL.N.NOM 1SG.NOM 2PL.DAT speak.PST.1SG[ACC]
     'you listened to those things, that I said to you'

$$\text{(Old High German, Tatian 165:6)}$$

Consider the example in (4), in which the internal dative case competes against the external dative case.[3] The internal case is dative, as the predicate *willian* 'to wish' takes dative objects. The external case is dative as well, as the predicate *seggian* 'to say' takes dative indirect objects. The relative pronoun *them* 'RP.PL.M.DAT' appears in the internal and external case: the dative.

(4) sagda   **them**   **siu**   **uuelda**
     say.PST.3SG[DAT] RP.PL.M.DAT 3SG.F.NOM wish.PST.3SG[DAT]
     'she said to those, whom she wished for'   (Old Saxon, Hel. 4:293)

These findings can be summarized as in Table 4.7. The top-left to bottom-right diagonal corresponds to the examples I have given so far in which the internal and external case match. The nominative marked in light gray corresponds to (2), in which the internal nominative case competes against the external nominative case, and the relative pronoun surfaces in the nominative case. The accusative marked in dark gray corresponds to (3), in which the internal accusative case competes against the external accusative case, and the relative pronoun surfaces in the accusative case. The unmarked dative corresponds to (4), in which the internal dative case competes against the external dative case, and the relative pronoun surfaces in the dative case.

Table 4.7: Old High German headless relatives (matching)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM		
[ACC]		ACC	
[DAT]			(DAT)

In Table 4.7, six cells remain empty. These are the cases in which the internal and the external case differ. In the remainder of this section, I discuss them one by one.

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[3] I could not find such an instance for this situation in any of the Old High German texts. This example comes from the 'Heliand', an Old Saxon text written around the same time as the Old High German works I give examples from. Old Saxon is linguistically speaking the closest relative of Old High German.

I start with the competition between the accusative and the nominative. Following the case scale, the relative pronoun appears in the accusative case and never in nominative. As Old High German allows the internal and external case to surface, the accusative surfaces when it is the internal case and when it is the external case.

Consider the example in (5). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *zellen* 'to tell' takes accusative objects. The external case is nominative, as the predicate *sin* 'to be' takes nominative objects. The relative pronoun *then* 'RP.SG.M.ACC' appears in the internal case: the accusative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is accusative, the external case is nominative and the relative pronoun appears in the nominative case are unattested.

(5) Thíz   ist   **then**   **sie**   **zéllent**
     DEM.SG.N.NOM be.PRES.3SG[NOM] RP.SG.M.ACC 3PL.M.NOM tell.PRES.3PL[ACC]
     'this is the one whom they talk about'   (Old High German, Otfrid III 16:50)

Consider the example in (6). In this example, the internal nominative case competes against the external accusative case. The internal case is nominative, as the predicate *gisizzen* 'to possess' takes nominative subjects. The external case is accusative, as the predicate *bibringan* 'to create' takes accusative objects. The relative pronoun *dhen* 'RP.SG.M.ACC' appears in the external case: the accusative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause.[4]

(6) ih   bibringu   fona iacobes samin   endi fona
     1SG.NOM create.PRES.1SG[ACC] of   Jakob.GEN seed.SG.DAT and of

     iuda   dhen   **mina**   **berga**   **chisitzit**
     Judah.DAT RP.SG.M.ACC my.ACC.M.PL mountain.ACC.PL possess.PRES.3SG[NOM]
     'I create of the seed of Jacob and of Judah the one, who possess my mountains'
                                                         (Old High German, Isid. 34:3)

The two examples in which the nominative and the accusative compete are highlighted in Table 4.8. The light gray marking corresponds to (5), in which the internal accusative wins over the external nominative, and the relative pronoun surfaces in the accusative case. The dark gray marking corresponds to (6), in which the external accusative wins over the internal nominative, and the relative pronoun surfaces in the accusative case.

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[4]At the end of this section I discuss a counterexample to the case scale, in which the internal case is nominative, the external case is accusative, and the relative pronoun appears in the nominative case.

Table 4.8: Old High German headless relatives (NOM — ACC)

INT \\ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	
[ACC]	ACC	ACC	
[DAT]			(DAT)

I continue with the competition between the dative and the nominative. Following the case scale, the relative pronoun appears in the dative case and never in nominative. As Old High German allows the internal and the external case to surface, the dative surfaces when it is the internal case and when it is the external case.

Consider the example in (7). In this example, the internal dative case competes against the external nominative case. The internal case is dative, as the predicate *forlazan* 'to read' takes dative indirect objects. The external case is nominative, as the predicate *minnon* 'to love' takes nominative subjects. The relative pronoun *themo* 'RP.SG.M.DAT' appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is dative, the external case is nominative and the relative pronoun appears in the nominative case are unattested.

(7) **themo   min uuirdit   forlazan**,   min minnot
     RP.SG.M.DAT less become.PRES.3SG read.INF$_{[DAT]}$ less love.PRES.3SG$_{[NOM]}$
     'to whom less is read, loves less'   (Old High German, Tatian 138:13)

Consider the example in (8). In this example, the internal nominative case competes against the external dative case. The internal case is nominative, as the predicate *sprehhan* 'to speak' takes nominative subjects. The external case is dative, as the predicate *antwurten* 'to reply' takes dative objects. The relative pronoun *demo* 'RP.SG.M.DAT' appears in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. Examples in which the internal case is nominative, the external case is dative and the relative pronoun appears in the nominative case are unattested.

(8) enti aer   ant uurta   demo   **zaimo**
     and 3SG.M.NOM reply.PST.3SG$_{[DAT]}$ RP.SG.M.DAT to 3SG.M.DAT

     sprah
     speak.PST.3SG$_{[NOM]}$
     'and he replied to the one who spoke to him'
                    (Old High German, Mons. 7:24, adapted from **pittner1995**: 199)

The two examples in which the nominative and the dative compete are highlighted in Table 4.9. The light gray marking corresponds to (7), in which the internal dative wins over the external nominative, and the relative pronoun surfaces in the dative case. The dark gray marking corresponds to (8), in which the external dative wins over the internal nominative, and the relative pronoun surfaces in the dative case.

Table 4.9: Old High German headless relatives (NOM — DAT)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	
[DAT]	DAT		(DAT)

I end with the competition between the dative and the accusative. Following the case scale, the relative pronoun appears in the dative case and never in accusative. As Old High German allows the internal and the external case to surface, the dative surfaces when it is the internal case and when it is the external case.

Consider the example in (9). In this example, the internal dative case competes against the external accusative case. The internal case is dative, as the predicate *zawen* 'to tell' takes dative subjects. The external case is accusative, as the predicate *weizan* 'to know' takes accusative objects. The relative pronoun *thémo* 'RP.SG.M.DAT' appears in the external case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is accusative, the external case is dative and the relative pronoun appears in the accusative case are unattested.

(9)   weiz   **thémo**   **ouh baz**   **záweta**
      know.1SG[ACC] RP.SG.M.DAT also better manage.PST.3SG[DAT]
      'I know the one who also managed it better' (Old High German, Otfrid V 5:5)

Consider the example in (10). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *zellen* 'to tell' takes accusative objects. The external case is dative, as the comparative of the adjective *furiro* 'great' takes dative objects. The relative pronoun *thên* 'RP.PL.M.DAT' appears in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. Examples in which the internal case is accusative, the external case is dative and the relative pronoun appears in the accusative case are unattested.

(10)   bis   -tú   nu   zi wáre furira   Ábrahame?   ouh
        be.PRES.2SG -2SG.NOM now truly   great.CMPR_{[DAT]} Abraham.DAT and

        thén   **man**   **hiar nu zálta**
        RP.PL.M.DAT one.NOM.M.SG here now tell.PST.3SG_{[ACC]}
        'are you now truly greater than Abraham? and than those, who one talked
        about here now'   (Old High German, Otfrid III 18:33)

The two examples in which the accusative and the dative compete are highlighted
in Table 4.10. The light gray marking corresponds to (9), in which the internal dative
wins over the external accusative, and the relative pronoun surfaces in the dative
case. The dark gray marking corresponds to (10), in which the external dative wins
over the internal accusative, and the relative pronoun surfaces in the dative case.

Table 4.10: Old High German headless relatives (ACC — DAT)

INT ╲ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	(DAT)

In my research I encountered a single counterexample to the pattern I just de-
scribed. Consider the example in (11). In this example, the internal nominative case
competes against the external accusative case. The internal case is nominative, as
the predicate *giheilen* 'to save' takes nominative subjects. The external case is ac-
cusative, as the predicate *beran* 'to bear' takes accusative objects. Surprisingly, the
relative pronoun *thér* 'RP.SG.M.NOM' appears in the internal case: the nominative,
which is the less complex of the two cases. The relative pronoun is marked in bold,
just as the relative clause, showing that the relative pronoun patterns with the rela-
tive clause.

(11)   Tház si   uns   béran   scolti   **thér**
        that 3SG.F.NOM 1PL.DAT bear.INF_{[ACC]} should.SUBJ.PST.3SG RP.SG.M.NOM

        unsih gihéilti
        1PL.ACC save.SBJV.PST.3SG_{[NOM]}
        'that she should have beared for us the one, who had saved us'
                                            (Old High German, Otfrid I 3:38)

This example is unexpected, because the least complex case (the nominative) wins
and not the most complex case (the accusative). The only explanation for this I can

see is a functional one. The *thér* 'RP.SG.M.NOM' in (11) refers to Jesus. In the relative clause he is the subject of *unsih gihéilti* 'had saved us', hence the internal nominative case. In the main clause he is the object of *tház si uns béran scolti* 'that she should have beared', hence the external accusative case. Letting the relative pronoun surface in the internal case could be interpreted as emphasizing the role of Jesus as a savior, rather than him being the object of being given birth to. In line with that reasoning, it is expected that certain grammatical facts more often deviate from regular patterns if Jesus is involved. I leave investigating this prediction for future research. Of course, this does not answer the question of what happens to the accusative case required by the external predicate. It also does not explain why not another emphasizing strategy is used, for instance forming a light-headed relative, which would leave space for two cases. I acknowledge this example as a counterexample to the pattern I describe, but I do not change my generalization, as this is a single occurrence.

Leaving the counterexample aside, I conclude that Gothic and Old High German are both instances of languages that allow the internal and the external case to surface. The relative pronoun surfaces in the case that wins the case competition.

4.3 Only internal case allowed

This section discusses the situation in which only the internal case is allowed to surface when it wins the case competition. When the internal case wins the case competition, the result is ungrammatical. I repeat the pattern from Section 4.1 in Table 4.11.

Table 4.11: Only internal case allowed (repeated)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	*
[ACC]	ACC	ACC	*
[DAT]	DAT	DAT	DAT

An example of a language that shows this pattern is Modern German. In this section I discuss the Modern German data, based on the research of **vogel2001**. The examples and the judgements are **vogel2001**'s (**vogel2001**). I made the glosses more detailed, and I added translations where they were absent.

First I discuss examples in which the internal and the external case match, and then examples in which they differ. If the internal case and the external case are identical, so there is a tie, the relative pronoun simply surfaces in that case. I illustrate this for the nominative, the accusative and the dative.

Consider the example in (12), in which the internal nominative case competes against the external nominative case. The internal case is nominative, as the predicate *mögen* 'to like' takes nominative subjects. The external case is nominative as well, as the predicate *besuchen* 'to visit' also takes nominative subjects. The relative pronoun *wer* 'RP.AN.NOM' appears in the internal and external case: the nominative.

(12) Uns   besucht,   **wer**   **Maria**   **mag**.
      2PL.ACC visit.PRES.3SG$_{[NOM]}$ RP.AN.NOM Maria.ACC like.PRES.3SG$_{[NOM]}$
      'Who visits us likes Maria.'

<div align="right">(Modern German, adapted from **vogel2001**: 343)</div>

Consider the example in (13), in which the internal accusative case competes against the external accusative case. The internal case is accusative, as the predicate *mögen* 'to like' takes accusative objects. The external case is accusative as well, as the predicate *einladen* 'to invite' also takes accusative objects. The relative pronoun *wen* 'RP.AN.ACC' appears in the internal and external case: the accusative.

(13) Ich   lade ein,   **wen**   **auch**   **Maria**   **mag**.
      1SG.NOM invite.PRES.1SG$_{[ACC]}$ RP.AN.ACC Maria.NOM like.PRES.3SG$_{[ACC]}$
      'I invite who Maria also likes.'

<div align="right">(Modern German, adapted from **vogel2001**: 344)</div>

Consider the examples in (14), in which the internal dative case competes against the external dative case. The internal case is dative, as the predicate *vertrauen* 'to please' takes dative objects. The external case is dative as well, as the predicate *folgen* 'to follow' also takes dative objects. The relative pronoun *wem* 'RP.AN.DAT' appears in the internal and external case: the dative.

(14) Ich   folge,   **wem**   **immer ich**
      1SG.NOM folge.PRES.1SG$_{[DAT]}$ RP.AN.DAT ever   1SG.NOM

      vertraue.
      vertraue.PRES.3SG$_{[DAT]}$
      'I follow whoever I trust.' (Modern German, adapted from **vogel2001**: 342)

These findings can be summarized as in Table 4.12. The top-left to bottom-right diagonal corresponds to the examples I have given so far in which the internal and external case match. The nominative marked in light gray corresponds to (12), in which the internal nominative case competes against the external nominative case, and the relative pronoun surfaces in the nominative case. The accusative marked in dark gray corresponds to (13), in which the internal accusative case competes against the external accusative case, and the relative pronoun surfaces in the accusative case.

The unmarked dative corresponds to (14), in which the internal dative case competes against the external dative case, and the relative pronoun surfaces in the dative case.

Table 4.12: Modern German headless relatives (matching)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM		
[ACC]		ACC	
[DAT]			DAT

In Table 4.12, six cells remain empty. These are the cases in which the internal and the external case differ. In the remainder of this section, I discuss them one by one.

I start with the competition between the accusative and the nominative. Following the case scale, the relative pronoun appears in the accusative case and never in nominative. Following the internal-only requirement, when the accusative case is the internal case, the sentence is grammatical. When the accusative is the external case, the sentence is ungrammatical.

I start with the situation in which the internal case wins the competition, and it is possible to have a grammatical Modern German headless relative. Consider the example in (15). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *mögen* 'to like' takes accusative objects. The external case is nominative, as the predicate *besuchen* 'to visit' takes nominative subjects. The relative pronoun *wen* 'RP.AN.ACC' appears in the internal case: the accusative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. The example is grammatical, because the example adheres to the case scale, and the most complex case (here the accusative) is the internal case.

(15)   Uns   besucht,   **wen   Maria   mag**.
       2PL.ACC visit.PRES.3SG$_{[NOM]}$ RP.AN.ACC Maria.NOM like.PRES.3SG$_{[ACC]}$
       'Who visits us, Maria likes.'

                                        (Modern German, adapted from **vogel2001**: 343)

The example in (16) is identical to (15), except for that the relative pronoun appears in the external less complex nominative case. This example is ungrammatical: although the internal case is more complex, the relative pronoun appears in the least complex case (the nominative) and not in the most complex case (the accusative).

(16)   *Uns   besucht,   wer   **Maria   mag**.
       2PL.ACC visit.PRES.3SG[NOM] RP.AN.NOM Maria.NOM like.PRES.3SG[ACC]
       'Who visits us, Maria likes.'

                                          (Modern German, adapted from **vogel2001**: 343)

Now I turn to the situation in which the external case wins the competition, and there
is no grammatical outcome possible, whichever case the relative pronoun appears in.
Consider the example in (17). In this example, the internal nominative case competes
against the external accusative case. The internal case is nominative, as the predicate
sein 'to be' takes nominative subjects. The external case is accusative, as the predicate
einladen 'to invite' takes accusative objects. The relative pronoun *wen* 'RP.AN.ACC'
appears in the external case: the accusative. The relative pronoun is not marked in
bold, just as the main clause, showing that the relative pronoun patterns with the
main clause. The example adheres to the case scale, but the most complex case (here
the accusative) is not the internal case. The example is ungrammatical, because only
the internal can win the case competition in Modern German.

(17)   *Ich   lade ein,   wen   **mir   sympathisch**
       1SG.NOM invite.PRES.1SG[ACC] RP.AN.ACC 1SG.DAT nice

       ist.
       be.PRES.3SG[NOM]
       'I invite who I like.'   (Modern German, adapted from **vogel2001**: 344)

The example in (18) is identical to (17), except for that the relative pronoun appears
in the external less complex nominative case. This example is also ungrammatical:
in addition to the most complex case not being the internal case, the relative pro-
noun also does not appear in the most complex case (the accusative) but in the least
complex case (the nominative).[5]

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[5]Not every speaker or Modern German agrees with the ungrammaticality of (18). A sentence for
which also has been claimed that speakers accept it is given in (i). This example was originally marked as
ungrammatical by **groos1981** (**groos1981**: 206).

(i)   Ich   liebe   **wer   gutes   tut**,   und hasse,   **wer   mich**
      1SG.NOM love.1SG[ACC] RP.AN.NOM good.NMLZ do.3SG[NOM] and hate.1SG[ACC] RP.AN.NOM ISG.ACC

      verletzt.
      hurt.3SG[NOM]
      'I love who does good and hate who hurts me.' (Modern German, adapted from **groos1981**: 206)

The relative acceptability of (18) and (i) is unexpected because the relative pronoun appears in the least
complex case (the nominative) and not in the more complex case (the accusative). However, the more
complex case would also not be grammatical, because it is the external case, and Modern German only
allows the relative pronoun to surface in the internal case. My hypothesis is that, because there is no way
of making the headless relative grammatical, speakers try to make the construction work by somehow

(18) *Ich   lade ein,   **wer   mir   sympathisch**
      1SG.NOM invite.PRES.1SG[ACC] RP.AN.NOM 1SG.DAT nice

      ist.
      be.PRES.3SG[NOM]

      'I invite who I like.'   (Modern German, adapted from **vogel2001**: 344)

The two examples in which the nominative and the accusative compete are high-
lighted in Table 4.13. The light gray marking corresponds to (15), in which the inter-
nal accusative wins over the external nominative, and the relative pronoun surfaces
in the accusative case (and not in the losing nominative case as in (16)). The dark gray
marking corresponds to (17), in which the external accusative wins over the internal
nominative, but the relative pronoun is not allowed to surface in the accusative case
(or in the losing nominative case as in (18)).

Table 4.13: Modern German headless relatives (NOM — ACC)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	
[ACC]	ACC	ACC	
[DAT]			DAT

I continue with the competition between the dative and the nominative. Fol-
lowing the case scale, the relative pronoun appears in the dative case and never in
nominative. Following the internal-only requirement, when the dative case is the
internal case, the sentence is grammatical.

I start again with the situation in which the internal case wins the competition,
and it is possible to have a grammatical Modern German headless relative. Consider
the example in (19). In this example, the internal dative case competes against the
external nominative case. The internal case is dative, as the predicate *vertrauen* 'to
trust' takes dative objects. The external case is nominative, as the predicate *besuchen*
'to visit' takes nominative subjects. The relative pronoun *wem* 'RP.AN.DAT' appears
in the internal case: the dative. The relative pronoun is marked in bold, just as the
relative clause, showing that the relative pronoun patterns with the relative clause.

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repairing it. I can think of two strategies for that: (1) they can take *wer gutes tut* 'who does good' and *wer
mich verletzt* 'who hurts me' as clauses objects, which are not case-marked in German, or (2) they insert
a morphologically silent object as the head of the relative clause.

Notice that this type of example is crucially different from the Old High German counterexample in
(11). In the Old High German situation, there was a grammatical possibility which was not used, and in
the Modern German situation, there is no grammatical way to make a headless relative.

The example adheres to the case scale, and the most complex case (here the dative) is the internal case, so the example is grammatical.

(19)   Uns   besucht,   **wem   Maria   vertraut**.
        2PL.ACC visit.PRES.3SG$_{[NOM]}$ RP.AN.DAT Maria.NOM trust.PRES.3SG$_{[DAT]}$
        'Who visits us, Maria trusts.'

                                        (Modern German, adapted from **vogel2001**: 343)

The example in (20) is identical to (19), except for that the relative pronoun appears in the external less complex nominative case. This example is ungrammatical: although the internal case is more complex, the relative pronoun appears in the least complex case (the nominative) and not in the most complex case (the dative).

(20)   *Uns   besucht,   wer   **Maria   vertraut**.
        2PL.ACC visit.PRES.3SG$_{[NOM]}$ RP.AN.NOM Maria.NOM trust.PRES.3SG$_{[DAT]}$
        'Who visits us, Maria trusts.'

                                        (Modern German, adapted from **vogel2001**: 343)

Now I turn again to the situation in which the external case wins the competition, and there is no grammatical outcome possible, whichever case the relative pronoun appears in. Consider the example in (21). In this example, the internal nominative case competes against the external dative case. The internal case is nominative, as the predicate *mögen* 'to like' takes nominative subjects. The external case is dative, as the predicate *vertrauen* 'to trust' takes dative objects. The relative pronoun *wem* 'RP.AN.DAT' appears in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. The example adheres to the case scale, but the most complex case (here the dative) is not the internal case. The example is ungrammatical, because only the internal can win the case competition in Modern German.

(21)   *Ich   vertraue,   wem   **Hitchcock   mag**.
        1SG.NOM trust.PRES.1SG$_{[DAT]}$ RP.AN.DAT Hitchcock.ACC like.PRES.3SG$_{[NOM]}$
        'I trust who likes Hitchcock.'

                                        (Modern German, adapted from **vogel2001**: 345)

The example in (22) is identical to (21), except for that the relative pronoun appears in the external less complex nominative case. This example is also ungrammatical: in addition to the most complex case not being the internal case, the relative pronoun also does not appear in the most complex case (the dative) but in the least complex case (the nominative).

(22) *Ich   vertraue,   **wer**   **Hitchcock**   **mag**.
1SG.NOM trust.PRES.1SG[DAT] RP.AN.NOM Hitchcock.ACC like.PRES.3SG[NOM]
'I trust who likes Hitchcock.'

(Modern German, adapted from **vogel2001**: 345)

The two examples in which the nominative and the dative compete are highlighted in Table 4.14. The light gray marking corresponds to (19), in which the internal dative wins over the external nominative, and the relative pronoun surfaces in the dative case (and not in the losing nominative case as in (20)). The dark gray marking corresponds to (21), in which the external dative wins over the internal nominative, but the relative pronoun is not allowed to surface in the dative case (or in the losing nominative case as in (22)).

Table 4.14: Modern German headless relatives (NOM — DAT)

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	*
[ACC]	ACC	ACC	
[DAT]	DAT		DAT

I end with the competition between the dative and the accusative. Following the case scale, the relative pronoun appears in the dative case and never in accusative. Following the internal-only requirement, when the dative case is the internal case, the sentence is grammatical.

I start again with the situation in which the internal case wins the competition, and it is possible to have a grammatical Modern German headless relative. Consider the example in (23). In this example, the internal dative case competes against the external accusative case. The internal case is dative, as the predicate *vertrauen* 'to trust' takes dative objects. The external case is accusative, as the predicate *einladen* 'to invite' takes accusative objects. The relative pronoun *wem* 'RP.AN.DAT' appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. The example adheres to the case scale, and the most complex case (here the dative) is the internal case, so the example is grammatical.

(23) Ich   lade ein,   **wem**   **auch Maria**   **vertraut**.
1SG.NOM invite.PRES.1SG[ACC] RP.AN.DAT also Maria.NOM trust.PRES.3SG[DAT]
'I invite whoever Maria also trusts.'

(Modern German, adapted from **vogel2001**: 344)

The example in (24) is identical to (23), except for that the relative pronoun appears in the external less complex accusative case. This example is ungrammatical: although the internal case is more complex, the relative pronoun appears in the least complex case (the accusative) and not in the most complex case (the dative).

(24) *Ich   lade ein,   wen   **auch Maria   vertraut**.
       1SG.NOM invite.PRES.1SG[ACC] RP.AN.ACC also   Maria.NOM trust.PRES.3SG[DAT]
       'I invite whoever Maria also trusts.'
                                    (Modern German, adapted from **vogel2001**: 344)

Now I turn again to the situation in which the external case wins the competition, and there is no grammatical outcome possible, whichever case the relative pronoun appears in. Consider the example in (25). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *mögen* 'to like' takes accusative objects. The external case is dative, as the predicate *vertrauen* 'to trust' takes dative objects. The relative pronoun *wem* 'RP.AN.DAT' appears in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. The example adheres to the case scale, but the most complex case (here the dative) is not the internal case. The example is ungrammatical, because only the internal can win the case competition in Modern German.

(25) *Ich   vertraue,   wem   **auch Maria   mag**.
       1SG.NOM trust.PRES.1SG[DAT] RP.AN.DAT also   Maria.NOM like.PRES.3SG[ACC]
       'I trust whoever Maria also likes.'
                                    (Modern German, adapted from **vogel2001**: 345)

The example in (26) is identical to (25), except for that the relative pronoun appears in the external less complex accusative case. This example is also ungrammatical: in addition to the most complex case not being the internal case, the relative pronoun also does not appear in the most complex case (the dative) but in the least complex case (the accusative).

(26) *Ich   vertraue,   **wen   auch Maria   mag**.
       1SG.NOM trust.PRES.1SG[DAT] RP.AN.ACC also   Maria.NOM like.PRES.3SG[ACC]
       'I trust whoever Maria also likes.'
                                    (Modern German, adapted from **vogel2001**: 345)

The two examples in which the nominative and the dative compete are highlighted in Table 4.15. The light gray marking corresponds to (23), in which the internal dative wins over the external accusative, and the relative pronoun surfaces in the dative case (and not in the losing accusative case as in (24)). The dark gray marking

corresponds to (25), in which the external dative wins over the internal nominative, but the relative pronoun is not allowed to surface in the dative case (or in the losing accusative case as in (26)).

Table 4.15: Modern German headless relatives (ACC — DAT)

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	*
[ACC]	ACC	ACC	*
[DAT]	DAT	DAT	DAT

In sum, Modern German is an instance of a language that only allows the internal case to surface. The relative pronoun surfaces in the most complex case, but only when this more complex case is the internal case.

4.4 Only external case allowed

This section discusses the situation in which only the external case is allowed to surface when it wins the case competition. When the internal case wins the case competition, the result is ungrammatical. I repeat the pattern from Section 4.1 in Table 4.16.

Table 4.16: Only external case allowed (repeated)

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	*	ACC	DAT
[DAT]	*	*	DAT

To my knowledge, this pattern is not attested in any natural language, whether extinct or alive. Classical Greek has been mentioned in the literature both as a language of the third type (c.f. **cinqueforthcoming**, who actually classifies Gothic also as such) and as a language of the first type (**grosu1987**). I show that the correct description of Classical Greek is the latter, and that it patterns with Gothic and Old High German.[6] I start with an example in which a more complex external case

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[6]It does seem to be the case that examples in which the external case wins over the internal case are more frequent in Classical Greek than examples in which the internal case wins over the external case

wins the case competition over a less complex internal case, and the relative pronoun surfaces in the external case.

Consider the example in (27). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *tíktō* 'to give birth to' takes accusative objects. The external case is dative, as the predicate *ékhō* 'to provide' takes dative indirect objects. The relative pronoun *hõ̜* 'RP.SG.M.DAT' appears in the internal case: the dative. The relative pronoun is not marked in bold, unlike as the relative clause, showing that the relative pronoun patterns with the main clause.

(27)   pãn tò tekòn   trophèn   ékhei   hõ̜   **án**
       any parent.SG.NOM food.SG.ACC provide.PRES.3SG$_{[DAT]}$ RP.SG.M.DAT MOD

       tékę̄
       gives birth.AOR.3SG$_{[ACC]}$

       'any parent provides food to what he would have given birth to'
               (Classical Greek, Pl. Men. 237e, adapted from **kakarikos2014**: 292)

This example is compatible with the picture of Classical Greek only allowing the external case to surface when it wins the competition. I repeat Table 4.16 from the beginning of this section as Table 4.17, and I mark the cell that corresponds to the example in (27) in gray.

Table 4.17: Classical Greek headless relatives possibility 1

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	*	ACC	DAT
[DAT]	*	*	DAT

However, the example in (27) is not only compatible with the external-only type. Considering only the example I have given so far, it is still possible for Classical Classical Greek to be of the unrestricted type. I repeat Table 4.5 from Section 4.2 as Table 4.18, and I mark the cell that corresponds to the example in (27) in gray.

What sets Table 4.17 and Table 4.18 apart is the bottom-left corner of the table. These are cases in which the internal case wins the case competition. In Table 4.17

(see **kakarikos2014** for numerous examples of the former type). In this dissertation I do not address the question of why certain constructions and configurations are more frequent than others. My goal is to set up a system that generates the grammatical patterns and excludes the ungrammatical or unattested patterns.

Table 4.18: Classical Greek headless relatives possibility 2

INT ᴱˣᵀ	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

these examples are not allowed to surface, and in Table 4.18 they are. In what follows, I give an example in which a more complex internal case wins over a less complex external case. This indicates that Classical Greek cannot be of the type shown in Table 4.17, but is has to be of the type shown in Table 4.18. In other words, it is not of the type that only allows the external case to surface when it wins the case competition.

Consider the example in (28). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *philéō* 'to love' takes accusative objects. The external case is nominative, as the predicate *apothnḗiskō* 'to die' takes nominative subjects. The relative pronoun *hòn* 'RP.SG.M.ACC' appears in the internal case: the accusative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause.[7]

(28)   **hòn   hoi theoì philoũsin** apothnḗiskei néos
       RP.SG.M.ACC the god.PL love.3PL[ACC] die.3SG[NOM] young
       'He, whom the gods love, dies young.'   (Classical Greek, Men. DD., 125)

This example shows that Classical Greek is not an instance of the third possible pattern, in which only the external case is allowed to surface. Instead, as illustrated by Table 4.19, the language allows the internal case (marked light gray) and the external case (marked dark gray) to surface when either of them wins the case competition.

I do not discuss more examples from Classical Greek than I did until now. This does not change anything about the point I am making here: the only kind of system that is compatible with the examples given is the one in which the internal and the external case are allowed to surface when either of them wins the case competition. For more examples in which the external case wins, I refer the reader to **kakarikos2014 (kakarikos2014**: 292-294). An example in which the external da-

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[7]The sentence in (28) can also be analyzed as a headed relative, in which the relative clause modifies the phonologically empty subject of *apothnḗiskō* 'to die'. Then, however, more needs to be said about how it is possible for a relative clause to modify a phonologically empty element.

Table 4.19: Summary of Classical Greek headless relatives

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

tive wins over the internal nominative can be found in **noussia2015**. I am not aware of an example in which the internal dative wins over the external accusative.

To sum up, to my knowledge, there is no language in which only the external case is allowed to surface when it wins the case competition, and the internal case is not. Classical Greek patterns with Gothic and Old High German in that is allows the internal and the external case to surface.

4.5   Only matching allowed

This section discusses the situation in which the case is neither the internal case nor the external case allowed to surface when either of them wins the competition. In other words, when the internal and the external case differ, there is no grammatical headless relative construction possible. Only when there is a tie, i.e. when the internal and external case match, there is a grammatical result. I repeat the pattern from Section 4.1 in Table 4.20.

Table 4.20: The matching type (repeated)

INT \ EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	*
[ACC]	*	ACC	*
[DAT]	*	*	DAT

An example of a language that shows this pattern is Polish. In this section I discuss the Polish data, based on the research of **citko2013** after **himmelreich2017**. I only go through the case competition between accusative and dative, as only this data is discussed. This does not change anything about the point I am making here: the only kind of system that is compatible with the examples given is the one in which the case is allowed to surface in neither the internal case nor in the external case,

when either of them wins the case competition. I made the glosses more detailed, and I added translations where they were absent.

First I discuss examples in which the internal and the external case match, and then examples in which they differ. If the internal case and the external case are identical, so there is a tie, the relative pronoun simply surfaces in that case. I illustrate this for the nominative, the accusative and the dative.

Consider the example in (29), in which the internal accusative case competes against the external accusative case. The internal case and external case are accusative, as the predicate *lubić* 'to like' in both clauses takes accusative objects. The relative pronoun *kogo* 'RP.ACC.AN' appears in the internal and external case: the accusative.

(29) Jan lubi   kogo   **-kolkwiek Maria lubi**.
      Jan like.3SG$_{[ACC]}$ RP.ACC.AN ever   Maria like.3SG$_{[ACC]}$
      'Jan likes whoever Maria likes.'
                     (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

Consider the example in (30), in which the internal dative case competes against the external dative case. The internal case is dative, as the predicate *ufać* 'to trust' takes dative objects. The external case is dative as well, as the predicate *pomagać* 'to help' also takes dative objects. The relative pronoun *them* 'RP.PL.AN.DAT' appears in the internal and external case: the dative.

(30) Jan pomaga   komu   **-kolkwiek ufa**.
      Jan help.3SG$_{[DAT]}$ RP.DAT.AN ever   trust.3SG$_{[DAT]}$
      'Jan helps whomever he trusts.'
                     (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

These findings can be summarized as in Table 4.21. The top-left to bottom-right diagonal corresponds to the examples I have given so far in which the internal and external case match. The accusative marked in light gray corresponds to (29), in which the internal accusative case competes against the external accusative case, and the relative pronoun surfaces in the accusative case. The dative marked in dark gray corresponds to (30), in which the internal dative case competes against the external dative case, and the relative pronoun surfaces in the dative case.

In Table 4.21, two cells remain empty. These are the cases in which the internal and the external case differ. In the remainder of this section, I discuss them one by one.

I give examples from the case competition between accusative and dative. According to the case scale, the dative would win over the accusative. However, as the case is neither allowed to surface in the internal case nor in the external case, all

Table 4.21: Polish headless relatives (matching)

INT \ EXT	[ACC]	[DAT]
[ACC]	ACC	
[DAT]		DAT

examples are ungrammatical.

I start with the situation in which the internal case wins the competition, and there is no grammatical outcome possible, whichever case the relative pronoun appears in. Consider the example in (23). In this example, the internal dative case competes against the external accusative case. The internal case is dative, as the predicate *dokuczać* 'to tease' takes dative objects. The external case is accusative, as the predicate *lubić* 'to like' takes accusative objects. The relative pronoun *komu* 'RP.AN.DAT' appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. The example adheres to the case scale, but the internal case is not allowed to surface when it wins the case competition. Therefore, the example is ungrammatical.

(31)   *Jan lubi   **komu**   **-kolkwiek dokucza**.
       Jan like.3SG$_{[ACC]}$ RP.DAT.AN ever   tease.3SG$_{[DAT]}$
       'Jan likes whoever he teases.'
                       (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

The example in (32) is identical to (31), except for that the relative pronoun appears in the external less complex accusative case. This example is also ungrammatical: the external case is less complex, and the external case is not allowed to surface when it wins the case competition.

(32)   *Jan lubi   kogo   **-kolkwiek dokucza**.
       Jan like.3SG$_{[ACC]}$ RP.ACC.AN ever   tease.3SG$_{[DAT]}$
       'Jan likes whoever he teases.'
                       (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

Now I turn to the situation in which the external case wins the competition, and there is no grammatical outcome possible, whichever case the relative pronoun appears in. Consider the example in (33). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *wpuścić* 'to let' takes accusative objects. The external case is dative, as the predicate *ufać* 'to trust' takes dative objects. The relative pronoun *komu* 'RP.AN.DAT' appears

in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. The example adheres to the case scale, but the external case is (as the internal case) not allowed to surface when it wins the case competition. Therefore, the example is ungrammatical.

(33) *Jan ufa komu **-kolkwiek wpuścil** **do domu**.
      Jan trust.3SG$_{[DAT]}$ RP.DAT.AN ever let.3SG$_{[ACC]}$ to home
      'Jan trusts whoever he let into the house.'

      (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

The example in (34) is identical to (33), except for that the relative pronoun appears in the internal less complex accusative case. This example is also ungrammatical: the internal case is less complex, and the internal case is not allowed to surface when it wins the case competition.

(34) *Jan ufa **kogo** **-kolkwiek wpuścil** **do domu**.
      Jan trust.3SG$_{[DAT]}$ RP.ACC.AN ever let.3SG$_{[ACC]}$ to home
      'Jan trusts whoever he let into the house.'

      (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

The two examples in which the accusative and the dative compete are highlighted in Table 4.22. The light gray marking corresponds to (31), in which the internal dative wins over the external accusative, but the relative pronoun is not allowed to surface in the dative case (or in the losing accusative case as in (32)). The dark gray marking corresponds to (33), in which the external dative wins over the internal accusative, but the relative pronoun is not allowed to surface in the dative case (or in the losing accusative case as in (34)).

Table 4.22: Polish headless relatives (ACC — DAT)

INT ᴱˣᵀ	[ACC]	[DAT]
[ACC]	ACC	*
[DAT]	*	DAT

    In sum, Polish is an instance of a language that only allows for matching cases. When the internal and the external case differ in Polish, there is no way to form a grammatical headless relative construction.

4.6   Summary

In case competition in headless relatives two aspects play a role. The first one is
which case wins the case competition. It is a crosslinguistically stable fact that this
is determined by the case scale in (35), repeated from Chapter 2. A case more to the
right on the scale wins over a case more to the left on the scale.

(35)   NOM < ACC < DAT

This generates the pattern shown in Table 4.23. The left column shows the internal
case between square brackets. The top row shows the external case between square
brackets. The other cells indicate the case of the relative pronoun. When the dative
wins over the accusative, the relative pronoun appears in the dative case. When
the dative wins over the nominative, the relative pronoun appears in the nominative
case. When the accusative wins over the nominative, the relative pronoun appears
in the accusative case.

Table 4.23: Relative pronoun follows case competition

INT ^{EXT}	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

The second aspect is whether the internal and the external case are allowed to
surface when either of them wins the case competition. This differs across languages.
There are four logical possibilities, listed in (36).

(36)   Logically possibile language types

   i.   The unrestricted type: the internal and the external case are allowed to
         surface when either of them wins the case competition

   ii.   The internal-only type: only the internal case is allowed to surface when
         it wins the case competition

   iii. The external-only type: only the external case is allowed to surface
         when it wins the case competition

   iv.   The matching type: neither the internal case nor in the external case is
         allowed to surface when either of them wins the case competition

As far as I am aware, not all of these logical possibilities are attested in natural lan-
guages. I discuss the types one by one, and I give example when they are attested.

In my description, I refer to the differ gray-marking in Table 4.24. The cells marked in light gray are the ones in which the internal case wins the case competition, the cells marked in dark gray are the ones in which the external case wins the case competition, and the unmarked cells are the ones in which the internal and external case match.

Gothic, Old High German and Classical Greek are examples of the unrestricted type in (36i). In these languages, relative pronouns in the unmarked, light gray and dark gray cells are attested. Modern German is an example of the 'unrestricted — internal-only' type in (36ii). In this language, relative pronouns in the unmarked and light gray cells are grammatical. To my knowledge, the 'unrestricted — external-only' type in (36iii) is not attested. This would be a language in which relative pronouns in the unmarked and the dark gray cells are grammatical. Polish is an example of a language of the matching type in (36iv). In this language, relative pronoun in only in the unmarked cells are grammatical.

Table 4.24: Relative pronoun follows case competition

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

Figure 4.1 shows a diagram that generates the three attested patterns and not the unattested one. The diamonds stand for parameters that distinguish different types of languages. The texts along the arrows to the rectangles (and to a diamond) indicate how the different types of languages behave with respect to the parameters. The rectangles describe the form that the relative pronoun appears in. Below the rectangle I give examples of languages that are of this particular type.

The first parameter is whether or not a language allows for a mismatch between the internal and external case. If a language does not allow for a mismatch, the matching type of language (36iv) is generated. If a language allows for a mismatch between the internal and external case, the second parameter comes into play. This one is concerned with the case the relative pronoun is allowed to surface when it wins the case competition. Here I give two options: (1) it is allowed to surface in only the internal case or (2) it is allowed to surface in the internal and the external case.[8] If a

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[8]I do not introduce the option of allowing the relative pronoun to surface only in the external case. The reason for this is that this pattern is not attested crosslinguistically. If a language like this appears, this option could in principle be added. However, I predict that it will not appear. In Chapter III, I show how it follows from general properties of relative clauses that this type of language is excluded.

language allows the internal case to surface when it wins the case competition, the 'unrestricted — internal-only' type is generated. If a language allows the internal and the external case to surface, the unrestricted type is generated.[9]
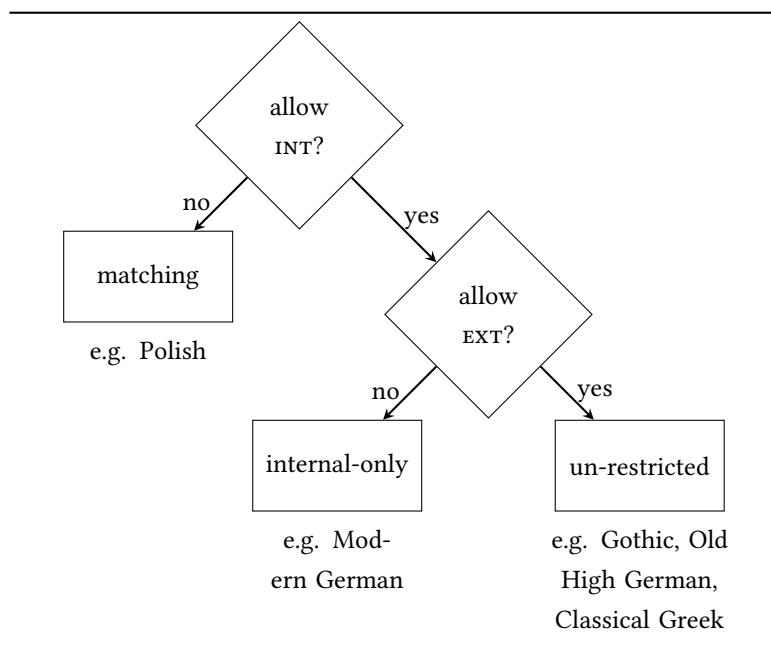
Figure 4.1: Attested patterns in headless relatives with case competition

The main focus of Chapter III is the linguistic counterpart of the second parameter. I show with general properties of relative clauses how the difference between the unrestricted and the 'unrestricted — internal-only' type can be modeled, and how the exclusion of the 'unrestricted — external-only' type follows from these particular properties. I also introduce a linguistic counterpart for the first parameter, which distinguishes matching from unrestricted languages.

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[9]The matching type could also have been generated with the second parameter. The text along the arrow would have been *none.* I choose to not do this, because in Chapter III I propose separate mechanisms for each of the parameters in Figure 4.1. The first one distinguishes matching languages from unrestricted (i.e. unrestricted and internal-only) languages, and the second one distinguishes unrestricted from internal-only languages.

Chapter 5

Aside: languages without case competition

In the previous chapter, I discussed languages that show case competition. There are also languages that do not show any case competition. This section discusses these languages, and gives a typology of headless relatives.

In languages without case competition, the internal and external case do not compete to show their case on the relative pronoun. It is irrelevant how the two cases relate to each other on the case scale. Instead, it is fixed per language whether the relative pronoun appears in the internal or the external case. Logically, there are two possible languages without case competition: one that lets the relative pronoun appear in the internal case, and one that lets the relative pronoun appear in the external case.

Table 5.1 shows the pattern of a language in which the relative pronoun always appears in the internal case. In the second row, the internal case is nominative and the external case is nominative, accusative or dative. The relative pronoun appears in the nominative. It is irrelevant here that the nominative is less complex than the accusative and the dative, because there is no case competition taking place. The third row shows that the relative pronoun always appears in the accusative when the internal case is the accusative, and the fourth row shows the same for the dative. To my knowledge, this type is not attested in any natural language.

Table 5.2 shows the pattern of a language in which the relative pronoun always appears in the external case. In the second column, the external case is nominative and the internal case is nominative, accusative or dative. The relative pronoun appears in the nominative. It is irrelevant here that the nominative is less complex than the accusative and the dative, because there is no case competition taking place. The third column shows that the relative pronoun always appears in the accusative when the external case is the accusative, and the fourth column shows the same for

Table 5.1: Always internal case

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	NOM	NOM
[ACC]	ACC	ACC	ACC
[DAT]	DAT	DAT	DAT

the dative.

Table 5.2: Always external case

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	NOM	ACC	DAT
[DAT]	NOM	ACC	DAT

Section 5.1 discusses two languages that let their relative pronouns in headless relatives always surface in the external case: Old English and Modern Greek. In Section 5.2 I extend the typology from Section 4.6 by adding the languages without case competition. As I briefly mentioned, I do not know of any language, whether extinct or alive, that lets the relative pronoun always surface in the internal case. I do not offer an explanation for why it is not attested, and I include this possibility in my typology.

5.1   Always external case

In this section I discuss two languages in which the relative pronoun always appears in the external case. I show that these languages do not show any case competition. In other words, these languages are of the type shown in Table 5.2 and not of the type I discussed in Section 4.4 (or of the one in Section 4.2).

Two example of languages that shows this pattern are Old English and Modern Greek. In this section I discuss the Old English data with examples from **harbert1983**. The Modern Greek data I discuss is taken from **daskalaki2011**. For all examples holds that I made the glosses more detailed, and I added and modified translations.

I start with Old English. I give an example in which the external case is more complex than the internal case and the relative pronoun appears in the most complex

Table 5.3: Always external case (repeated)

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	NOM	ACC	DAT
[DAT]	NOM	ACC	DAT

external case.

Consider the example in (1). The internal case is nominative, as the predicate *gegyltan* 'to sin' takes nominative subjects. The external case is dative, as the predicate *for-gifan* 'to forgive' takes dative objects. The relative pronoun *ðam* 'RP.DAT.PL' appears in the external case: the dative. The relative pronoun is not marked in bold, unlike the relative clause, showing that the relative pronoun patterns with the main clause.

(1)   ðæt is, ðæt man for-gife,   ðam   **ðe**   **wið**   **hine**
       that is that one forgive.SUBJ.SG$_{[DAT]}$ RP.DAT.PL COMP against 3SG.M.ACC

       gegylte
       sin.3SG$_{[NOM]}$

       'that is, that one$_2$ forgive him$_1$, who sins against him$_2$.'

                           (Old English, adapted from **harbert1983**: 549)

This example is compatible with three patterns. First, Old English could be a case competition language that only allows the external case to surface. I repeat Table 4.16 from Section 4.4 as Table 5.4, and I mark the cell that corresponds to example (1) in gray.

Table 5.4: Old English headless relatives possibility 1

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	*	ACC	DAT
[DAT]	*	*	DAT

Second, Old English could be a case competition language that allows the internal case and the external case to surface. I repeat Table 4.5 from Section 4.2 as Table 5.5, and I mark the cell that corresponds to example (1) in gray.

Table 5.5: Old English headless relatives possibility 2

INT ^{EXT}	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

Third, Old English could be a language without case competition that lets the relative pronoun appear in the external case. I repeat Table 5.3 from the beginning of this section as Table 5.6, and I mark the cell that corresponds to example (1) in gray.

Table 5.6: Old English headless relatives possibility 3

INT ^{EXT}	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	NOM	ACC	DAT
[DAT]	NOM	ACC	DAT

What sets Table 5.4, Table 5.5 and Table 5.6 apart is the bottom-left corner of the table. These are situations in which the internal case is more complex than the external case. In Table 5.4 the winning case is not allowed to surface, and there is no grammatical headless relative possible. If this is the pattern that Old English shows, then it would be a language with case competition that only allows the external case to surface, i.e. it would be of the type of Section 4.4 I claimed did not exist. In Table 5.5 and in Table 5.6 there is a relative pronoun that can surface, but the case of the relative pronouns differs. In Table 5.5, the relative pronoun surfaces in the most complex case that wins the case competition: the internal case. In Table 5.6, there is no case competition taking place, and the relative pronoun surfaces in the external case.

In the example that follows I show that Old English is of the type in Table 5.6. I give an example in which the internal case is more complex than the external one. Nevertheless, the relative pronoun surfaces in the less complex external case. Old English is namely a language without case competition that lets the relative pronoun surface in the external case.

Consider the example in (2). The internal case is dative, as the preposition *onuppan* 'upon' takes dative objects. The external case is accusative, as the pred-

icate *tōbrȳsan* 'to pulversize' takes accusative objects. The relative pronoun *ðone* 'RP.SG.ACC' appears in the external case: the accusative. The relative pronoun appears in the external case, although it is the least complex case of the two. The example is grammatical, because Old English does not show case competition, so the case scale is irrelevant. As long as the relative pronoun appears in the external case, the headless relative is grammatical.

(2) he tobryst   ðone   **ðe   he onuppan fylð**
     it pulverizes[Acc] RP.SG.ACC COMP it upon[DAT] falls
     'It pulverizes him whom it falls upon.'

                                    (Old English, adapted from **harbert1983**: 550)

This example shows that Old English is neither an instance of the pattern in Section 4.4, in which only the external case is allowed to surface, nor is it an instance of the pattern in Section 4.2, in which the internal case and external case are allowed to surface. Instead, as illustrated by Table 5.7, the language does not have any case competition. The relative pronoun appears in the external case: the external case can be the most complex case, illustrated by the example in (1), marked here in light gray, or it can be the least complex case, illustrated by the example in (2), marked here in dark gray.

Table 5.7: Summary of Old English headless relatives

INT EXT	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	NOM	ACC	DAT
[DAT]	NOM	ACC	DAT

I do not discuss more examples from Old English than I did until now. This does not change anything about the point I am making here: the only kind of system that is compatible with the examples given is the one in which the relative pronoun always appears in the external case.

The same pattern appears in Modern Greek. The only difference is that Modern Greek has the genitive, and not the dative. I start again with an example in which the external case is more complex than the internal case and the relative pronoun appears in the most complex external case.

Consider the example in (3). The internal case is nominative, as the predicate *voíθisó* 'to help' takes nominative subjects. The external case is accusative, as the predicate *efχarístisó* 'to thank' takes accusative objects. The relative pronoun *ópjus* 'RP.PL.M.ACC' appears in the external case: the accusative. The relative pronoun is

not marked in bold, unlike the relative clause, showing that the relative pronoun patterns with the main clause.

(3)   Efχarístisa   ópjus   **me**   **voíϑisan**.
      thank.PST.3PL[ACC] RP.PL.M.ACC CL.1SG.ACC help.PST.3PL[NOM]
      'I thanked whoever helped me.'
                                        (Modern Greek, adapted from **daskalaki2011**: 80)

This example is compatible with three patterns. First, Modern Greek could be a case competition language that only allows the external case to surface. I repeat Table 4.16 from Section 4.4 as Table 5.8, and I mark the cell that corresponds to example (3) in gray.

Table 5.8: Modern Greek headless relatives possibility 1

INT \ EXT	[NOM]	[ACC]	[GEN]
[NOM]	NOM	ACC	GEN
[ACC]	*	ACC	GEN
[GEN]	*	*	GEN

Second, Modern Greek could be a case competition language that allows the internal case and external case to surface. I repeat Table 4.5 from Section 4.2 as Table 5.9, and I mark the cell that corresponds to example (3) in gray.

Table 5.9: Modern Greek headless relatives possibility 2

INT \ EXT	[NOM]	[ACC]	[GEN]
[NOM]	NOM	ACC	GEN
[ACC]	ACC	ACC	GEN
[GEN]	GEN	GEN	GEN

Third, Modern Greek could be a language without case competition that lets the relative pronoun appear in the external case. I repeat Table 5.3 from the beginning of this section as Table 5.10, and I mark the cell that corresponds to example (3) in gray.

What sets Table 5.8, Table 5.9 and Table 5.10 apart is the bottom-left corner of the table. These are cases in which the internal case is more complex than the external case. In Table 5.8 the winning case is not allowed to surface, and there is no grammatical headless relative possible. If this is the pattern that Modern Greek shows,

Table 5.10: Modern Greek headless relatives possibility 3

INT \ EXT	[NOM]	[ACC]	[GEN]
[NOM]	NOM	ACC	GEN
[ACC]	NOM	ACC	GEN
[GEN]	NOM	ACC	GEN

then it would be a language with case competition that only allows the external case to surface, i.e. it would be of the type of Section 4.4 I claimed did not exist. In Table 5.9 and in Table 5.10 there is a relative pronoun that can surface, but the case of the relative pronouns differs. In Table 5.9, the relative pronoun surfaces in the most complex case that wins the case competition: the internal case. In Table 5.10, there is no case competition taking place, and the relative pronoun surfaces in the external case.

In the example that follows I show that Modern Greek is of the type in Table 5.10. I give an example in which the internal case is more complex than the external one. Nevertheless, the relative pronoun surfaces in the less complex external case. Modern Greek is namely a language without case competition that lets the relative pronoun surface in the external case.

Consider the example in (4). The internal case is accusative, as the predicate *irθó* 'to invite' takes accusative objects. The external case is nominative, as the predicate *kálesó* 'to come' takes nominative subjects. The relative pronoun *ópji* 'RP.PL.M.NOM' appears in the external case: the nominative. The relative pronoun appears in the external case, although it is the least complex case of the two. The example is grammatical, because Modern Greek does not show case competition, so the case scale is irrelevant. As long as the relative pronoun appears in the external case, the headless relative is grammatical.

(4) Irθan ópji **káleses**.
    come.PST.3PL_[NOM] RP.PL.M.NOM invite.PST.2SG_[ACC]
    'Whoever you invited came.'

                                    (Modern Greek, adapted from **daskalaki2011**: 80)

The example in (5) is identical to (4), except for that the relative pronoun appears in the internal more complex case. This example is ungrammatical: the relative pronoun does not appear in the external case. The fact that the internal case is more complex is irrelevant.

(5)   *Irθan   **ópjus**   **káleses**.
       come.PST.3PL[NOM] RP.PL.M.ACC invite.PST.2SG[ACC]
       'Whoever you invited came.'

                                (Modern Greek, adapted from **daskalaki2011**: 79)

This example shows that Modern Greek is neither an instance of the pattern in Section 4.4, in which only the external case is allowed to surface, nor is it an instance of the pattern in Section 4.2, in which the internal case and external case are allowed to surface. Instead, as illustrated by Table 5.11, the language does not have any case competition. The relative pronoun appears in the external case: the external case can be the most complex case, illustrated by the example in (3), marked here in light gray, or it can be the least complex case, illustrated by the example in (4), marked here in dark gray.

Table 5.11: Summary of Modern Greek headless relatives

INT EXT	[NOM]	[ACC]	[GEN]
[NOM]	NOM	ACC	GEN
[ACC]	NOM	ACC	GEN
[GEN]	NOM	ACC	GEN

There is something more to be said about the situation in Modern Greek. When the internal case is genitive instead of accusative, a clitic is added to the sentence to make it grammatical.

Consider the example in (6). The internal case is genitive, as the predicate *eðósó* 'to give' takes genitive objects. The external case is accusative, as the predicate *efχarístisó* 'to thank' takes nominative subjects. The relative pronoun *ópjon* 'RP.PL.M.NOM' appears in the external case: the nominative. The relative pronoun appears in the external case, although it is the least complex case of the two. The example is grammatical, because Modern Greek does not show case competition, so the case scale is irrelevant. As long as the relative pronoun appears in the external case, the headless relative is grammatical. In addition, the relative clause obligatorily contains the genitive clitic *tus* 'CL.3PL.GEN'.[1]

(6)   Me   efχarístisan   ópji   **tus**   **íχa**
       CL.1SG.ACC thank.PST.3PL[NOM] RP.PL.M.NOM CL.3PL.GEN have.PST.1SG

---

[1]In Modern German, it is possible to insert a light head to resolve a situation with a more complex external case. However, then the relative pronoun has to change as well (from a WH-pronoun into a D-pronoun). I assume this is a different construction, and the Modern Greek one with the clitic inserted is not.

ðósi   **leftá**.

give.PTCP[GEN] money

'Whoever I had given money to, thanked me.'

(Modern Greek, adapted from **daskalaki2011**: 80)

This once again confirms the picture of Modern Greek always letting the relative pronoun surface in the external case. The internal case is taken care of by the clitic, which is independent of the relative clause construction.

I do not discuss more examples from Modern Greek than I did until now. This does not change anything about the point I am making here: the only kind of system that is compatible with the examples given is the one in the relative pronoun always appears in the external case. For more examples that illustrate this pattern, I refer the reader to **daskalaki2011** (**daskalaki2011**: 79-80) and **spyropoulos2011** (**spyropoulos2011**: 31-34).[2]

[3]

In sum, Old English and Modern Greek are languages without case competition in their headless relatives. The relative pronoun always appears in the external case.

5.2   A typology of headless relatives

This section provides a typological overview of headless relatives. First, I describe the difference between the patterns of languages with and without case competition. Second, I include the parameters of non-case competition languages in the diagram I introduced in Section 4.6. Third, I give an overview of all logically possible patterns, I show how the diagram generates the attested ones, and I discuss the non-attested patterns.

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[2]When the relative clause is dislocated, both the internal and the external case can be used. In (ia), the internal case is accusative, and the external case is nominative. Normally the relative pronoun should appear in the external case, so the nominative. However, the accusative is also grammatical here. **spyropoulos2011** argues that in these left-dislocated structure, there is a silent *pro* or a clitic (*ton* in (ib)) that satisfies the external case. This allows the relative pronoun to take the internal case. This makes this construction more of a correlative.

(i)   a.   ópjos/   ópjon   epiléksume θa   pári to   vravío

RP.SG.M.NOM/RP.SG.M.ACC choose.1PL[ACC] FUT   take.3SG[NOM] the price.ACC

'Whoever we may choose, he will get the price.'

b.   ópjos/   ópjon   me   aɣapá   ton   aɣapó

RP.SG.M.NOM/RP.SG.M.ACC CL.1SG.ACC love.3SG[NOM] CL.3SG.M.ACC love.1SG[ACC]

'Whoever loves me, I love him.'

[3]Then there is also the thing that Modern Greek has oblique accusatives that require a clitic. Difference between S-ACC and B-ACC.

In Section 4.2 to 4.5, I discussed four different patterns. These four patterns are all based on a single table, shown in Table 5.12 (repeated from Section 4.2). The cases in the cells are the ones that win the case competition. The variation between the four patterns lies in whether all cells in the table are grammatical, or whether some of them are not. In none of the four patterns in Section 4.2 to 4.5, the cells are filled by a case different from what is given in 5.12.

Table 5.12: Relative pronoun follows case competition

INT ᴱˣᵀ	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

In this section I introduced two different ways of filling out the table. The first one is the one in which the relative pronoun appears in the internal case, as in Table 5.13 (repeated from Table 5.2).

Table 5.13: Relative pronoun in internal case

INT ᴱˣᵀ	[NOM]	[ACC]	[DAT]
[NOM]	NOM	NOM	NOM
[ACC]	ACC	ACC	ACC
[DAT]	DAT	DAT	DAT

The second one is the one in which the relative pronoun appears in the external case, as in Table 5.14 (repeated from Table 5.2).

Table 5.14: Relative pronoun in external case

INT ᴱˣᵀ	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	NOM	ACC	DAT
[DAT]	NOM	ACC	DAT

I incorporate the parameters that generates these different patterns into the diagram from Section 4.6 in Figure 5.1. I added two different parameters. First, a

language either has case competition or it does not at at 'case competition?'. If the language has case competition, the pattern shown in Table 5.12 is generated. The two parameters that follow then ('INT as winner?' and 'EXT as winner?') are described in Section 4.6. If the language does not have case competition, the second parameter is whether the language lets its relative pronouns appear either in the internal case or in the external case at at 'INT/EXT?'. If the language lets its relative pronouns appear in the internal case, the pattern shown in Table 5.13 is generated. I am not aware of any language that lets its relative pronoun appear in the internal case.[4] If the language lets its relative pronouns appear in the external case, the pattern shown in Table 5.14 is generated. Old English and Modern Greek are two examples of languages that let their relative pronouns appear in the external case.
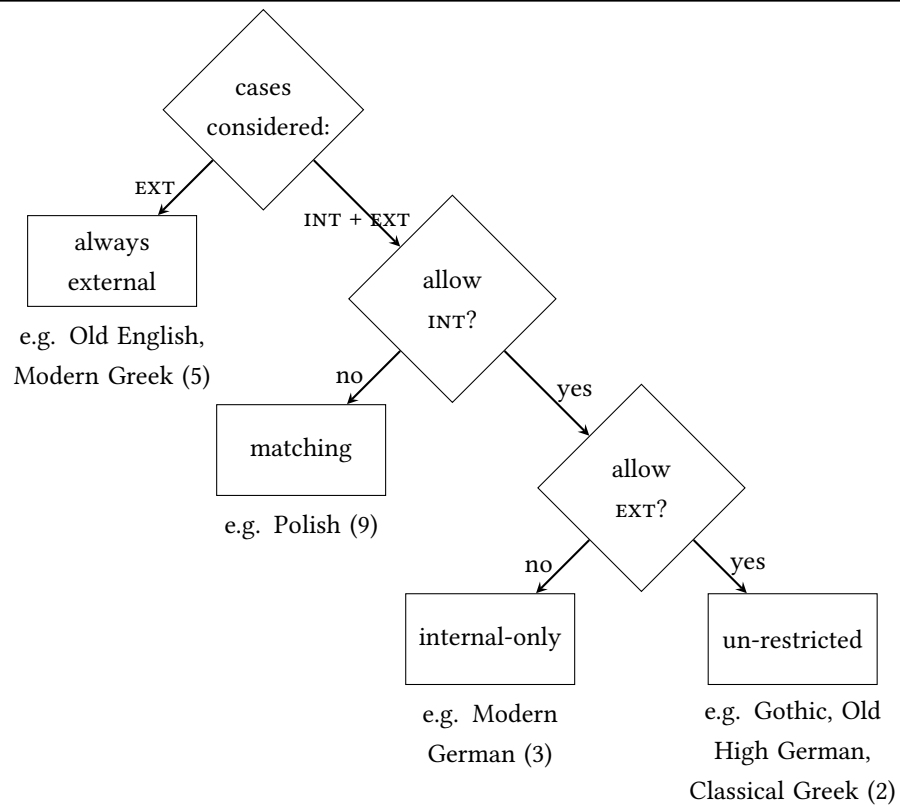
Figure 5.1: Attested patterns in headless relatives

In Table 5.15, I give all logically possible patterns for headless relatives. The top row sketches two different situations: one in which the internal case is the

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[4]In this dissertation I do not offer an explanation for why this type of example should be absent. Future research should determine whether this pattern is actually attested, or whether this option should be excluded and how.

most complex ([INT]>[EXT]) and one in which the external case is the most complex ([EXT]>[INT]). The second row refers to the case which the relative pronoun appears in, which can be either the internal case (INT) or the external case (EXT).

When the internal case and the external case differ (which holds for both options the top row indicates), the relative pronoun cannot appear in both the internal and external case at the same time. This excluded the possibility of having a checkmark at both INT and EXT in the same situation. This leaves the possibility to have a checkmark at INT, at EXT or at none of them. This gives 3 × 3 = 9 logically possible options, which are listen in Table 5.15.

Table 5.15: Possible patterns for headless relatives

	[INT]>[EXT]		[EXT]>[INT]		
	INT	EXT	INT	EXT	language
1	✓	*	✓	*	n.a.
2	✓	*	*	✓	e.g. Old High German
3	✓	*	*	*	e.g. Modern German
4	*	✓	✓	*	n.a.
5	*	✓	*	✓	e.g. Old English
6	*	✓	*	*	n.a.
7	*	*	✓	*	n.a.
8	*	*	*	✓	n.a.
9	*	*	*	*	e.g. Polish

In what follows I show how Figure 5.1 generates of all logically possible patterns only the attested patterns (except for the one in which the relative pronoun always takes the internal case).

I start with the leftmost pattern in Figure 5.1, which is number 1 in Table 5.15. In this pattern, there is no case competition, and the relative pronoun surfaces in the internal case. As I mentioned earlier, I am not aware of a language that exemplified this pattern and future research should tell whether this option is attested or whether it should be excluded. The second pattern in Figure 5.1 is number 5 in Table 5.15. In this pattern, there is no case competition, and the relative pronoun surfaces in the external case. This pattern is exemplified by Old English and Modern Greek. The third pattern in Figure 5.1 is number 9 in Table 5.15. In this pattern, there is case competition, and the relative pronoun is only allowed to surface in the case when there is a tie, i.e. when the internal and external case match. This pattern is exemplified by Polish. The fourth pattern in Figure 5.1 is number 3 in Table 5.15.

In this pattern, there is case competition, and the relative pronoun is only allowed to surface in the internal case when it wins the case competition. This pattern is exemplified by Modern German. The fifth and last pattern in Figure 5.1 is number 2 in Table 5.15. In this pattern, there is case competition, and the relative pronoun is allowed to surface in the internal case and the external case when either of them wins the case competition. This pattern is exemplified by Old High German, Gothic and Classical Greek.

This leaves four patterns that are logically possible but not attested in languages: pattern numbers 4, 6, 7 and 8 in Table 5.15. These patterns cannot be generated by the diagram in Figure 5.1. That means that they are not a result of any of the possible parameter settings in the diagram.

In the pattern number 4, the relative pronoun surfaces in the external case when the internal case is the most complex, and the relative pronoun surfaces in the internal case when the external case is the most complex. In other words, the relative pronoun appears in the losing case in the case competition. Pattern number 6 and 7 are both subsets of pattern number 4 in the sense that they allow part of what number 4 allows. In the pattern number 6, the relative pronoun surfaces in the external case when the internal case is the most complex, and there is no grammatical option when the external case is the most complex. Patterns number 7 is the opposite of pattern number 6: there is no grammatical option when the external case is the most complex, and the relative pronoun surfaces in the internal case when the external case is the most complex. The absence of these three patterns across languages provides further evidence for the case scale in Chapter 2.

In the pattern number 8, the relative pronoun is only allowed to surface in the external case when it wins the case competition. This pattern is excluded as a result of the relative ordering of 'INT as a winner?' and 'EXT as a winner?' in the diagram in Figure 5.1. The next chapter, Chapter 3, discusses the linguistic counterpart of this ordering.

Part III

Deriving the typology

Chapter 6

The source of variation

In Chapter 4, I introduced two descriptive parameters that describe the differences between the attested languages. I repeat the overview in Figure 6.1.
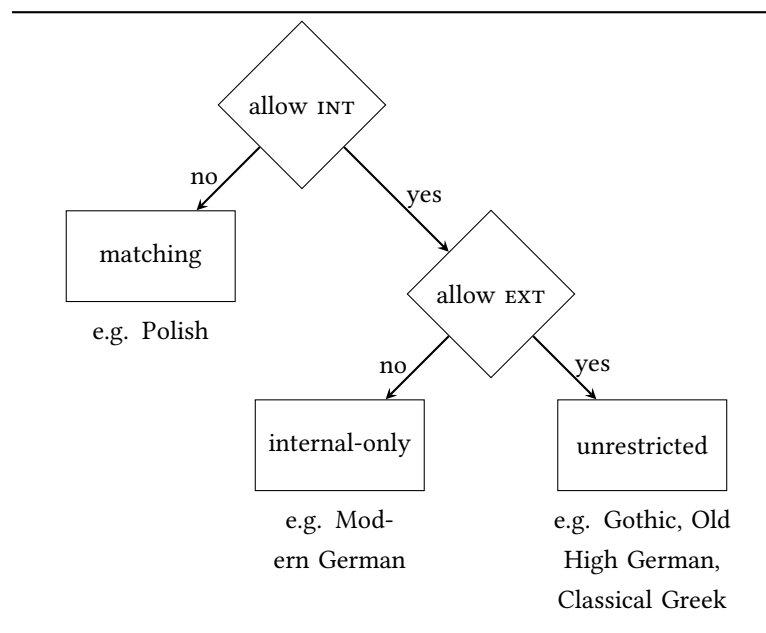
Figure 6.1: Two descriptive parameters generate three language types

The first parameter, *allow ɪɴᴛ*, is whether the internal case is allowed to surface when it wins the case competition. This parameter distinguishes the matching type of language from the internal-only and the unrestricted type of languages. The second parameter, *allow ᴇxᴛ*, is whether the external case is allowed to surface when it wins the case competition. This parameter distinguishes the internal-only type of language from the unrestricted type of language.

When the parameters are formulated like this, they describe the different lan-

guage types, but they are specific to the headless relative construction. Ideally, the difference between languages can be derived from independent properties of the language.[1] I argue that there is such a property: the different lexical entries that are present in different languages. These different lexical entries are the links between lexical trees, phonological representations and conceptual representations, which are part of the language's lexicon. The goal of Part III of this dissertation is to show how different lexical entries lead to differences in language types and to illustrate in detail how this works for the three different language types discussed in Chapter 4. In this chapter I give the basic idea behind my proposal. I work the proposal out for the three different language types in the following three chapters.

This chapter is structured as follows. First, I discuss the basic assumptions that I am making, which are the same for each of the discussed language types. Then I introduce the source of the crosslinguistic variation: the lexical entries that are present in the different language types. I show how differences in lexical entries ultimately lead to different language types.

6.1   Underlying assumptions

I start with my assumption that headless relatives are derived from light-headed relatives.[2] The light head bears the external case, and the relative pronoun bears the internal case, as illustrated in (1).

(1)   light head$_{\text{EXT}}$ [relative pronoun$_{\text{INT}}$ …]

In a headless relative, either the light head or the relative pronoun is deleted.

To see what a light-headed relative looks like, consider the Old High German light-headed relative in (2). The relative clause, including the relative pronoun, is marked in bold. *Thér* 'LH.SG.M.NOM' is the light head of the relative clause. This is the element that appears in the external case, the case that reflects the grammatical role in the main clause. *Then* 'RP.SG.M.ACC' is the relative pronoun in the relative clause. This is the element that appears in the internal case, the case that reflects the grammatical role within the relative clause.

---

[1]Exactly this point was raised by in **grosu1994**: "A natural question at this point is whether this typology needs to be fully stipulative, or is to some extent derivable from independent properties of individual languages." He investigated the correlation between the morphology richness of morphology and the willingness for a language to show headless relatives. He found a certain tendency, but no absolute rule.

[2]The same is argued for headless relatives with D-pronouns in Modern German by **fuss2014**; **hanink2018** and for Polish by **citko2004**. Several others claim that headless relatives have a head, but that it is phonologically empty (**bresnan1978**; **groos1981**; **himmelreich2017**).

(2) eno nist   thiz   thér   **then**   **ir**
     now not be.3SG[NOM] DEM.SG.N.NOM LH.SG.M.NOM RP.SG.M.ACC 2PL.NOM

     suochet   zi arslahanne?
     seek.2PL[ACC] to kill.INF.SG.DAT

     'Isn't this now the one, who you seek to kill?'

                                              (Old High German, Tatian 349:20)

The difference between a light-headed relative and a headless relative is that in a
headless relative either the light head or the relative pronoun does not surface. The
surfacing element is the one that bears the winning case, and the absent element is
the one that bears the losing case. This means that what I have so far been glossing as
the relative pronoun and calling the relative pronoun is actually sometimes the light
head (when the relative pronoun is deleted) and sometimes the relative pronoun
(when the light head is deleted). To reflect that, I call the surfacing element from
now on the surface pronoun.

This brings me to my second assumption, which concerns the circumstances un-
der which the light head or the relative pronoun can be deleted. A light head or a
relative pronoun can be deleted when their content can be recovered. The content
can be recovered when there is an antecedent which contains the deleted element.
More specifically, the deleted element needs to form a single constituent within the
antecedent.[3]

For light heads and relative pronouns this means that one of them can be ab-
sent when they form a constituent within the other element.[4] In other words, it
depends on the comparison between the light head and the relative pronoun them-
selves which one of them is absent. Specifically, it depends on the comparison of
the constituents that the two elements consist of. Note that it is also possible that
neither of the elements form a constituent within the other one. The consequence is
then that neither of them is deleted, which describes the situation in which there is
no grammatical headless relative.

I continue with my third assumption. In order to be able to compare the light
head and the relative pronoun, I zoom in on their internal syntax. In Chapter 7 to
9 I give arguments to support the structures I am assuming here. Figure 6.2 gives a
simplified representation of the light head and the relative pronoun.

---

[3]In Section 6.2.2 I show that constituent containment is also a necessary requirement in other types
of deletion operations.

[4]Throughout this chapter I elaborate further on the exact requirements for constituent containment.
There are namely two types of constituent containment possible. The first type is structural constituent
containment: an element can be absent if it is a constituent that is structurally contained within the other
element. I elaborate on this in Section 6.2.2. The second type is formal constituent containment: an
element can be absent if it is a constituent that is formally contained within the other element. I elaborate
on this in Section 6.2.3.

light head	relative pronoun

```
                                    RELP
                                    ╱╲
              κP                REL    κP
              ╱╲                      ╱╲
          κ      φP              κ      φP
```
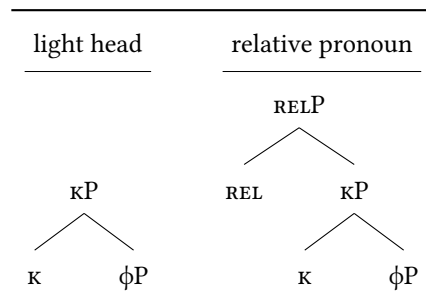
Figure 6.2: LH and RP

I assume that the light head and the relative pronoun partly contain the same syntactic features. The features they have in common are case features (κ) and what I here simplify as phi features (φ). The light head and the relative pronoun differ from each other in that the relative pronoun has at least one feature more, which I call here REL.

The three assumptions I just introduced hold for all language types I discuss. In all language types, headless relatives are derived from light-headed relatives. For all language types, the deletion operation requires constituent containment. And in all language types, the relative pronoun consists of the features of the light head plus at least one additional feature (here REL). The difference between languages does not come from modifying these assumptions in any way, but from how different languages package their features into constituents. Before I explain how differences in constituency lead to different language types, I show how differences in constituency arise.

In Chapter 3 I discussed the third person singular feminine pronoun in German. I repeat the lexical entry I gave for it in (3).

(3)   ACCP ⟺ *sie*
         ╱╲
      F2   NOMP
            ╱╲
         F1   3SG.FP
               △
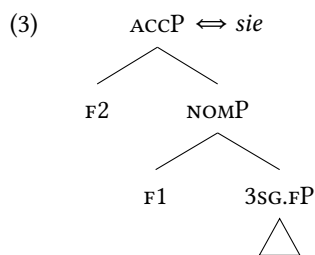
The lexical entry corresponds to the pronominal features, F1 and F2 and the phonological form *sie*.

Consider the syntactic structure of the accusative pronoun in German in (4).

(4)

```
             AccP
           ╱    ╲
        F2      NomP
               ╱    ╲
             F1     3SG.FP
                      △
```

sie
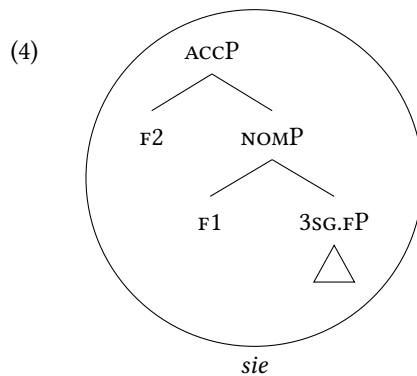
This syntactic structure is contained in the lexical tree in (3), so is spelled out as *sie*. This means that the accusative pronoun in German is spelled out by a single lexical entry.

The situation is different for the third person singular pronoun in Khanty, which I also showed in Chapter 3. In Khanty, there is not a single lexical entry that spells out all features that the German lexical entry in (3) spells out. Instead, the same features are realized by two separate lexical entries, shown in (5).

(5)   a.   NomP ⟺ *luw*

```
           ╱    ╲
         F1     3SGP
                  △
```

b.   AccP ⟺ *e:l*

```
         │
        F2
```
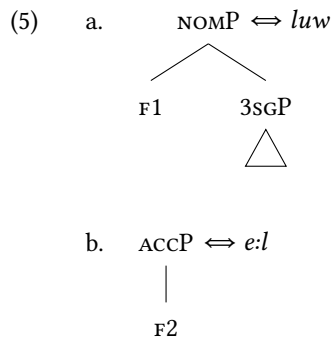
The lexical entry in (5a) corresponds to the pronominal features and the feature F1 and the phonological form *luw*. The lexical entry in (5b) corresponds to the feature F2 and the phonological form *e:l*.

Consider the syntactic structure of the accusaitve pronoun in Khanty in (6).

(6)

```
                    AccP
                  ╱      ╲
              NomP        AccP
             ╱    ╲         │
           F1    3SGP      F2
                  △
                           e:l
          luw
```
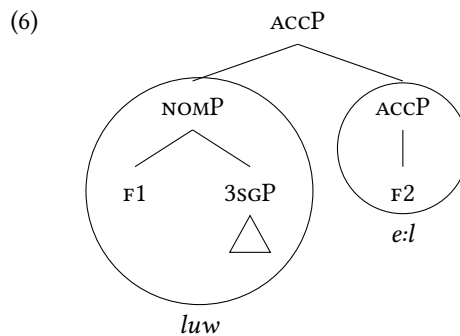
Nanosyntax only allows constituents to be spelled out, which means that in order to spell out the accP, the nomP needs to be moved out of the way first.[5] Now compare the syntactic structures of the German accusative pronoun in (4) and the Khanty one in (6). The feature content is the same (except for the feminine feature, which does not play a role here), but the internal syntax looks different. This change in internal syntax is a direct consequence of the lexical entries that are available within the language.

Exactly this type of difference is what leads to the different language types in headless relatives. Languages contain different lexical entries that spell out the features of the light head and the relative pronoun. The different lexical entries lead to differences in the internal syntax of the light head and the relative pronoun. Differences in the internal syntax of the light head and the relative pronoun lead to differences in whether or not one of them is contained in the other. Whether or not one of them is contained in the other determines whether or not the light head or relative pronoun can be recovered and, therefore, deleted. Whether or not the light head or relative pronoun can be deleted determines whether or not there is a single surface pronoun and, with that, a grammatical headless relative. I summarize chain in (7).

(7)   lexical entries → internal syntax → containment → deletion → surface pronoun

The different language types appear by going through the chain in (7) in the three different situations: (i) when the internal and external case match, (ii) when the internal case is the more complex case, and (iii) when the external case is the more complex case. An overview of these situation and whether or not a surface pronoun, and therefore a grammatical headless relative, results from it is shown in Table 6.1.

In the unrestricted type of language, the lexical entries are such that there is a grammatical headless relative when the cases match, when the internal case is more complex and when the external case is more complex. In the internal-only type of language, the lexical entries are such that there is a grammatical headless relative when the cases match and when the internal case is more complex but not when external case is more complex. In the matching type of language, the lexical entries are such that there is a grammatical headless relative when the cases match but not when the internal case is more complex or when the external case is more complex.

In sum, I assume that headless relative clauses are derived from light-headed relatives. Light-headed relatives contain a light head and a relative pronoun. In a headless relative either the light head or the relative pronoun is deleted. The nec-

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[5]The movement operation is part of the spellout algorithm in Nanosyntax, which is the same for all languages. I elaborate on this spellout algorithm in Chapters 7 and 8.

Table 6.1: Overview situations

language type	situation	surface pronoun
unrestricted	$\kappa_{INT} = \kappa_{EXT}$	✓
	$\kappa_{INT} > \kappa_{EXT}$	✓
	$\kappa_{INT} < \kappa_{EXT}$	✓
internal-only	$\kappa_{INT} = \kappa_{EXT}$	✓
	$\kappa_{INT} > \kappa_{EXT}$	✓
	$\kappa_{INT} < \kappa_{EXT}$	*
matching	$\kappa_{INT} = \kappa_{EXT}$	✓
	$\kappa_{INT} > \kappa_{EXT}$	*
	$\kappa_{INT} < \kappa_{EXT}$	*

essary requirement for deletion is that the deleted element (either the light head or relative pronoun) is a constituent that is structurally contained within the other element. Light heads and relative pronouns contain the same features, and the relative pronoun contains at least one feature more. The difference between language types ultimately arises from languages having different lexical entries that spell out the features of the light head and the relative pronoun.

6.2 The three language types

In Chapter 4 I discussed three different language types. In this section I broadly sketch the kind of lexical entries these language types have that ultimately lead to them being of these types. For each language type I start with describing the kind of lexical entries they have, and I show the internal syntax that the light head and the relative pronoun have because of that.[6] For each language type, I compare the constituents of the light head and the relative pronoun in the three different situations: (i) when the cases on the light head and the relative pronoun match, (ii) when the relative pronoun bears the more complex case, and (iii) when the light head bears the more complex case. I show that the internal syntax I assume for the light head and the relative pronoun leads to the different patterns observed in the given language types.

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[6]In this chapter I do not motivate the lexical entries I propose. In chapters 7 to 9 I take a concrete example for each language type and I show evidence for the lexical entries I am proposing.

6.2.1 The internal-only type

I start with the internal-only type of language. I suggest that the light head and the relative pronoun in this type of language have the internal syntax as shown in Figure 6.3.
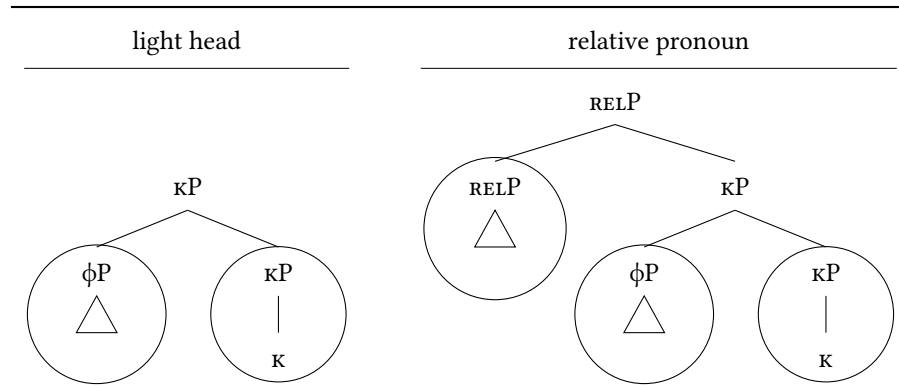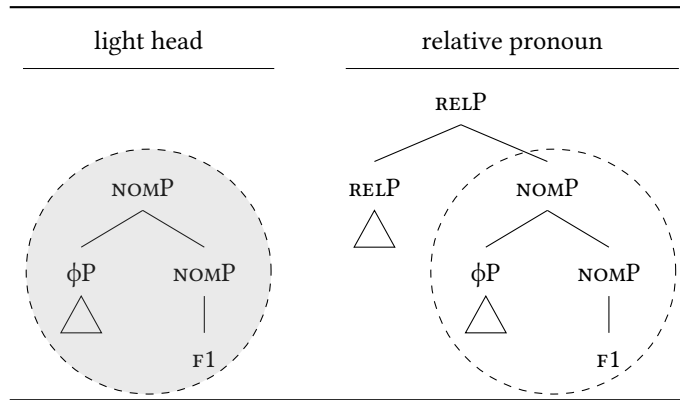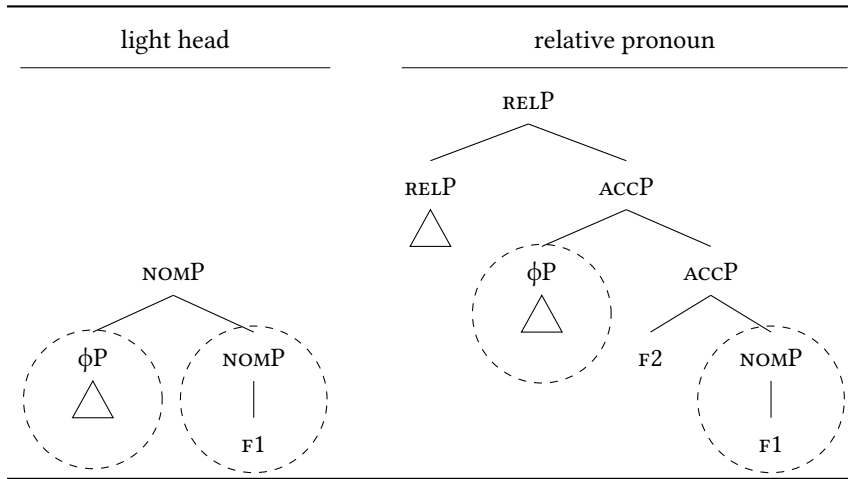
light head	relative pronoun
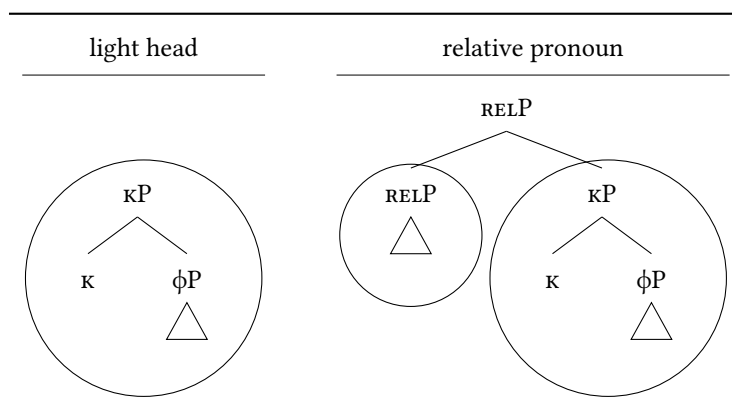
Figure 6.3: LH and RP in the internal-only type

This is a consequence of the following lexical entries. The light head is spelled out by a single lexical entry, indicated by the circle around the κP. This lexical entry is a portmanteau of a phi and case features. The relative pronoun is spelled out by two lexical entries, indicated by the circles around the κP and the RELP. The phi and case features of the relative pronoun are spelled out by the same portmanteau as the light head is. The RELP is spelled out by a separate lexical entry. Chapter 7 motivates this analysis for the internal-only type of language Modern German.

In Figure 6.4, I give an example in which the relative pronoun and the light head bear the same case.

light head	relative pronoun
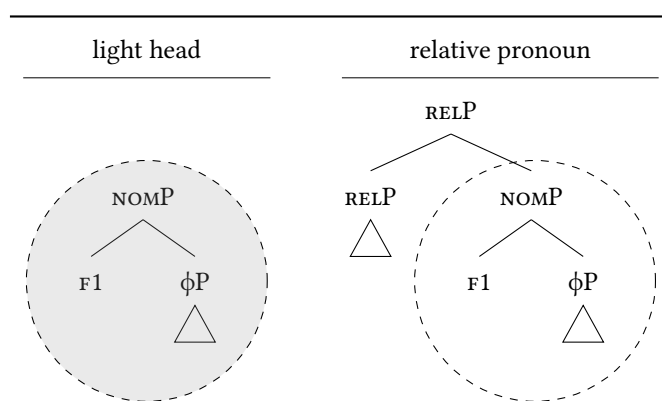
Figure 6.4: EXT_NOM vs. INT_NOM in the internal-only type

I draw a dashed circle around each constituent that is structurally a constituent

in both the light head and the relative pronoun. The light head (the NOMP) is a constituent that is structurally contained within the relative pronoun (the RELP), so the light head can be deleted. I illustrate this by marking the content of the dashed circles for the light head gray. As the light head is deleted, the headless relative surfaces with the relative pronoun that bears the internal case.

In Figure 6.5, I give an example in which the relative pronoun bears a more complex case than the light head.
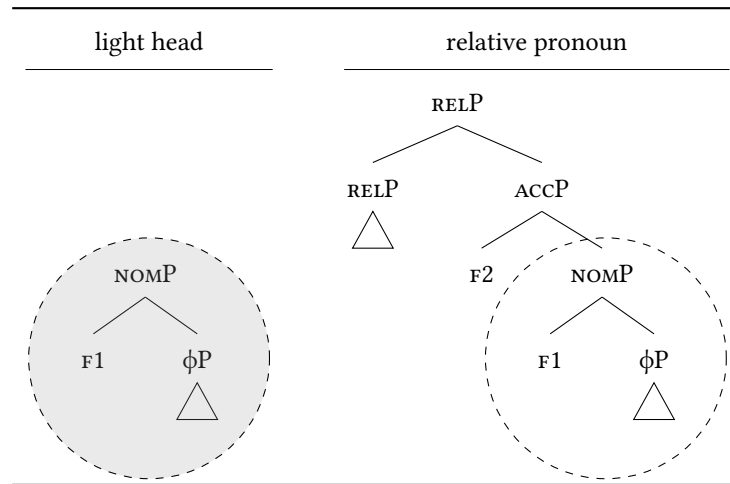
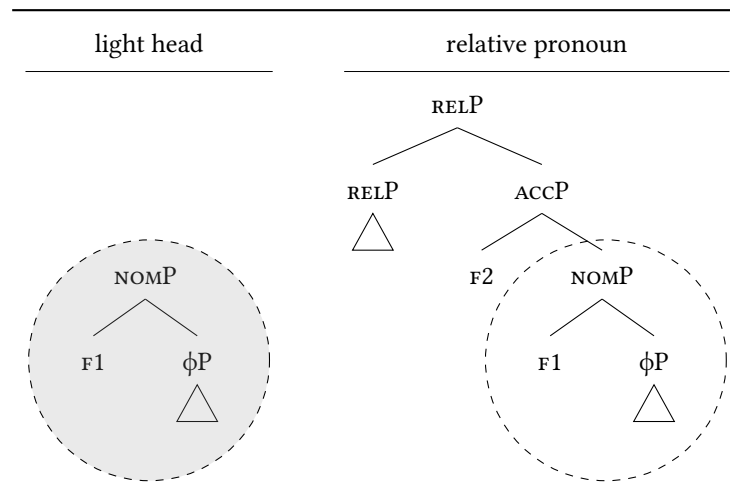Figure 6.5: EXT_{NOM} vs. INT_{ACC} in the internal-only type

I draw a dashed circle around each constituent that is structurally a constituent in both the light head and the relative pronoun. The light head (the NOMP) still is a constituent that is structurally contained within the relative pronoun (the RELP), so the light head can be deleted. I illustrate this by marking the content of the dashed circles for the light head gray. As the light head is deleted, the headless relative surfaces with the relative pronoun that bears the internal case.

In Figure 6.6, I give an example in which the light head bears a more complex case than the relative pronoun.

I draw a dashed circle around each constituent that is structurally a constituent in both the light head and the relative pronoun. Different from the examples in Figure 6.4 and 6.6, the light head does not form a constituent within the relative pronoun. The NOMP of the light head is a constituent that is structurally contained within the relative pronoun, but the relative pronoun does not contain the feature F2 that forms an ACCP. The NOMP of the relative pronoun is a constituent that is structurally contained within the relative pronoun, but the light head does not contain the feature REL that forms a RELP. As a result, none of the elements can be absent. I illustrate this by leaving the content of both dashed circles unfilled. As none of the items is deleted, there is no grammatical headless relative possible.

light head   relative pronoun
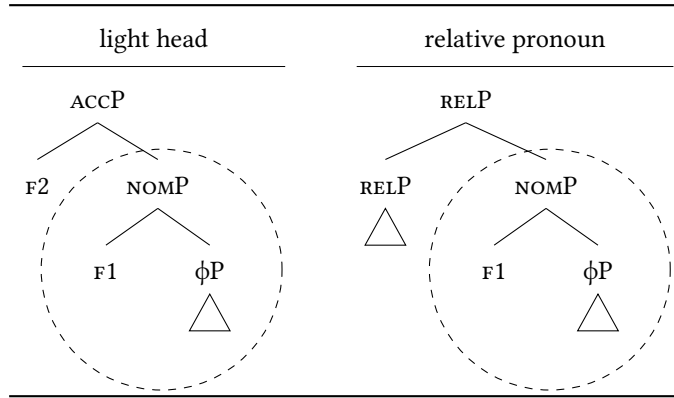
Figure 6.6: EXT_{ACC} vs. INT_{NOM} in the internal-only type

The comparisons between the light head and the relative pronoun in different cases correctly derive the observed patterns in the internal-only type of language. An overview of the patterns is shown in Table 6.2.

Table 6.2: Grammaticality in the internal-only type

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$\kappa_{\text{INT}} = \kappa_{\text{EXT}}$	$[\kappa_1[\phi]]$	$[\text{REL}], [\kappa_1[\phi]]$	structure	LH	RP_{INT}
$\kappa_{\text{INT}} > \kappa_{\text{EXT}}$	$[\kappa_1[\phi]]$	$[\text{REL}], [\kappa_2[\kappa_1[\phi]]]$	structure	LH	RP_{INT}
$\kappa_{\text{INT}} < \kappa_{\text{EXT}}$	$[\kappa_2[\kappa_1[\phi]]]$	$[\text{REL}], [\kappa_1[\phi]]$	no	none	*

Languages of the internal-only type have a lexical entry that spells out phi and case features and a lexical entry that spells out the feature REL. Headless relatives in this type of language are grammatical when the internal and the external case match and when the internal case is more complex than the external case. In these situations, the light head is a constituent that is structurally contained within the relative pronoun, the light head is deleted, and the relative pronoun is the surface pronoun. Headless relatives are ungrammatical when the external case is more complex than the internal case, because then the light head no longer is a constituent that is structurally contained within the relative pronoun, and none of the elements is deleted.

6.2.2 The matching type

I continue with the matching type of language. I suggest that the light head and the relative pronoun in this type of language have the internal syntax as shown in Figure

6.7.

| light head | relative pronoun |

Figure 6.7: LH and RP in the matching type

This is a consequence of the following lexical entries. The light head is spelled out by two lexical entries: one that spells out the φP and one that spells out the κP which does not contain the φP. I indicate this by circling the φP and the κP. Notice that the φP has moved over the κP, which is a direct consequence of the available lexical entries. Remember that Nanosyntax only allows constituents to be spelled out. κP can only be spelled out if the φP is moved out of the way. This is the crucial difference between the internal-only type of language and the matching type of language: the former has a single lexical entry that spells out both phi and case features and the latter has two separate ones. Exactly this ultimately leads to two different languages types. The relative pronoun in the matching type of language is spelled out by three lexical entries: the φP and the κP that are also part of the light head, and in addition the RELP. I indicate this by circling the RELP, the φP and the κP. Chapter 7 motivates this analysis for the matching type of language Polish.

In Figure 6.8, I give an example in which the light head and the relative pronoun bear the same case.

I draw a dashed circle around each constituent that is structurally a constituent in both the light head and the relative pronoun. In this instance it is no problem that the φP has moved over the NOMP. The light head (the NOMP) still is a constituent that is structurally contained within the relative pronoun (the RELP), so the light head can be deleted. I illustrate this by marking the content of the dashed circles for the light head gray. As the light head is deleted, the headless relative surfaces with the relative pronoun that bears the internal case.

In Figure 6.9, I give an example in which the relative pronoun bears a more complex case than the light head.

I draw a dashed circle around each constituent that is structurally a constituent in both the light head and the relative pronoun. The light head (the NOMP) no longer

Figure 6.8: EXT_{NOM} vs. INT_{NOM} in the matching type

Figure 6.9: EXT_{NOM} vs. INT_{ACC} in the matching type

is a constituent that is structurally contained within the relative pronoun (the RELP). Therefore, the light head cannot be deleted, which I illustrate by leaving the content of both dashed circles unfilled. As none of the items is deleted, there is no grammatical headless relative possible. Figure 6.9 shows that in this instance it is a problem the φP has moved over the NOMP or ACCP.

Something else the example shows is the necessity to formulate the proposal in terms of constituent containment instead of feature containment. To illustrate the difference, I repeat the example from the internal-only type in which the relative pronoun could delete the light head in Figure 6.10 from Figure 6.5.

In Figure 6.10, two different types of containment hold: feature containment and structural constituent containment. With feature containment, each feature of the light head (i.e. features contained in φP and F1) is also a feature within the relative pronoun. Therefore, the relative pronoun contains the light head. With structural

Figure 6.10: EXT_NOM vs. INT_ACC in the internal-only type (repeated)

constituent containment, the NOMP is a constituent that is structurally contained within the RELP. Therefore, the relative pronoun contains contains the light head.

Consider Figure 6.9 again. Here feature containment holds, but structural constituent containment does not. The light head and the relative pronoun contain exactly the same features for the light head and the relative pronoun as in Figure 6.10, so also here each feature of the light head (i.e. features contained in ϕP and F1) is also a feature within the relative pronoun. However, the features form a different syntactic structure, in such a way that the light head no longer forms a single constituent within the relative pronoun.

In sum, structural constituent containment is a stronger requirement than feature containment. Only this stronger requirement is able to distinguish the internal-only type of language from the matching type of language. Therefore, this account crucially relies on structural constituent containment being the containment requirement that needs to be fulfilled.

Structural constituent containment is not an ad hoc requirement for deletion of a light head or relative pronoun. It is also what seems to be crucial in NP ellipsis in general. **cinqueforthcoming** argues that nominal modifiers can only be absent if they form a constituent with the NP. If they do not, they can not be deleted while still being interpreted, meaning that ellipsis is ungrammatical. In what follows, I present his argument.

In (8), I give an example of a conjunction with two noun phrases from Dutch. The first conjunct consists of a demonstrative, an adjective and a noun, and the second one of only a demonstrative.

(8)   deze witte huizen en   die
       these white houses and those
       'these white houses and those white houses'   (Dutch)

In Figure 6.11, I schematically show the first and second conjunct of (8).
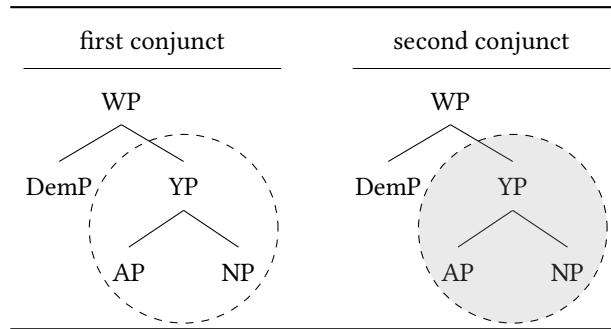
Figure 6.11: Nominal ellipsis in Dutch

The YP in the second conjunct is the constituent that is deleted. I draw a dashed circle around it, and I mark the content gray. This YP contains the adjective and the noun. The interpretation of the YP in the second conjunct can be recovered, because the YP in the first conjunct serves as the antecedent. What is crucial here is that the deleted material forms a single constituent, and that is why it can be recovered.

The situation is different in Kipsigis, a Nilotic Kalenjin language spoken in Kenya. In (9), I give an example of a conjunction of two noun phrases in Kipsigis. The first conjunct consists of a noun, a demonstrative and an adjective, and the second one only of a demonstrative.

(9)   kaarii-chuun leel-ach ak   chu
       houses-those white-PL and these
       'those white houses and these houses'
       not: 'those white houses and these white houses'
                                    (Kipsigis, **cinqueforthcoming**: 24)

The order of the noun, the demonstrative and the adjective indicates that the NP must have moved (probably cyclically via YP) to the specifier of WP. I show this in (10).

(10)

```
                          WP
              ┌───────────┴───────────┐
             NP                       WP
              │               ┌────────┴────────┐
      kaarii 'houses'       DemP               YP
                              │          ┌──────┴──────┐
                      chuun 'those'     N̶P̶           YP
                                         │        ┌────┴────┐
                                       k̶a̶a̶r̶i̶i̶    AP       N̶P̶
                                                  │         │
                                            leel 'white'  k̶a̶a̶r̶i̶i̶
```
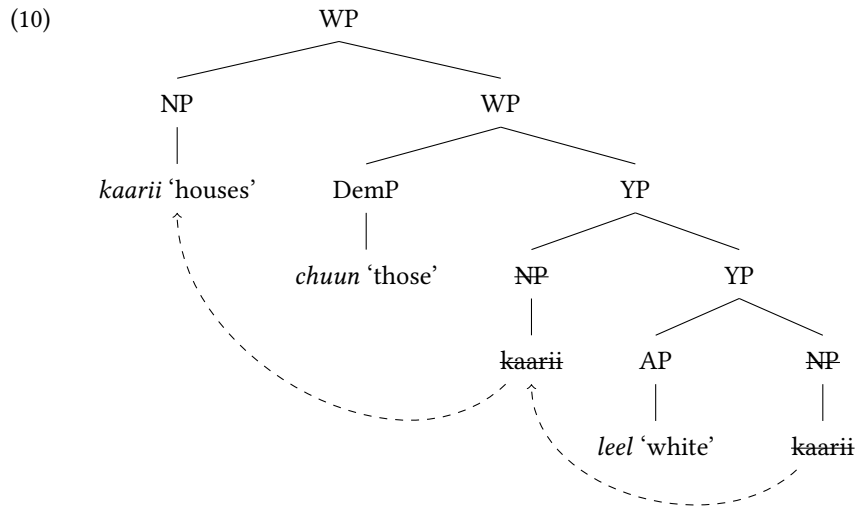
In Figure 6.12, I schematically show the first and second conjunct of (9).
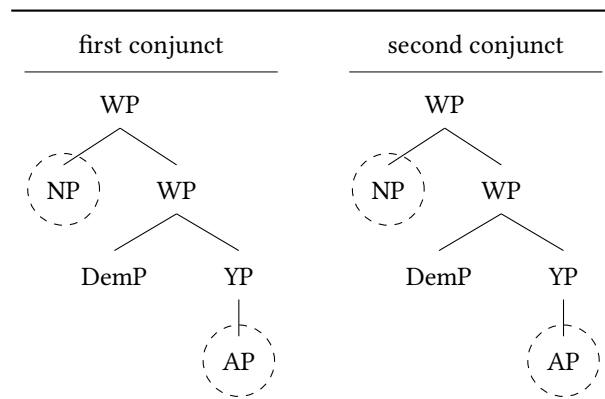
Figure 6.12: Nominal ellipsis in Kipsigis

Different from the Dutch example, the adjective and the noun that are deleted in the second conjunct of (9) do not form a constituent. I draw a dashed circle around the deleted elements and their antecedents in Figure 6.12. Since the adjective and the noun in Figure 6.12 do not form a single constituent together, they cannot be interpreted in the second conjunct of (9). Instead, only the noun can be recovered.

This observation regarding NP ellipsis provides independent support for my assumption that structural constituent containment is the crucial requirement for deletion of the light head or the relative pronoun in headless relatives.

Coming back to the matching type of language, I do not give an example in which the light head bears a more complex case than the relative pronoun. The reasoning here is the same as for the internal-only type: both the light head and the relative pronoun contain a feature that the other element does not contain (F2 or REL). Since

the weaker requirement of feature containment is not met, the stronger requirement of structural constituent containment cannot be met either. As none of the elements contains the other one, none of them is deleted, and there is no grammatical headless relative possible.

The comparisons between the light head and the relative pronoun in different cases correctly derive the observed patterns in the matching type of language. An overview of the patterns is shown in Table 6.3.

Table 6.3: Grammaticality in the matching type

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$\kappa_{INT} = \kappa_{EXT}$	$[\kappa_1], [\phi]$	$[REL], [\kappa_1], [\phi]$	structure	LH	RP_{INT}
$\kappa_{INT} > \kappa_{EXT}$	$[\kappa_1], [\phi]$	$[REL], [\kappa_2[\kappa_1]], [\phi]$	no	none	*
$\kappa_{INT} < \kappa_{EXT}$	$[\kappa_2[\kappa_1]], [\phi]$	$[REL], [\kappa_1], [\phi]$	no	none	*

Languages of the matching type have a lexical entry that spells out phi features, a lexical entry that spells out case features and a lexical entry that spells out the feature REL. Headless relatives in this type of language are only grammatical when the internal and the external case match. In this situation, the light head is a constituent that is structurally contained within the relative pronoun, the light head is deleted, and the relative pronoun is the surface pronoun. When one of the cases is more complex than the other one, there is no longer a grammatical outcome possible. This follows from the fact that in the matching type of language ϕP and κP are both spelled out by their own lexical entry, which means that they both form separate constituents. As a result, the light head no longer is a constituent that is structurally contained within the relative pronoun, and none of the elements is deleted.

6.2.3 The unrestricted type

I end with the unrestricted type of language. This type of language has two possible light heads, which are part of the derivation under different circumstances. I suggest that the first possible light head and the relative pronoun in this type of language have the internal syntax as shown Figure 6.13.

This is a consequence of the following lexical entries, which are exactly the same as they are in the internal-only type of language. The light head is spelled out by a single lexical entry, indicated by the circle around the κP. This lexical entry is a portmanteau of a phi and case features. The relative pronoun is spelled out by two lexical entries, indicated by the circles around the κP and the RELP. The phi and case features of the relative pronoun are spelled out by the same portmanteau as the light
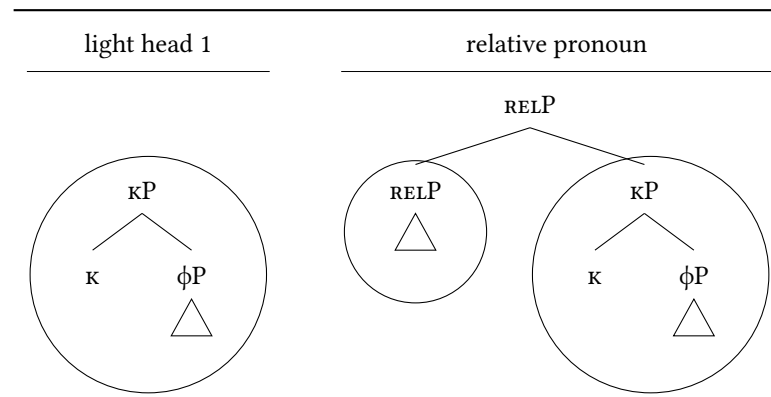
Figure 6.13: LH-1 and RP in the unrestricted type

head is. The RELP is spelled out by a separate lexical entry. Chapter 9 motivates this analysis for the unrestricted type of language Old High German.

Because the internal syntax of the light head and the relative pronoun is the same as in the internal-only type of language, the outcomes of the comparison between them in different cases are also the same as in the internal-only type of language. This means that when the internal case and the external case match or when the internal case is more complex than the external case, the light head is a constituent that is structurally contained within the relative pronoun, and the light head is deleted, as shown in Figure 6.4 and Figure 6.5. This is the pattern that is observed in the unrestricted type of language.

Crucially, the unrestricted type of language differs from the internal-only type of language when the external case is more complex than the internal case. The structures given in Figure 6.13 cannot lead to a grammatical headless relative, shown in Figure 6.6. Therefore, I propose that in this situation the light head needs to be a different one.

Before I give the second possible light head in the unrestricted type of language, I zoom in on the situation in which the external case is more complex. At first sight, it is unexpected that the light head bearing the external case surfaces to begin with. Recall that the feature content of light head is that of the relative pronoun minus the feature REL. So far, I proposed that the light head can be deleted when all of its features structurally form a constituent within the relative pronoun. This is impossible the other way around: all features of the relative pronoun can never structurally form a constituent in the light head, because the relative pronoun contains the feature REL that the light head does not. It seems that there is one case that defies this rule: syncretism. In what follows I show a situation similar to the missing REL feature: a syncretism between nominative and accusative case in Modern German. This situation leads me to propose a second type of constituent containment: formal

constituent containment.

Consider the example in (11), in which the internal nominative case competes against the external accusative case. The relative clause is marked in bold. The internal case is nominative, as the predicate *gefällen* 'to please' takes nominative subjects. The external case is accusative, as the predicate *erzählen* 'to tell' takes accusative objects. The relative pronoun *was* 'REL.INAN.NOM/ACC' is syncretic between the nominative and the accusative.

(11)   Ich   erzähle   **was**   **immer mir**
       1SG.NOM tell.PRES.1SG[Acc] RP.INAN.NOM/ACC ever   1SG.DAT

       gefällt.
       pleases.PRES.3SG[NOM]
       'I tell whatever pleases me.'

                                           (Modern German, adapted from **vogel2001**: 344)

Remember from Chapter 4 that Modern German is an internal-only type of language. This means that it allows the internal case to surface when it wins the case competition, but it does not allow the external case to do so. Solely looking at the cases in the example, it is expected that the example is ungrammatical: the internal nominative case cannot win over the external accusative case, and the external case is not allowed to surface. However, the example in (11) is grammatical, because there is a syncretism between the nominative and the accusative in the inanimate gender.

This leads me to distinguish a second type of constituent containment: formal constituent containment. This type of containment holds when there is a constituent that is formally (i.e. with its phonological form) contained within a given element. Technically, it works as follows. The fact that there is a syncretism between the nominative and the accusative means that there is a lexical entry for the ACCP which contains the feature F2 and the NOMP, but not a more specific one that spells out only the NOMP. In (12), I give such a lexical entry, which spells out as *s*.

(12)   ACCP ⟺ *s*
            ╱   ╲
          F2   NOMP
                 ╱   ╲
               F1   ϕP
                      △

In Figure 6.14, I give the example in which the light head bears a more complex case than the relative pronoun and there is a syncretism between the nominative and the

accusative case.
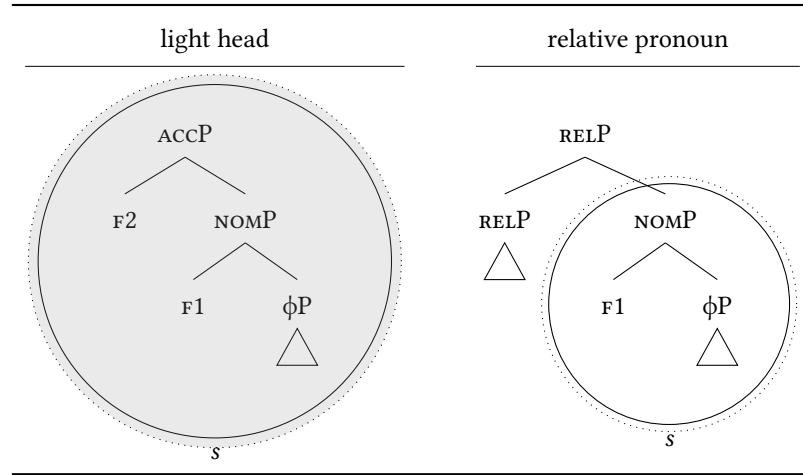
Figure 6.14: EXT_ACC vs. INT_NOM with case syncretism

The ACCP in the light head corresponds to *s*, illustrated by the circle around the ACCP and the *s* below it. The NOMP in the relative pronoun corresponds to *s* too, illustrated in the same way. I draw a dotted circle around each constituent that is formally a constituent in both the light head and the relative pronoun. The light head (the ACCP realized by *s*) is a constituent that is formally contained within the relative pronoun (the NOMP realized by *s*), so the light head is deleted. I illustrate this by marking the content of the dotted circle for the light head gray. As the light head is deleted, the headless relative surfaces with the relative pronoun that bears the internal case.

In sum, a more complex case can be deleted when it is syncretic with the less complex case, even though the more complex case contains a case feature more. If that is the case, then a relative pronoun can also be deleted when it is syncretic with the light head, even though the relative pronoun contains at least one feature more. Consider such a situation in 6.15.[7]

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[7]Another option to get a relative pronoun deleted is to let the relative features form a separate constituent which is not deleted.

(i)
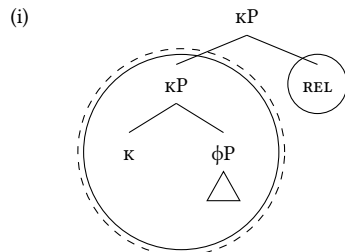
In this chapter and in Chapter 9 (in which I work out the proposal for Old High German) I only discuss
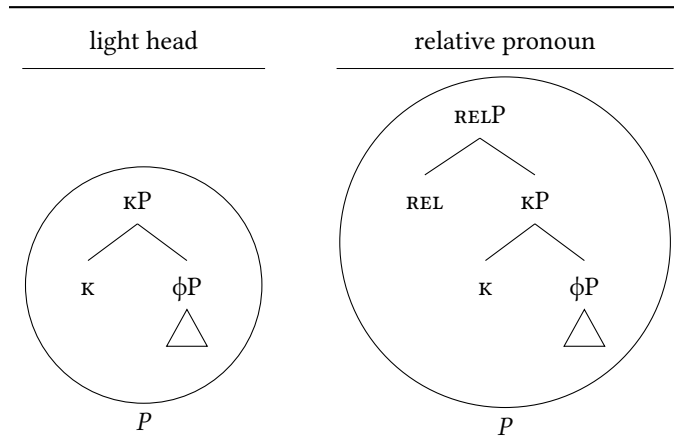
Figure 6.15: A syncretic light head and relative pronoun

The light head corresponds to *P*, illustrated by the circle around the κP and the *P* below it. The relative pronoun corresponds to *P* too, illustrated by the circle around the RELP and the *P*. The relative pronoun (the RELP realized by *P*) is a constituent that is formally contained within the light head (the κP realized by *P*), so the relative pronoun can be deleted.

Although in this situation the relative pronoun can be deleted, this does not describe the situation in Old High German, the language I discuss in Chapter 9. In Old High German, the second possible light head contains an additional feature, which I refer to as X. This is not just a stipulation, but is a reason to think that a second possible light head needs to have a slightly different feature content. This reason has to do with spellout. If two forms contain exactly the same features, it is impossible that they lead to two different syntactic structures. However, this is exactly what I showed in Figure 6.13 and Figure 6.15: in the former the feature REL gets its own spellout while in the latter REL is spelled out together with the κP. These two structures can never be part of the same language, meaning that Figure 6.15 cannot be part of the unrestricted type of language. A possible solution is that the light head has a different feature content, which I argue is the case in Old High German.[8,9] I leave it open for future research to find out whether a language like the one described in Figure 6.15 exists or not.

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the situation in which the relative pronoun as a whole is a constituent that is formally contained within the light head, and the relative pronoun is deleted.

[8]There is a second possible solution to solve the problem, which is having two different relative pronouns: in one the feature REL actually corresponds to more than one feature or a different feature.

[9]There is a second reason to believe that the second possible light head needs to have a different feature content. This reason has to do with the larger syntactic structure of headless relatives. I return to this point in Chapter 9.

Now consider the second possible light head and the relative pronoun I suggest for the unrestricted type of language. I show them in Figure 6.16.
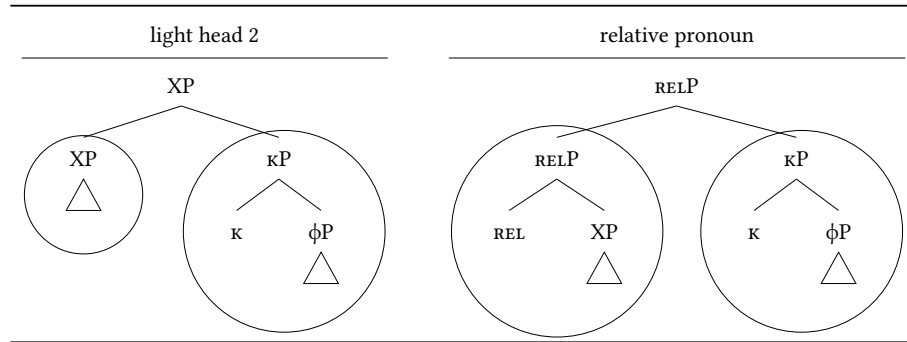
Figure 6.16: ʟʜ-2 and ʀᴘ in the unrestricted type

As discussed, I propose that this light head does not only consist of phi and case features, but that it also contains a feature I here refer to as X. In Chapter 9 I motivate this claim and I discuss the content of this feature.

The internal syntax of the light head and the relative pronoun is the consequence of the following lexical entries. The light head is spelled out by two lexical entries. The feature X is spelled out by its own lexical entry, indicated by the circle around the XP. The rest of the light head is spelled out by the portmanteau of phi and case features. The relative pronoun always consists of all features the light head consists of. Therefore, it consists of phi and case features, the feature ʀᴇʟ and the feature X.[10] The phi and case features are spelled out by the same portmanteau as in the light head. The feature ʀᴇʟ and the feature X are spelled out by a single lexical entry. It is crucial for the analysis that there is a lexical entry for the ʀᴇʟP which contains the feature ʀᴇʟ and the XP, but not a more specific one that spells out the XP on its own. In (13), I give the lexical entry, which spells out as *X*.

(13)   ʀᴇʟP ⟺ *X*
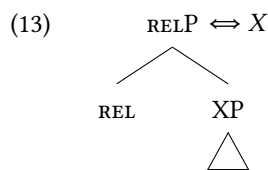
Chapter 9 motivates this analysis for the unrestricted type of language Old High German. It also shows that the two other languages types, discussed as Modern German and Polish, do not have a syncretism as described in (13), so the introduction of a second possible light head would not aid them.

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[10]I actually assume that the relative pronoun that is being compared to the first possible light head also contains the feature X. I left it out of the structures there because it was not relevant for the discussion.

I now return to the problem at hand, being that in the unrestricted type of language a relative pronoun can be deleted. In Figure 6.17, I give an example in which this can happen. It contains the second possible light head and the relative pronoun, which both elements bear the same case.
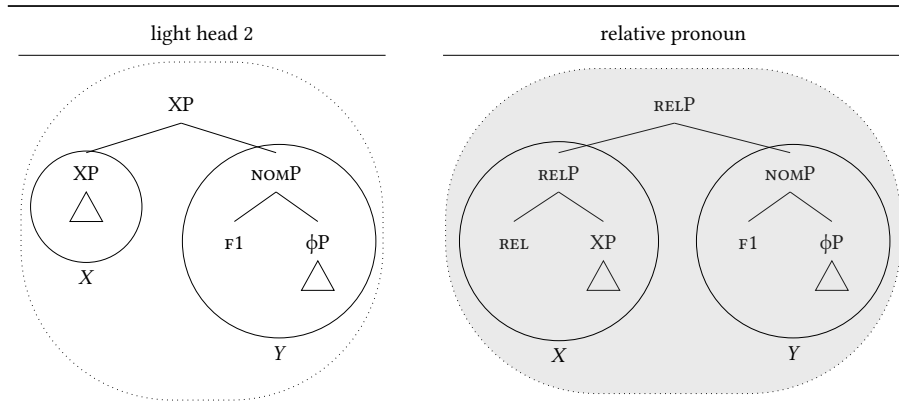
Figure 6.17: EXT_NOM vs. INT_NOM in the unrestricted type

The light head corresponds to *XY*, illustrated by the circle around the XP and the *X* below it and the circle around the NomP and the *Y* below it. The relative pronoun corresponds to *XY* too, illustrated by the circle around the RELP and the *X* below it and the circle around the NomP and the *Y* below it. I draw a dotted circle around each constituent that is formally a constituent in both the light head and the relative pronoun. The relative pronoun (the RELP realized by *XY*) is a constituent that is formally contained within the light head (the XP realized by *XY*), so the relative pronoun is deleted.[11] I illustrate this by marking the content of the dotted circle for the relative pronoun gray.

Finally arriving at the situation in which the external case is more complex than the internal case, I show that the analysis of Figure 6.17 cannot simply be extended to this situation. In Figure 6.18 I give an example of the second possible light head and the relative pronoun, in which the light head bears the more complex case.

The light head corresponds to *XZ*, illustrated by the circle around the XP and the *X* below it and the circle around the AccP and the *Z* below it. The relative pronoun corresponds to *XY*, illustrated by the circle around the RELP and the *X* below it and the circle around the NomP and the *Y* below it. I draw a dotted circle around each constituent that is formally a constituent in both the light head and the relative pronoun. The relative pronoun is no longer a constituent that is formally contained

---

[11]The same holds the other way around: the light head (the XP realized by *XY*) is a constituent that is formally contained within the relative pronoun (the RELP realized by *XY*). Therefore, either the light head or the relative pronoun can be deleted. I delete the relative pronoun here, as I discuss how it is possible for the relative pronoun to be deleted even though it has a feature less than the light head.
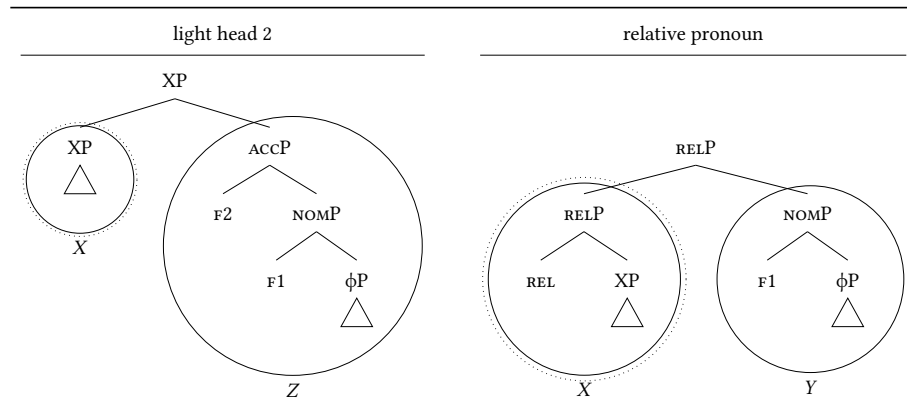
Figure 6.18: EXT_ACC vs. INT_NOM in the unrestricted type

within the light head. Therefore, the relative pronoun cannot be deleted, which I illustrate by leaving the content of both dotted circles unfilled. As none of the items is deleted, it is expected that there is no grammatical headless relative possible.

However, this is not what is observed in the unrestricted type of language. For this type of language I need to make an assumption explicit that concerns the larger syntactic structure of headless relatives. I assume that the relative clause is built first, which includes the relative pronoun that bears its case. At a later stage in the derivation, the light head is built. The last features of the light head that are merged are the case features. This means that there is a stage in the derivation in which the light head bears the nominative case (as in Figure 6.17). At that point, the relative pronoun is deleted. The light head remains as the surface pronoun. Subsequently the feature F2 is merged to the light head to make it a ACCP.

This type of derivation is not possible in the situation in which the internal case is more complex than the external case. In that situation, there is namely no stage in the derivation in which the case of the relative pronoun and the case of the light head match. The relative pronoun is namely built before the light head, and even at the end of the derivation the light head does not have the more complex case that the relative pronoun has. In Chapter 9 I discuss these derivations in more detail.

Crucially, this deletion option is only successful for languages of the unrestricted type but not for languages of the internal-only or the matching type. This is derived from the fact that the unrestricted type of language has a light head available that is syncretic with the relative pronoun. This is not the case in the internal-only and the matching type of language. I elaborate on this in Chapter 9.

Table 6.4 shows the comparisons between the constituents within the first light head and the relative pronoun. The patterns are derived correctly for the situation in which cases match and the situation in which internal case is more complex than the external case.

Table 6.4: Grammaticality in the unrestricted type with LH-1

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$K_{INT} = K_{EXT}$	$[K_1[\phi]]$	$[REL], [K_1[\phi]]$	structure	LH	RP_{INT}
$K_{INT} > K_{EXT}$	$[K_1[\phi]]$	$[REL], [K_2[K_1[\phi]]]$	structure	LH	RP_{INT}
$K_{INT} < K_{EXT}$	$[REL], [K_1[\phi]]$	$[K_2[K_1[\phi]]]$	no	none	*

Focusing on the first possible light head, languages of the unrestricted type have a lexical entry that spells out phi and case features and a lexical entry that spells out the feature REL. Headless relatives in this language are grammatical in all situations: when the internal and the external case match, when the internal case is more complex and when the external case is more complex. The first possible light head only derives the correct result for the first two situations and not for the last one. In the first two situations, the light head is a constituent that is structurally contained within the relative pronoun, the light head is deleted, and the relative pronoun is the surface pronoun. In the last situation, the light head no longer is a constituent that is structurally contained within the relative pronoun, and none of the elements is deleted.

Table 6.5 shows the comparisons between the constituents within the second light head and the relative pronoun. The patterns are derived correctly for the situation in which cases match and the situation in which external case is more complex than the internal case.

Table 6.5: Grammaticality in the unrestricted type with LH-2

situation	lexical entries		containment	deleted	surfacing
	LH-2	RP			
$K_{INT} = K_{EXT}$	/X/, /Y/	/X/, /Y/	form	RP	LH_{EXT}
$K_{INT} > K_{EXT}$	/X/, /Y/	/X/, /Z/	no	none	*
$K_{INT} < K_{EXT}$	/X/, /Y/	/X/, /Y/	form	RP	LH_{EXT}

Focusing on the second possible light head, languages of the unrestricted type have a lexical entry that spells out phi and case features and a lexical entry that spells out the features X and REL and crucially not a lexical entry that only spells out the feature X. Headless relatives in this language are grammatical in all situations: when the internal and the external case match, when the internal case is more complex and when the external case is more complex. The second possible light head only derives

the correct result for the first and the last situation but not for the second one. In the first and last situation, the relative pronoun is (at some point of the derivation) a constituent that is formally contained within the light head, the relative pronoun is deleted, and the light head is the surface pronoun. In the second situation, the relative pronoun is at no point in the derivation a constituent that is formally contained within the light head, and none of the elements is deleted.

6.3   Summary

In summing up this chapter, I return to the metaphor with the committee that I introduced in Chapter 4. I wrote that first case competition takes place, in which a more complex case wins over a less complex case. This case competition can now be reformulated into a more general mechanism, namely constituent containment. A more complex case corresponds to a constituent that contains the constituent of a less complex case.

Subsequently, I noted that there is a committee that can either approve the winning case or not approve it. In Chapter 4 I wrote that the approval happens based on where the winning case comes from: from inside of the relative clause (internal) or from outside of the relative clause (external). I argued in this chapter that headless relatives are derived from light-headed relatives. The light head bears that external case and the relative pronoun bears the internal case. The 'approval' of an internal or external case relies on the same mechanism as case competition, namely constituent containment. If the light head is a constituent that is (structurally) contained within the relative pronoun, the light head can be deleted. Then the light head with its external case is absent, and the relative pronoun with its internal case surfaces. This is what corresponds to the the internal case 'being allowed to surface'. If the relative pronoun is a constituent that is (formally) contained within the light head, the relative pronoun can be deleted. Then the relative pronoun with its internal case is absent, and the light head with its external case surfaces. This is what corresponds to the the external case 'being allowed to surface'.

In other words, the grammaticality of a headless relative depends on constituent containment. The constituents that are compared are those of the light head and the relative pronoun, which both bear their own case. Case is special in that it can differ from sentence to sentence within a language. Therefore, the grammaticality of a sentence can differ within a language depending on the internal and external case. The part of the light head and relative pronoun that does not involve case features is stable within a language. Therefore, whether the internal or external case is 'allowed to surface' does not differ within a language.

The source of variation between languages is the different lexical entries that languages have. The parameters introduced in Chapter 4 and repeated in the intro-

duction of the chapter can be reformulated as in Figure 6.19.
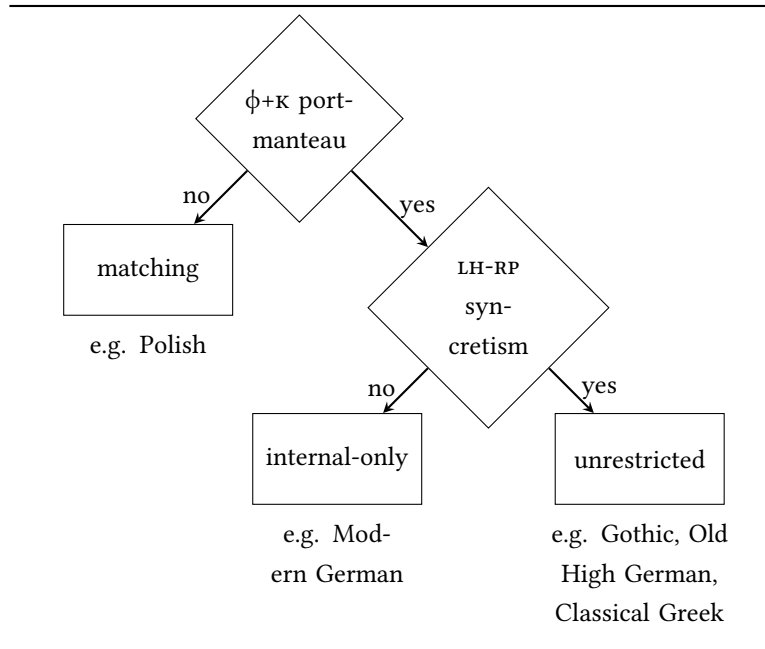
Figure 6.19: Different lexical entries generate three language types

The first parameter distinguishes the matching type of language from the internal-only and the unrestricted type of languages. The internal-only and unrestricted type of languages have a portmanteau that spells out these two features. The matching type of language does not have that, but it has two separate lexical entries for the phi and case features. The second parameter distinguishes the internal-only type of language from the unrestricted type of language. The unrestricted type of language has a light head that is syncretic with the relative pronoun. The internal-only type of language does not have such a syncretism.

This system excludes the external-only type. An external-only type would be a language type in which the relative pronoun can be deleted, but the light head cannot be deleted. In my proposal, an element can be deleted if it is a constituent that is structurally or formally contained within the other element. First consider only structural constituent containment, leaving formal constituent containment aside for now. The relative pronoun contains at least one feature more than the light head: the feature REL. The relative pronoun can not be deleted, because it is not a constituent that is structurally contained within the light head. In other words, a relative pronoun can never be deleted using structural constituent containment. This is also the point that I made before I introduced formal constituent containment in Section 6.2.3.

Now consider also formal constituent containment. Remember that an external-only type of language is a language in which the relative pronoun can be deleted,

but the light head cannot be deleted. In Figure 6.15, I showed a situation in which the light head is syncretic with the relative pronoun, which I repeat here in Figure 6.20.
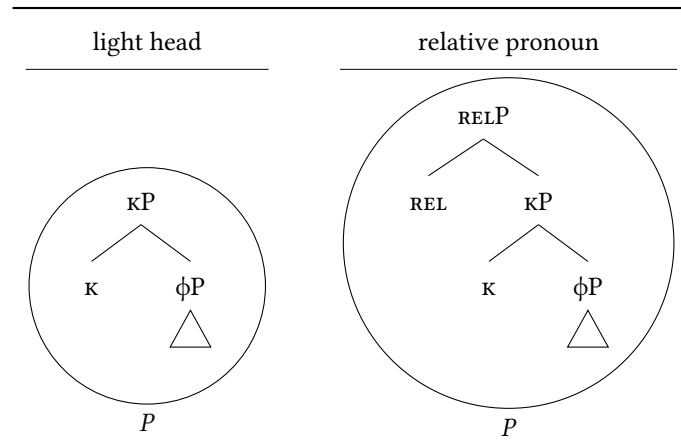
Figure 6.20: A syncretic light head and relative pronoun

In Figure 6.20, the relative pronoun is a constituent that is formally contained within the light head, and the relative pronoun can be deleted. Note here that the internal and external case need to be identical too. Only then the two forms are fully syncretic, and deletion can take place. As I explained at the of Section 6.2.3, this is a situation that appears when the internal and external cases match, but also when the external case is more complex. In a derivation with a more complex external case, there is namely always a stage in which the internal and external case match, since the external case features are the last features to be merged with the light head. When the internal case is more complex, the light head cannot be deleted by formal constituent containment. There is namely no stage in the derivation in which the internal and external case match and the light head and the relative pronoun are fully syncretic. However, consider Figure 6.20 again. Although the light head cannot be deleted by formal constituent containment, it can be deleted by structural constituent containment. The light head is namely still a constituent that is formally contained within the relative pronoun.[12]

In this dissertation I describe different language types in case competition in headless relatives. In my account, the different language types are a result of a comparison of the light head and the relative pronoun in the language. The larger syntactic context in which this takes place should be kept stable across languages. The operation that deletes the light head or the relative pronoun is the same for all language types. In this work, I do not specify on which larger syntactic structure and

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[12]This reasoning holds for monomorphemic light heads and relative pronouns. I discuss the possibility of an external-only type of language with bimorphemic light head and relative pronouns in Chapter 9.

which deletion operation should be used. I Chapter 9, I briefly discuss some general assumptions I am making regarding the larger syntactic structure to explain how an external case can win the case competition, which for the other language types too.

To conclude, in this chapter I introduced the assumptions that headless relatives are derived from light-headed relatives and that relative pronouns contain at least one more feature than light heads. A headless relative is grammatical when either the light head or the relative pronoun is a constituent that is structurally or formally contained within the other element. This set of assumptions derives that only the most complex case can surface and that there is no language of the external-only type.

Chapter 7

Deriving the internal-only type

In Chapter 6, I suggested that languages of the internal-only type have two lexical entries that spell out light heads and relative pronouns in the language: a portmanteau for phi and case features and a separate lexical entry that spells out the feature REL. This means that the internal syntax of light heads and relative pronouns looks as shown in Figure 7.1.
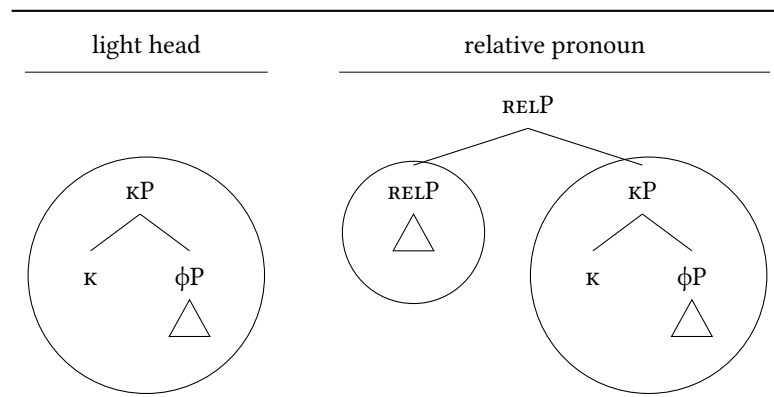
Figure 7.1: ELH and RP in the internal-only type

These lexical entries lead to the grammaticality pattern shown in Table 7.1.

Consider the first situation in which the internal and the external case match. The light head consists of a phi and case feature portmanteau. The relative pronoun consists of the same morpheme plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is a constituent that is structurally contained within the relative pronoun. Therefore, the light head can be deleted, and the relative pronoun surfaces, bearing the internal case.

Consider now the situation in the internal case wins the case competition. The light head consists of a phi and case feature portmanteau. The relative pronoun

Table 7.1: Grammaticality in the internal-only type

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$\kappa_{INT} = \kappa_{EXT}$	$[\kappa_1[\phi]]$	$[REL], [\kappa_1[\phi]]$	structure	LH	RP_{INT}
$\kappa_{INT} > \kappa_{EXT}$	$[\kappa_1[\phi]]$	$[REL], [\kappa_2[\kappa_1[\phi]]]$	structure	LH	RP_{INT}
$\kappa_{INT} < \kappa_{EXT}$	$[\kappa_2[\kappa_1[\phi]]]$	$[REL], [\kappa_1[\phi]]$	no	none	*

consists of a phi and case feature portmanteau that contains at least one more case feature than the light head (κ_2 in Figure 7.1) plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is a constituent that is structurally contained within the relative pronoun. Therefore, the light head can be deleted, and the relative pronoun surfaces, bearing the internal case.

Finally, consider the situation in which the external case wins the case competition. The relative pronoun consists of a phi and case feature portmanteau and an additional morpheme that spells out the feature REL. Compared to the relative pronoun, the light head lacks the morpheme that spells out REL, and it contains at least one more case feature (κ_2 in Figure 7.1). The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is a constituent that is contained within the other element. Therefore, none of the elements can be deleted, and there is no headless relative construction possible.

In Chapter 4, I showed that Modern German is a language of the internal-only type. In this chapter, I show that Modern German light heads and relative pronouns have the type of internal syntax described in Figure 7.1. I give a compact version of the internal syntax of Modern German light heads and relative pronouns in Figure 7.2.

Consider the light head in Figure 7.2. Light heads (i.e. phi and case features) in Modern German are spelled out by a single morpheme, indicated by the circle around the structure. They are spelled out as *n* or *m*, depending on which case they realize. Consider the relative pronoun in Figure 7.2. Relative pronouns in Modern German consist of two morphemes: the constituent that forms the light head (i.e. phi and case features) and the RELP, again indicated by the circles. The constituent that forms the light head has the same spellout as in the light head (*n* or *m*), and the RELP is spelled out as *we*. Throughout this chapter, I discuss the exact feature content of light heads and relative pronouns, I give lexical entries for them, and I show how these lexical entries lead to the internal syntax of light heads and relative pronoun as shown in Figure 7.2.
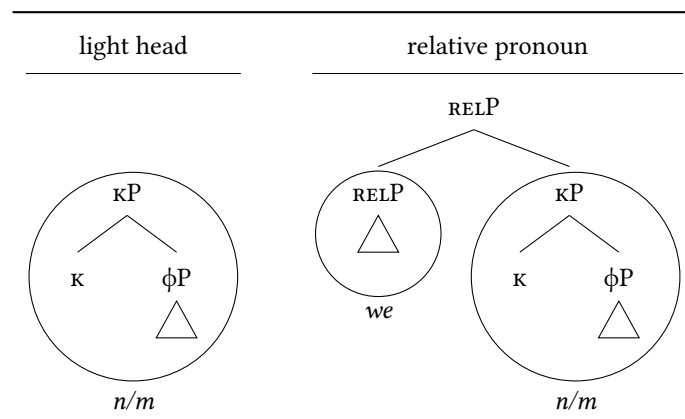
Figure 7.2: LH and RP in Modern German

The chapter is structured as follows. First, I discuss the relative pronoun. I start by decomposing it into the two morphemes I showed in Figure 7.2. Then I show which features each of the morphemes corresponds to. I illustrate how different morphemes are combined into the internal syntax in Figure 7.2. Then I discuss the light head. I argue that Modern German headless relatives are derived from a type of light-headed relative clause that does not surface in the language. I show that the light head corresponds to one of the morphemes of the relative pronoun (the κP in Figure 7.2). Finally, I compare the constituents of the light head and the relative pronoun. I show that the light head can be deleted when the internal case matches the external case or when the internal case is more complex than the external case. When the external case is more complex, I show that none of the elements can be deleted.

7.1 The Modern German relative pronoun

In the introduction of this chapter, I suggested that the internal syntax of relative pronouns in Modern German looks as shown in (1).

(1)
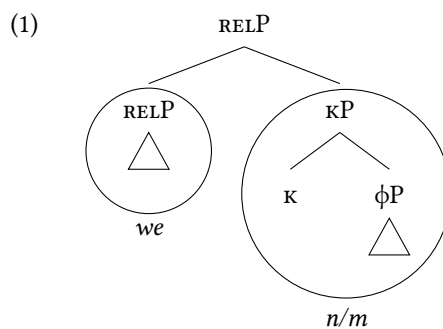
In Chapter 6, I suggested that relative pronouns consist of at least three features: REL, φ and K. In this section, I show that relative pronoun consists of more features than that. Still, the crucial claim I made in Chapter 6 remains unchanged: internal-only languages (of which Modern German is an example) have a portmanteau for the features that correspond to phi and case features and a morpheme that spells out the features the light head does not contain. I show the complete structure that I work towards in this section in (2).[1]
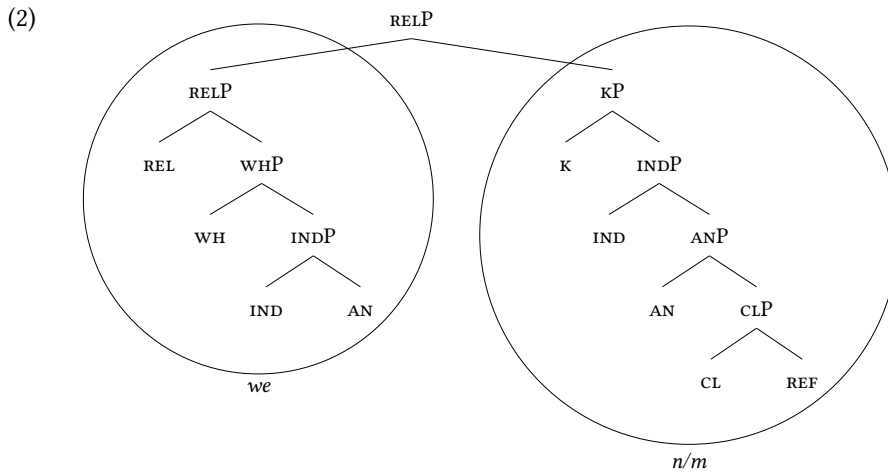
(2)

we   *n/m*

I discuss two relative pronouns: the animate accusative and the animate dative. These are the two forms that I compare the constituents of in Section 7.4. I show them in (3).

(3)   a.   we-n
             'RP.AN.ACC'

       b.   we-m
             'RP.AN.DAT'

I decompose the relative pronouns into two morphemes: the *we* and the final consonant (*n* or *m*). For each morpheme, I discuss which features they spell out, and I give their lexical entries. In the next section, I show how I construct the relative pronouns by combining the separate morphemes.

I start with the final consonants: *n* and *m*. These two morphemes correspond to what I called the phi and case feature portmanteau in Chapter 6 and the introduction to this chapter. I argue that the phi features actually correspond to gender features,

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[1]The KP in this functional sequence is a placeholder for multiple case projections. When the relative pronoun is the nominative, the KP consists of the feature F1, and it forms the NOMP. When the relative pronoun is the accusative, the KP consists of the features F1 and F2, and they form the ACCP. When the relative pronoun is the dative, the KP consists of the features F1, F2 and F3, and they form the DATP.

number features and pronominal features. Adding this all up, I claim that the final consonants correspond to number features, gender features, pronominal features and case features. Consider Table 7.2.

Table 7.2: Modern German relative pronouns (**durrell2011**: 5.3.3)

	AN	INAN
NOM	we-r	wa-s
ACC	we-n	wa-s
DAT	we-m	-

The final consonants change depending on animateness and case.[2] The differing final consonant can be observed in several contexts besides relative pronouns. Table 7.3 gives an overview of the demonstrative *dieser* 'this' in Modern German in two numbers, three genders and three cases.[3]

Table 7.3: Modern German demonstrative *dieser* 'this' (**durrell2011**: Table 5.2)

	M.SG	N.SG	F.SG	PL
NOM	diese-r	diese-s	diese	diese
ACC	diese-n	diese-s	diese	diese
DAT	diese-m	diese-m	diese-r	diese-n

Table 7.3 shows that the final consonant differs depending on gender, number and case. There is no vowel that differs between the different forms. I conclude from this that the consonant realizes features having to do with gender, number and case. In other words, the final consonant is a portmanteau that realizes gender, number and case features.

For number and gender, I adopt the features that are distinguished by **harley2002** for pronouns. The feature CL corresponds to a gender feature, which is inanimate or neuter if it is not combined with any other features. Combining CL with the feature AN gives the animate or masculine gender.[4] The feature IND corresponds to number, which is singular if it is not combined with any other features.

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[2]The vowel also differs between animateness. I return to this point when I discuss the feature content of the *we*.

[3]Notice that the animate forms in Table 7.2 are the masculine forms in Table 7.3 and that the inanimate forms in Table 7.2 are the neuter forms in Table 7.3. This is a pattern that appears more often.

[4]If the features CL and AN are combined with the feature FEM, it becomes the feminine gender.

For case, I adopt the features of **caha2009**, already introduced in Chapter 3. The feature F1 and F2 corresponds to the accusative, and the features F1, F2 and F3 correspond to the dative.

Having discussed the number, gender and case features, only the pronominal features remain. Another context in which the final consonants appear (besides their use as relative pronouns and demonstrative pronouns) is as pronouns on their own. In (4), I give examples of the masculine accusative singular and masculine dative singular.

(4)   a.   Ich wollte   n   gestern   schon   anrufen.
           I   wanted 3SG.M.ACC.WK yesterday already call
           'I already wanted to call him yesterday.'
     b.   Ich helfe m   sein Fahrrad zu reparieren.
           I   help 3SG.M.DAT.WK his   bike   to repare
           'I help him reparing his bike.'

This means that the forms also correspond to pronominal features. I follow **harley2002** who claim that all pronouns contain the feature REF, because they are referential expressions.[5]

I give the lexical entries for *n* and *m* in **??**. The *n* is the accusative animate singular,

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[5]

To be more precise, the final consonants correspond to the weak pronoun in Modern German. **cardinaletti1994** split pronouns in three classes: strong pronouns, weak pronouns and clitics. Following the tests in **cardinaletti1994** that distinguish the types from each other, the pronouns in (4) are neither strong pronouns nor clitics, and therefore, should be classified as weak pronouns.

First, *n* and *m* are not strong pronouns because of how they behave under coordination and under focus. Strong pronouns can be coordinated. *n* and *m* cannot be coordinated, as shown in (i).

(i)   a.   *Ich wollte   Jan und n   gestern   schon   anrufen.
           I   wanted Jan and 3SG.M.ACC.WK yesterday already call
           'I already wanted to call Jan and him yesterday.'
     b.   *Ich helfe Jan und m   sein Fahrrad zu reparieren.
           I   help Jan and 3SG.M.ACC.WK his   bike   to repare
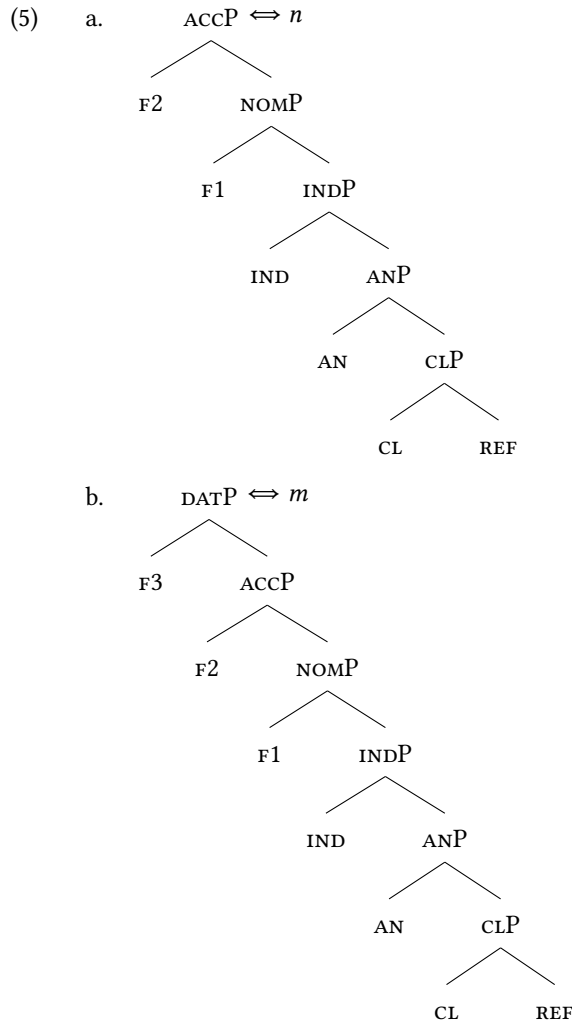   'I help Jan and him repairing his bike.'

Strong pronouns can be focused, whereas *n* and *m* cannot be focused.

Second, the consonants are not clitics because clitics cannot combine with prepositions, but *n* and *m* can, as shown in (ii).

(ii) a.   Ich bin schnell auf n   zu gelaufen.
           I   am fast   on 3SG.M.ACC.WK to walked
           'I walked toward him fast.'
     b.   Ich war   mit   m im   Wald wandern.
           I   have already a gift for   3SG.M.DAT.WK bought
           'I was hiking with him in the woods.'

so it spells out the features REF, CL, AN, IND, F1 and F2. The *m* is the dative animate singular, so it spells out the features that the *n* spells out plus F3.

(5) a.
$$\text{ACCP} \Longleftrightarrow n$$

```
        ACCP ⟺ n
        /    \
      F2     NOMP
             /   \
           F1    INDP
                 /   \
               IND   ANP
                     /  \
                    AN  CLP
                        /  \
                       CL  REF
```

  b.
$$\text{DATP} \Longleftrightarrow m$$

```
        DATP ⟺ m
        /    \
      F3     ACCP
             /    \
           F2     NOMP
                  /   \
                F1    INDP
                      /   \
                    IND   ANP
                          /  \
                         AN  CLP
                             /  \
                            CL  REF
```

Note that the ordering of the features here is not random. I motivate the ordering in Section 7.2.

I continue with the morpheme *we*. This morpheme corresponds to what I called the REL-feature in Chapter 6 and in the introduction to this chapter. I argue that

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Clitics can either follow a dative object or precede it. Strong and weak pronouns can only follow it. *n* and *m* can only follow a dative object.

Since *n* and *m* are not strong pronouns and not clitics, they are weak pronouns. Therefore, I propose that actually two pronominal features are present: REF and Σ. The feature Σ is present because the consonants are weak pronouns (**cardinaletti1994**). I assume that clitics lack the features REF (which corresponds to the LP in **cardinaletti1994**: 61) and the feature Σ. Strong pronouns have, in addition to REF and Σ, another feature (C in terms of **cardinaletti1994**: 61).

this morpheme actually spells out the operator features WH and REL and number and gender features.

Consider Table 7.4 and Table 7.5, repeated from Table 7.2.

Table 7.4: Modern German demonstrative pronouns (**durrell2011**: 5.4.1)

	M	N	F	PL
NOM	de-r	da-s	die	die
ACC	de-n	da-s	die	die
DAT	de-m	de-m	de-r	de-n

Table 7.5: Modern German relative pronouns (**durrell2011**: 5.3.3)

	AN	INAN
NOM	we-r	wa-s
ACC	we-n	wa-s
DAT	we-m	-

The morpheme *we* combines with the same endings as the morpheme *de* does in demonstrative pronouns (or relative pronouns in headed relatives).[6] This identifies the *de* and, more importantly for the discussion here, the *we* as a separate morpheme.[7,8]

---

[6]Note that WH-relative pronouns, unlike the demonstratives, do not have feminine and plural forms, and WH-relative pronouns do not. As far as I know, this holds for all relative pronouns in languages of the internal-only type (cf. also for Finnish, even though it makes a lot of morphological distinctions) and of the matching type. Relative pronouns in languages of the unrestricted type do inflect for feminine and plural, as well as always-external languages. In Chapter 10 I return to this observation in relation to the always-external languages.

[7]It is also possible to analyze *we* as two separate morphemes: *w* and *e*. This further decomposition would not make a difference for the analysis I propose here. What is crucial is that phi and case features correspond to a single morpheme and the other part has its own morpheme or morphemes.

[8]I actually think that *we* also spells out deixis features. In relative pronouns it does not express spatial deixis, but discourse deixis: it establishes a relation with an antecedent. Generally, three types of deixis are distinguished: proximal, medial and distal. I argue that *e* in the relative pronoun corresponds to the medial. Generally speaking, WH-pronouns combine with the medial or the distal. English has morphological evidence for this claim. Demonstratives in English can combine with either the proximal or this medial/distal, as shown in (i).

(i)   a.   this
               DEM.PROX

I start with discussing the operator features WH and REL. WH is a feature that WH-pronouns, such as WH-relative pronouns and interrogatives, share. The feature triggers the construction of a set of alternatives in the sense of **rooth1985**; **rooth1992** (**hachem2015**). This contrasts with the D in Table 7.4, which is responsible for establishing a definite reference. The feature REL is present to establish a relation.

I continue with the last two features that are spelled out by *we*, namely the number feature IND and the gender feature AN. Consider again Table 7.5. In the different genders, not only the final consonants differ, but also the vowel. This suggests that *we* also realizes gender features.[9]

---

b.   that
     DEM.MED/DIST

WH-pronouns combine with the medial/distal and are ungrammatical when combined with the proximal, shown in (ii).

(ii)   a.   *whis
            WH.PROX

       b.   what
            WH.MED/DIST

The use of the medial in WH-pronouns can be understood conceptually if one connects spatial deixis to discourse deixis (**colasanti2019**). The proximal is spatially near the speaker, and it refers to knowledge that the speaker possesses. The medial is spatially near the hearer, and it refers to knowledge that the hearer possesses. The distal is spatially away from the speaker and the hearer, and refers to knowledge that neither of them possess. In WH-pronouns, the speaker is not aware of the knowledge, so the use of the proximal is excluded. Since I do not have explicit evidence for the presence of the distal, I assume that it is the medial that combines with the WH-pronoun.

I adopt the features for deixis distinguished by **lander2018**. The feature DX_1 corresponds to the proximal, the features DX_1 and DX_2 correspond to the medial, and the features DX_1, DX_2 and DX_3 correspond to the distal. The difference between the proximal, the medial and the distal cannot be observed in Modern German, because it is syncretic all of them (**lander2018**: 387), see Table 7.4.

I leave the deixis features out of the discussion and the lexical entries because they are not relevant for the analysis.

[9]An alternative to this analysis is to let *wer* correspond two lexical entries of which the phonological part look as in (i).

(i)   a.   /*w*/ + CV
      b.   /*er*/ + C

Under this analysis, the final consonant has the vowel *e* in its lexical entry (as shown in (ib)), but it does not have a phonological slot for a vowel (i.e. no C). When the lexical entry is present without the lexical entry in (ia), the vowel *e* does not surface, because there is only a slot for a consonant. Only when the lexical entry combines with a lexical entry that does have a slot for a vowel (such as (i)), the vowel *e* gets to surface.
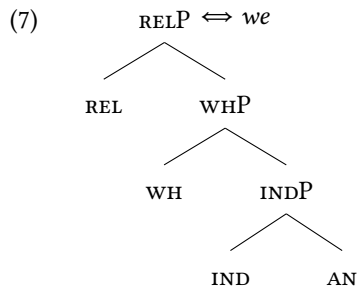
A theoretical advantage of this analysis is that there is no need to specify a *da* and a *de* and a *wa* and a *we* for the different genders in the lexicon. The vowel is part of the lexical entry that belongs to the final consonant and it gets to surface because of the vowel slot that the *w* or *d* introduces.

I end with discussing the feature IND. I derive its presence from the fact that WH-pronouns in Modern German can only show singular verbal agreement and no plural agreement. Consider the examples in (6).

(6)   a.   Wer mach-t das?
               who do-3SG that
               'Who is/are doing that?'
        b.   *Wer mach-en das?
               who do-3PL that
               intended: 'Who are doing that?'

In (6a), the verb *macht* appears in third person singular. It agrees with the WH-pronoun *wer* 'who'. This question can be interpreted as referring to a single referent or multiple, as indicated by the translation. The sentence in (6b), in which the verb *machen* has third person plural agreement, is ungrammatical.

In sum, the morpheme *we* corresponds to the features WH, REL, IND and AN as shown in (7).

(7)

```
            RELP  ⟺  we
           /    \
        REL      WHP
                /    \
              WH     INDP
                    /    \
                 IND      AN
```

At this point, I gave lexical entries for each of the morphemes that the relative pronoun consists of (in (5a), (5b) and (7)), and I showed what the relative pronouns as a whole look like. I repeat them from (2) in (8).

An empirical advantage of this analysis concerns the vowel *e*. The dative forms in all gender and numbers have the *e*, which I assigned to masculine gender. This holds for the genitive forms too, which I have not given here. If *we* is not specified for gender (but maybe still for number) and the vowel belongs to the final consonant, it can be inserted for non-masculines too.

Notice also that the feminine singular and the plurals do not have a weak pronoun and they do not have a marker in forms like *diese* 'this' (see Table 7.3). This could be because their lexical entries also contain only a slot for a consonant, and their phonology only consists of vowels, so the content of the lexical entry only appears when it is combined with a morpheme that introduces a slot for a vowel.

As this matter is not relevant for the core of my analysis, I put it aside for now. For ease of exposition I simply assign a phonological exponent to each lexical entry and I do not make further distinctions in C and V slots.
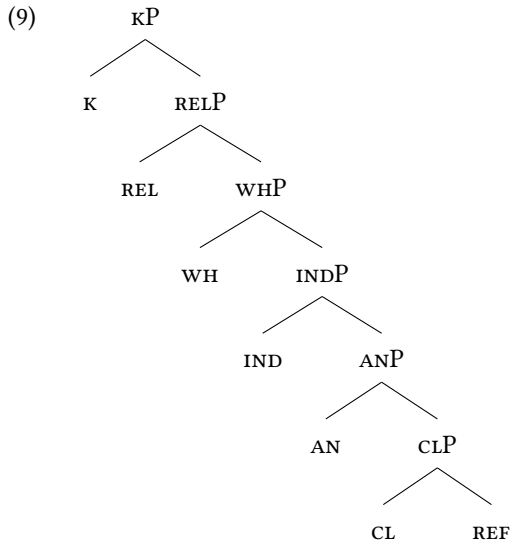
(8)
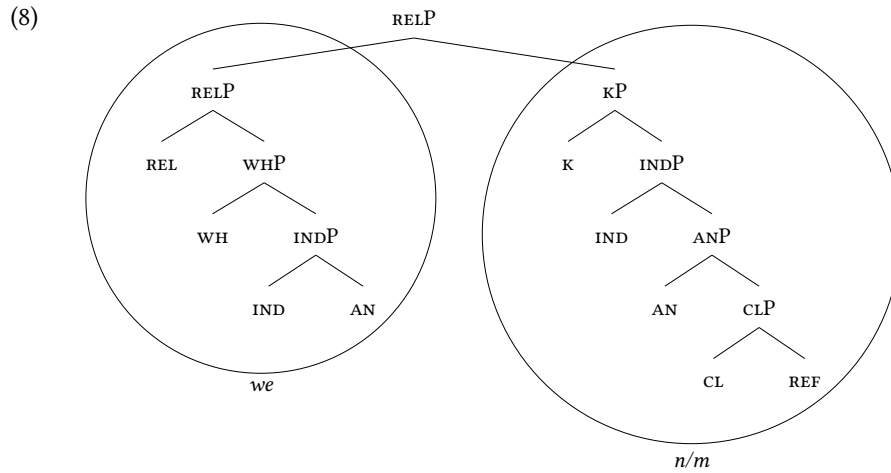
What is still needed, is a theory for combining the morphemes into relative pronouns. This theory should determine which morphemes should be combined with each other in which order. Ultimately, the result needs to be the internal syntax in (8). Ideally, the theory that derives this is not language-specific, but the same for all languages. In what follows I show how this is accomplished in Nanosyntax. Readers who are not interested in the precise mechanics can proceed directly to Section 7.3.

7.2 Combining morphemes in Nanosyntax

The way Nanosyntax combines different morphemes is not by glueing them together directly from the lexicon. Instead, features are merged one by one using two components that drive the derivation. These two components are (1) a functional sequence, in which the features that need to merged are specified including the order they are merged in, and (2) the Spellout Algorithm, which describes the spellout procedure. The lexical entries that are available within a language interact with the derivation in such a way that the morphemes get combined in the right way. Note that the functional sequence and the Spellout Algorithm are stable across languages. The only difference between languages lies in their lexical entries.

(9) shows the functional sequence for relative pronouns. It gives all features it contains and their hierarchical ordering.

(9)   KP
           ╱   ╲
         K   RELP
              ╱   ╲
           REL   WHP
                 ╱   ╲
               WH   INDP
                     ╱   ╲
                  IND   ANP
                        ╱   ╲
                     AN   CLP
                          ╱   ╲
                       CL   REF

Starting from the bottom, these are pronominal feature REF, gender features CL and AN, a number feature IND, operator features WH and REL and case features K.

This order is motivated as follows. Pronominal features (REF) are the nominal part of the structure and therefore the bottom-most feature. Both **picallo2008** and **kramer2016** argue that number (IND) is hierarchically higher than gender (CL and AN). Case (K) is agreed to be higher than number (IND) (**bittner1996**).

For the position of the operator features (WH and REL) consider (10).

(10)   a.   of the children
        b.   of which children

The linear order in (10a) reflects the hierarchical ordering of K > D > N. *Of* is namely an instance of K, THE is an instance of D, and CHILD is an instance of N. (10b) shows that the order is the same if the definite is substituted by the WH-word *which*, suggesting that the operator features are also positioned between K and N. Notice also that the plural morpheme *-ren* appears more to the right, hence lower in the structure, than the operator features. Finally, I assume that the feature REL is hierarchy higher than WH.

Before I derive construct the relative pronouns, I explain how the spellout procedure in Nanosyntax works. Features (Fs) are merged one by one according to the functional sequence, starting from the bottom. After each instance of merge, the constructed phrase must be spelled out, as stated in (11).

(11)   **Cyclic phrasal spellout (caha2020a)**
        Spellout must successfuly apply to the output of every Merge F operation.
        After successful spellout, the derivation may terminate, or proceed to an-

other round of Merge F.

Spellout is successful when the phrase that contains the newly merged feature forms a constituent in a lexical tree that is part of the language's lexicon. When the new feature is merged, it forms a phrase with all features merged so far. If this created phrase cannot be spelled out successfuly (i.e. when it does not form a constituent in a lexical tree), there are two movement operations possible that modify the syntactic structure in such a way that the newly merged feature becomes part of a different syntactic structure. These movements are triggered because spellout needs to succesully apply. Therefore, they are called spellout-driven movements. A Spellout Algorithm specifies which movement operations apply and in which order this happens. I give it in (12).

(12)   **Spellout Algorithm** (as in **caha2020a**, based on **starke2018**)

    a.   Merge F and spell out.

    b.   If (a) fails, move the Spec of the complement and spell out.

    c.   If (b) fails, move the complement of F and spell out.

I informally reformulate what is in (12), starting with the first line in (12a). This says that a feature F is merged, and the newly created phrase FP is attempted to spell out. The next two lines, (12b) and (12c), describe the two types of rescue movements that take place when the spellout in (12a) fails (i.e. when there is no match in the lexicon). In the discussion about Modern German, only the first line leads to successful spellout. In the next chapter in which I discuss Polish derivations, the second and third line also lead to successful spellouts. I give the full algorithm here to give the complete picture from the start.

    If these two movement operations still do not lead to a successful spellout, there are two more derivational options possible: Backtracking and Spec Formation. I return to these options later in this section, when they are relevant in the derivation of Modern German relative pronouns.

    With this background in place, I start constructing the accusative relative pronoun. I repeat the available lexical entries in (13).

(13)   a.   ACCP ⟺ *n*

```
        ACCP
       /    \
     F2     NOMP
           /    \
         F1     INDP
               /    \
             IND    ANP
                   /    \
                  AN    CLP
                       /    \
                      CL    REF
```

b.   DATP ⟺ *m*

```
        DATP
       /    \
     F3     ACCP
           /    \
         F2     NOMP
               /    \
             F1     INDP
                   /    \
                 IND    ANP
                       /    \
                      AN    CLP
                           /    \
                          CL    REF
```

c.   RELP ⟺ *we*

```
        RELP
       /    \
     REL    WHP
           /    \
         WH     INDP
               /    \
             IND    AN
```

Starting from the bottom of the functional sequence, the first two features that are merged at REF and CL, creating a CLP.

(14)

```
        CLP
       /    \
     CL     REF
```

The syntactic structure forms a constituent in the lexical tree in (13a). Therefore, the CLP is spelled out as *n*, as shown in (15).

(15)

CLP

CL   REF

n
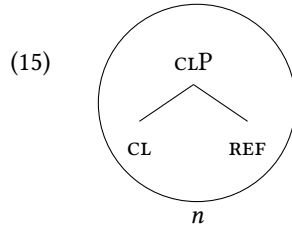
As usual, I mark this by circling the part of the structure that corresponds to the lexical entry, and placing the corresponding phonology below it. This spellout option corresponds to (12a) in the Spellout Algorithm.

There are more features in the functional sequence, so the next feature is merged. This next feature is the feature AN, and a ANP is created. The syntactic structure forms a constituent in the lexical tree in (13a). Therefore, the ANP is spelled out as *n*, shown in (16).

(16)

ANP

AN   CLP

CL   REF

n
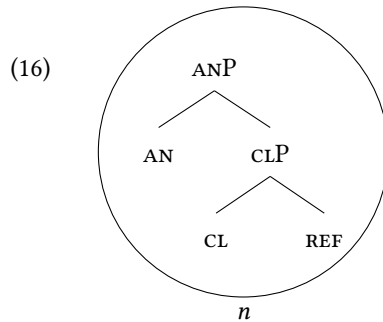
The next feature is the feature IND, and a INDP is created. The syntactic structure forms a constituent in the lexical tree in (13a). Therefore, the INDP is spelled out as *n*, shown in (17).

(17)

INDP

IND   ANP

AN   CLP

CL   REF

n
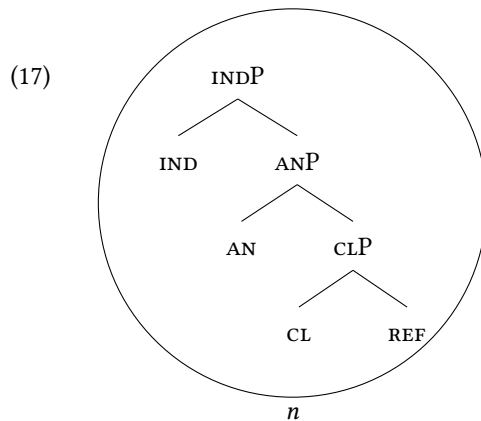
The next feature in the functional sequence is the feature WH. This feature cannot be spelled out as the other ones before, which I show in what follows. The feature WH is merged, and a WHP is created, as shown in (18).

(18)

```
                WHP
              /     \
           WH       INDP
                   /     \
                IND       ANP
                        /     \
                     AN       CLP
                             /    \
                           CL      REF
```
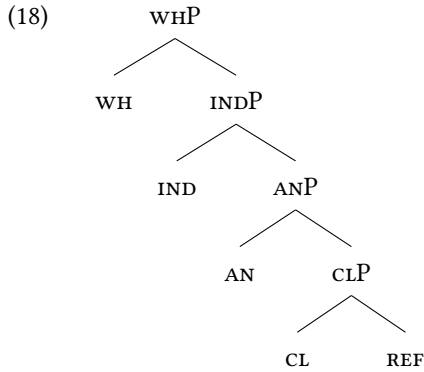
This syntactic structure does not form a constituent in the lexical tree in (13a). It namely contains the feature WH, which (5a) does not contain. There is also no other lexical tree that contains the structure in (18) as a constituent. Therefore, there is no successful spellout for the syntactic structure in the derivational step in which the structure is spelled out as a single phrase ((12a) in the Spellout Algorithm).

The first movement option in the Spellout Algorithm is moving the specifier, as described in (12b). As there is no specifier in this structure, the first movement option is irrelevant. The second movement option in the Spellout Algorithm is moving the complement, as described in (12c). In this case, the complement of WH, the INDP, is moved to the specifier of INDP. As this movement option does not lead to a successful match, I do not show it here. I come back to it in Chapter 8, in which it does lead to a successful match.

As I mentioned earlier, there are two more derivational options possible: Backtracking and Spec Formation. Derivationally, Backtracking comes first. However, since this does not lead to a successful spellout here I first introduce Spec Formation and I return to Backtracking later. Spec Formation is a last resort operation, when the feature cannot be spelled out by any of the preceding options. It is formalized as in (19).

(19)   **Spec Formation (starke2018):**
        If Merge F has failed to spell out (even after Backtracking), try to spawn
        a new derivation providing F and merge that with the current derivation,
        projecting F to the top node.

I reformulate this informally: if none of the preceding spellout options lead to a successful spellout, a last resort operation applies. The feature that has not been spelled out yet, is merged with some other features (to which I shortly come back) in a
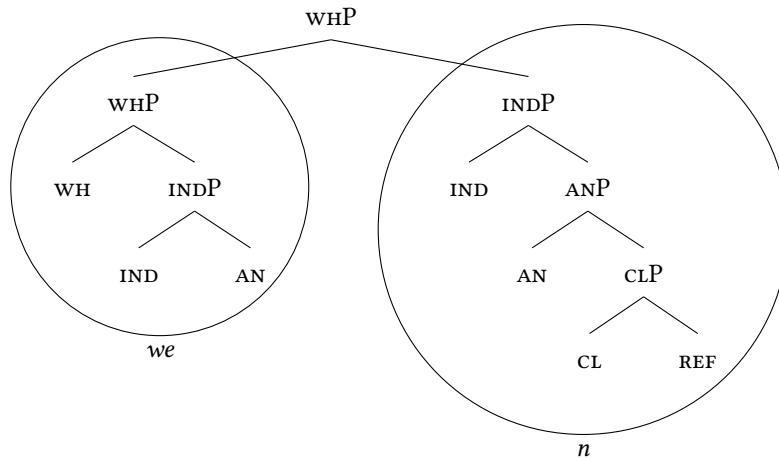
separate workspace. Crucially, the phrase that is created is contained in a lexical tree in the language's lexicon. Finally, the feature is spelled out successfully. The newly created phrase (the spec) is merged as a whole with the already existing structure.

Now I come back to the 'other' features that the feature is merged with to create a phrase that can be spelled out. This cannot be just any feature. What is crucial here again is the functional sequence. The newly merged feature is merged with features that precede it in this sequence. This can be a single feature or multiples ones. I illustrate this with the Modern German relative pronouns.

For the feature WH it means that it is merged with the feature IND. Then, the lexicon is checked for a lexical tree that contains the phrase whP that contains WH and IND, as shown in (20).
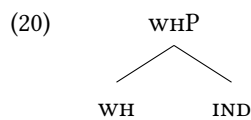
(20)   whP
         /   \
       WH   IND

This syntactic structure does not form a constituent in any of the lexical trees in the language's lexicon. Therefore, the feature WH combines not only with the feature merged before it, but with a phrase that consists of the two features merged before it: IND and AN. I give the phrase this gives in (21).

(21)   whP
         /   \
       WH   INDP
             /   \
           IND   AN
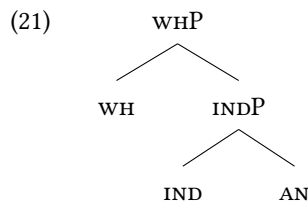
This syntactic structure forms a constituent in the lexical tree in (13c). Therefore, the whP is spelled out as *we*, as shown in (22).

(22)   whP
         /   \
       WH   INDP
             /   \
           IND   AN
            we
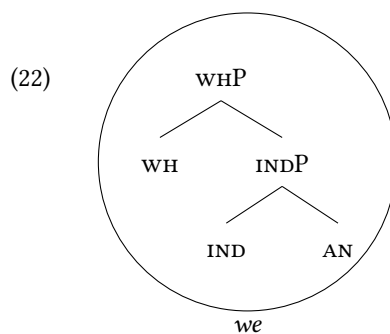
The newly created phrase is merged as a whole with the already existing structure. As specified in (19), the feature WH projects to the top node. I show the results in

(23).

(23)

```
                          WHP
          _____
         /                                   \
    ( WHP                          INDP )
    (   /\                          /\         )
    ( WH  INDP                   IND  ANP      )
    (      /\                          /\       )
    (   IND  AN                     AN   CLP    )
    (                                    /\     )
    (     we                         CL   REF  )
                                         n
```

Notice here that there is an overlap of multiple features between the phrase on the right and the phrase on the left.[10]

The next feature in the functional sequence is the feature REL. As always, it is merged to the existing syntactic structure, which is now the WHP. The result is the RELP shown in (24).

(24)

```
                    RELP
                    /\
                REL   WHP
          _____
         /                                  \
    ( WHP                         INDP )
    (   /\                          /\        )
    ( WH  INDP                   IND  ANP     )
    (      /\                          /\      )
    (   IND  AN                     AN   CLP   )
    (                                    /\    )
    (     we                         CL   REF )
                                         n
```

---
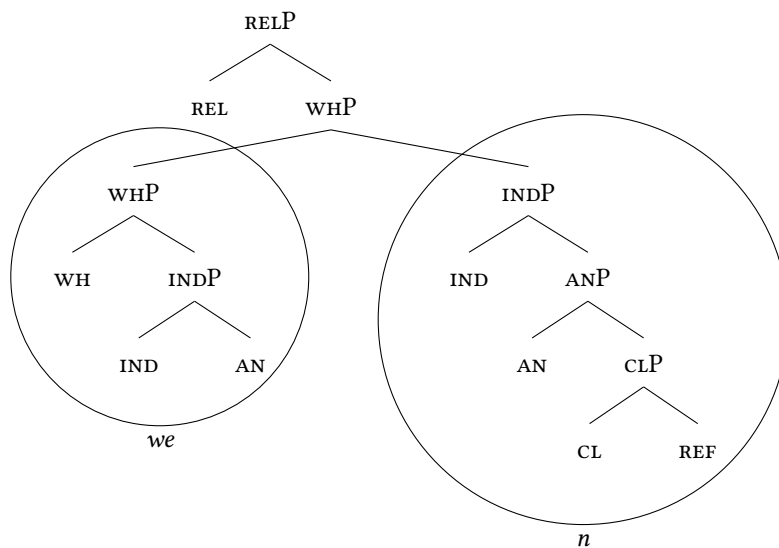
[10]There are three different proposals on Spec Formation. **caha2019** argue that there can only be a single feature overlap between the two phrases. **de2018** argue that there cannot be any overlap at all. The features that used in the second workspace are removed from the structure in the main workspace. In this dissertation, I work with the proposal in **starke2018**, in which the the overlap between the phrase on the left and the phrase on the right can also be more than a single feature. This is the only proposal of the three that allows me to derive all the forms I encounter.

This whole structure does not form a constituent in any of the lexical trees in the language's lexicon. Neither of the spellout driven movement operations leads to a successful spellout. This means that, once again, the derivation reaches a point at which one of the two other possible derivational options come into play. As I mentioned before, Backtracking comes first, and this is the operation that leads to a successful spellout here.

Consider the syntactic structure in (24) again. The feature REL is merged with the highest WHP. In this position it cannot be spelled out. Consider now the lexical entry in (13c). This is a lexical tree that contains REL. This means that the feature REL somehow needs to end up in the Spec that has just been merged. I follow **caha2019** who proposes that this happens via Backtracking. He argues that the main idea of Backtracking is that a feature is merged with a different tree than the one it was merged with before, as stated in (25).[11]

(25)   **The logic of backtracking (caha2019**: 198)
        When spellout of F fails, go back to the previous cycle, and provide a different configuration for Merge F.

Imagine a situation in which the previous feature was spelled out with a complex specifier and the next feature reaches the derivational option Backtracking. This is exactly the situation that arises after REL is merged. Providing a different configuration means splitting up the two phrases, and then merging the feature again. Specifically, I adopt the proposal in which the feature is merged in both workspaces, as stated in (26).

(26)   **Multiple Merge (caha2019**: 227)
        When backtracking reopens multiple workspaces, merge F in each such workspace.

For the example under discussion, the situation looks as in (27).

---

[11]In this dissertation I do not discuss the effect that Backtracking 'normally' has, namely to try a different spellout option at the previous cycle. That does not mean that I assume it is not part of the derivation: I actually assume it a step that is attempted. I refrain from mentioning it, because this does not lead to a successful spellout in any of the derivations I discuss.

(27)   a.   RELP
                       /   \
                    REL   WHP
                            /   \
                         WH   INDP
                                 /   \
                              IND   AN

        b.   RELP
                       /   \
                    REL   INDP
                            /   \
                         IND   ANP
                                 /   \
                              AN   CLP
                                      /   \
                                   CL   REF
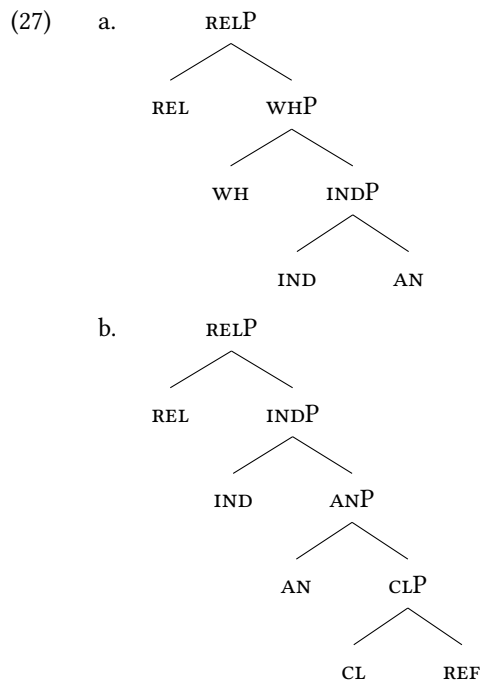
The feature REL is merged in both workspaces, so it combines with the RELP in (27a) and with the INDP in (27b). From here on, the derivation proceeds, as usual, according to the Spellout Algorithm, with the only difference that it happens in two workspaces simultaneously. Spellout has to be successful in at least one of the two workspaces.

In the case of (27), the spellout of REL is successful in the syntactic structure in (27a). This syntactic structure namely forms a constituent in the lexical tree in (13c), which corresponds to the *we*. As spellout has succeeded, the workspaces can be merged back together. The result is shown in (28).
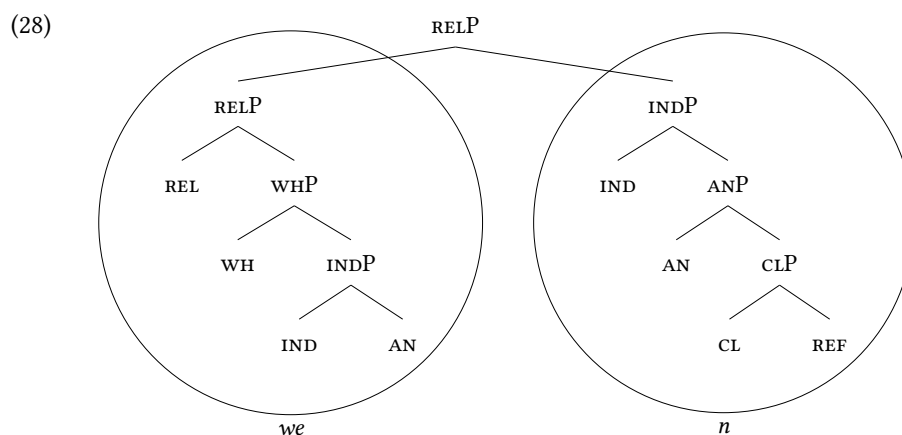
(28)   RELP

The next feature in the functional sequence is F1. This feature should somehow end up merging with INDP, because it forms a constituent in the lexical tree in (13a),

which corresponds to *n*. This can again be achieved via Backtracking in which phrases are split up. I go through the derivation step by step.

The feature F1 is merged with the existing syntactic structure, creating a NOMP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the INDP. The feature F1 is merged in both workspaces, so with the RELP and and with the INDP. The spellout of F1 is successful when it is combined with the INDP. It namely forms a constituent in the lexical tree in (13a), which corresponds to the *n*. The NOMP is spelled out as *n*, and all constituents are merged back into the existing syntactic structure, as shown in (29).

(29)

For the accusative relative pronoun, the last feature is merged: the F2. The derivation for F2 resembles the derivation of F1. The feature is merged with the existing syntactic structure, creating a ACCP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the NOMP. The feature F2 is merged in both workspaces, so with the RELP and and with the NOMP. The spellout of F2 is successful when it is combined with the NOMP. It namely forms a constituent in the lexical tree in (13a), which corresponds to the *n*. The ACCP is spelled out as *n*, and all constituents are merged back into the existing syntactic structure, as shown in (30).

(30)
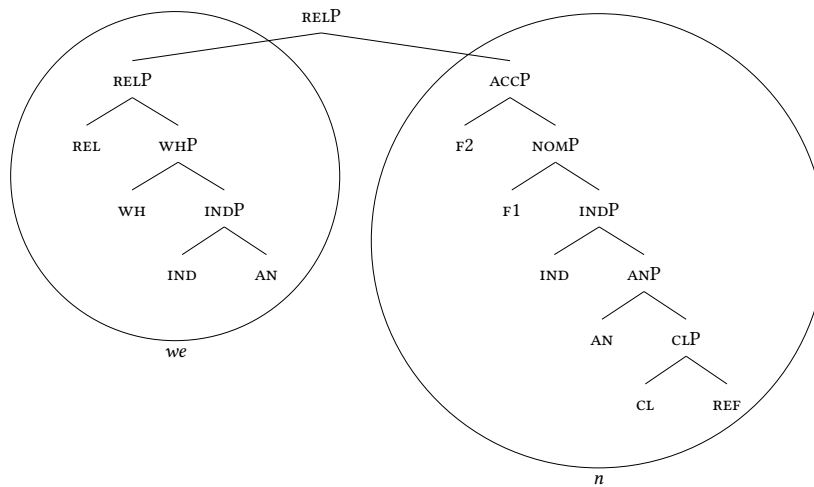
For the dative relative pronoun, one more feature is merged: the F3. The derivation for F3 resembles the derivation of F1 and F2. The feature is merged with the existing syntactic structure, creating a DATP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the ACCP. The feature F3 is merged in both workspaces, so with the RELP and and with the ACCP. The spellout of F3 is successful when it is combined with the ACCP. It namely forms a constituent in the lexical tree in (13b). The DATP is spelled out as *m*, and all constituents are merged back into the existing syntactic structure, as shown in (31).

(31)
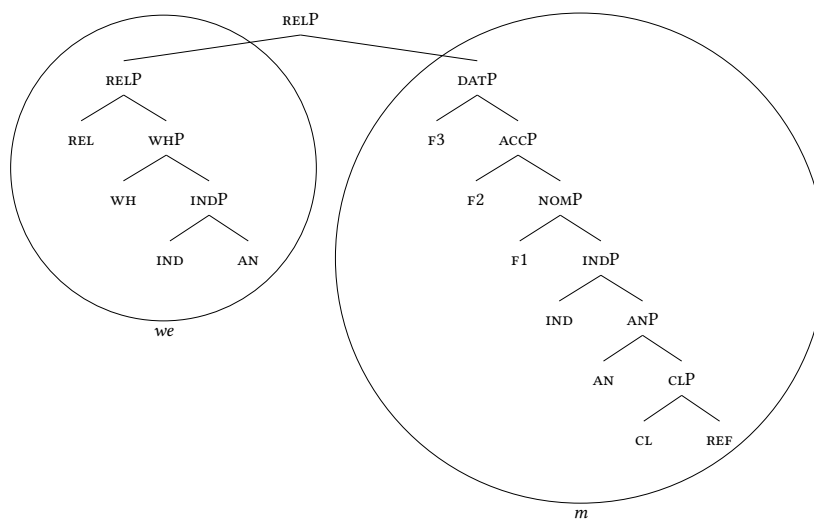
To summarize, I decomposed the relative pronoun into the two morphemes: *we* and the final consonant (*n* and *m*). I showed which features each of the morphemes

spells out and what the internal syntax looks like that they are combined into. It is
this internal syntax that determines whether the light head can be deleted or not.

7.3 The Modern German (extra) light head

I have suggested that headless relatives are derived from light-headed relatives. The
light head or the relative pronoun can be deleted when either of them is a constituent
that is contained within other. In the introduction of this chapter, I claimed that the
internal syntax of light heads in Modern German looks as shown in (32).
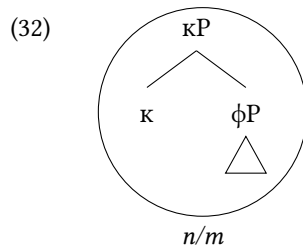
(32)

In Chapter 6, I suggested that light heads consist of at least two features: φ and κ. In
this section, I determine the exact feature content of the light head. I end up claiming
that the phi and case feature portmanteau of the relative pronoun is the light head in
headless relatives. I show the complete structure that I work towards in this section
in (33).

(33)
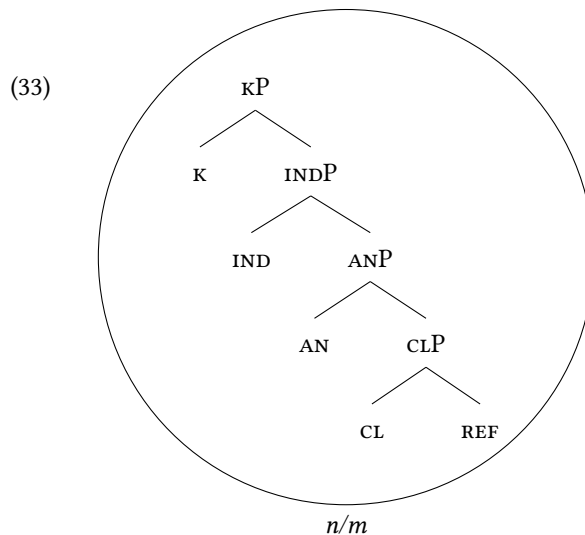
Before I dive into the feature content of the light head, I first need to identify it, as it
does not surface in headless relatives. I consider two kinds of light-headed relatives
as the source of the headless relative. First, the deletion of the light head is optional,
and the headless relative is derived from an existing light-headed relative. Second,

the deletion of the light head is obligatory, and the headless relative is derived from a light-headed relative that does not surfaces in Modern German. I consider the first option first, and I give two arguments against it. Then, to identify the exact input structure, I take the light head from the existing light-headed relative as a point of departure, and I modify it in such a way that it is appropriate as a light head for a headless relative.

I give an example of a Modern German light-headed relative in (34).[12]

(34)   Jan umarmt den   **wen**   **er mag**.
        Jan hugs   DEM.M.SG.ACC RP.AN.ACC he likes
        'Jan hugs the man that he likes.'

In (34), the relative pronoun is the WH-pronoun *wen* 'RP.AN.ACC', and the light head is the D-pronoun *den* 'DEM.M.SG.ACC'. For easy reference, I call this light-headed relative the *den-wen* relative.

One hypothesis is that the demonstrative *den* 'DEM.M.SG.ACC' is deleted from the light-headed relative in (34) and that the headless relative in (35) remains.[13] For easy reference, I call this headless relative the *wen* relative.

(35)   Jan umarmt **wen**   **er mag**.
        Jan hugs   RP.AN.ACC he likes
        'Jan hugs who he likes.'

I give two arguments against this hypothesis. First, in headless relatives the morpheme *auch immer* 'ever' can appear, as shown in (36).

---

[12]Modern German also has another light-headed relative, in which the relative pronoun is the D-pronoun. I give an example in (i).

(i)   Jan umarmt den   **den**   **er mag**.
        Jan hugs   D.M.SG.ACC RP.M.SG.ACC he likes
        'Jan hugs the man that he likes.'

This relative pronoun generally appears in headed relatives, shown in (ii).

(ii)   Jan umarmt den   Mann **den**   **er mag**.
        Jan hugs   D.M.SG.ACC man   RP.M.SG.ACC he likes
        'Jan hugs the man that he likes.'

I directly exclude the possibility that Modern German headless relatives are derived from these light-headed relatives, because they appear with the incorrect relative pronoun.

[13]This is exactly what **hanink2018** argues for. She claims that the feature content of the light head *den* matches the feature content of the relative pronoun *wen*. Therefore, the light head is by default deleted. Only if the light head carries an extra focus feature it surfaces.

(36) Jan unarmt **wen   auch immer er mag**.
      Jan hugs   RP.AN.ACC ever   he likes
      'Jan hugs whoever he likes.'

Light-headed relatives do not allow for this morpheme to be inserted, illustrated in (37).

(37) *Jan unarmt den   **wen   auch immer er mag**.
      Jan hugs   DEM.M.SG.ACC RP.AN.ACC ever   he likes
      'Jan hugs him whoever he likes.'

I assume that headless relatives are not derived from an ungrammatical structure.[14]

The second argument against the *den-wen* relative being the source of the *wen* relative comes from the interpretation differences between the two. Broadly speaking, the *wen* relative has two interpretations (see **šimík2020** for a recent elaborate overview on the semantics of free relatives). The *den-wen* has only one of them. I show this schematically in Table 7.6.

Table 7.6: Intepretations of *wen* and *den-wen* relatives

	wen	*den-wen*
definite-like	✓	✓
universal-like	✓	*

The first interpretation of the *wen* relative is a definite-like one. This interpretation corresponds to a definite description. Consider the context which facilitates a definite-interpretation and the repeated *den-wen* and *wen* relative in (38a).

(38) a. Context: Yesterday Jan met with two friends. He likes one of them. The other one he does not like so much.
      b. Jan umarmt den   **wen   er mag**.
          Jan hugs   DEM.M.SG.ACC RP.AN.ACC he likes
          'Jan hugs who he likes.'
      c. Jan umarmt **wen   er mag**.
          Jan hugs   RP.AN.ACC he likes
          'Jan hugs who he likes.'

A definite-like interpretation is one in which Jan hugs the person that he likes. The interpretation is available for the *wen* relative and for the *den-wen* relative.

---

[14]I am aware that such an analysis is common for sluicing.

The second interpretation of the *wen* relative is a universal-like one. This interpretation corresponds to a universal quantifier. Consider the context which facilitates a universal-interpretation and the repeated *den-wen* and *wen* relative in (39a).

(39)   a.   Jan has a general habit of hugging everybody that he likes.
         b.   #Jan umarmt den   **wen**   **er mag**.
               Jan hugs   DEM.M.SG.ACC RP.AN.ACC he likes
               'Jan hugs who he likes.'
         c.   Jan umarmt **wen**   **er mag**.
               Jan hugs   RP.AN.ACC he likes
               'Jan hugs who he likes.'

A universal-like interpretation is one in which Jan hugs everbody that he likes. This interpretation is available for the *wen* relative, but not for the *den-wen* relative.

There are some indications that the universal-like interpretation of headless relatives is the main interpretation that should be accounted for. First, informants have reported to me that headless relatives with case mismatches become more acceptable in the universal-like interpretation compared to the definite-like interpretation. Second, **šimík2020 (šimík2020**: 4) notes that some languages do not easily allow for the definite-like interpretation of headless relatives with an *ever*-morpheme. There is no language documented that does not allow for the universal-like interpretation, but does allow the definite-like interpretation.

In sum, there are two arguments against the *den-wen* relative being the source of the *wen* relative. In what follows, I show how the presence of *den* leads to having only the definite-like interpretation. I suggest that the problem lies in the feature content of the light head *den*. I point out how the feature content should be modified such that it is a suitable light head for a headless relative.

The light head in the *den-wen* relative is a demonstrative. A demonstrative refers back to a linguistic or extra-linguistic antecedent. Consider the context in (38a) again. The demonstrative *den* in the *den-wen* relative refers back to the friend of Jan that he likes, and the construction is grammatical. Now consider the context in (39a) again. In this case, there is no antecedent for the demonstrative *den* to refer back to, and the structure is infelicitous.

I zoom in on the internal syntax of the demonstrative *den* to investigate what it is about the demonstrative that forces the definite-like interpretation. The demonstrative consists (at least) of the two morphemes *de* and *n*. One of these morphemes are identical to the WH-relative pronoun: the *n*, which spells out pronominal, number, gender and case features. The other morpheme differs: the *de*, which establishes a definite reference.

So far, I established that the *den-wen* relative cannot be the source from which

the headless relative is derived. Still, there must be some light-headed relative that is the source. I propose that the light head in the light-headed relative is even lighter than the head in the *den-wen* relative: it is an extra light head.

I propose that the extra light head is the element that is left once the morphemes *de* is absent. This is the morpheme that is the final consonant of the relative pronoun. I give the extra light-headed relative that the *wen*-relative is derived from in (40). The brackets around the light head indicate that it is obligatorily deleted.[15]

(40) Jan umarmt [n]   **wen**   **er mag**.
      Jan hugs   ELH.AN.ACC RP.AN.ACC he likes
      'Jan hugs who he likes.'

In the remainder of this section, I discuss the two extra light heads that I compare the constituents of in Section 7.4. They are the accusative animate and the dative animate, shown in (41).

(41) a. n
          ELH.AN.ACC

---

[15]The light head and the extra light head I discuss resemble the strong and weak definite in **schwarz2009**, at least morphologically (although my light head is always obligatorily deleted). **schwarz2009**'s (**schwarz2009**) strong definite is anaphoric in nature, and the weak definite encodes uniqueness. I give an example of a strong definite in (i). The strong definite is *dem* that precedes *Freund* 'friend'. It refers back to the linguistic antecedent *einen Freund* 'a friend'.

(i)   Hans hat heute einen Freund zum   Essen mit   nach Hause gebracht. Er hat uns vorher
      Hans has today a   friend to the dinner with to   home brought   he has us beforehand

      ein Foto   von dem   Freund gezeigt.
      a   photo of the_STRONG friend shown

      'Hans brought a friend home for dinner today. He had shown us a photo of the friend beforehand.'

Weak definites are used when situational uniqueness is involved. This uniqueness can be global or within a restricted domain. I give two examples in (ii). In (iia), the dog is unique in this specific situation of the break-in. In (iib), the moon is unique for us people on the planet.

(ii) a. Der Einbrecher ist zum Glück vom   Hund verjagt   worden.
          the burglar   is luckily   by the_WEAK dog chased away been

          'Luckily, the burglar was chased away by the dog.'
      b. Armstrong flog als erster   zum   Mond.
          Armstrong flew as first one to the_WEAK moon

          'Armstrong was the first one to fly to the moon.'   (Modern German, **schwarz2009**: 40)

The meaning of **schwarz2009**'s (**schwarz2009**) strong definite seems similar to the meaning of the light head in the *den-wen* relative. I do not see right away how the extra light head in headless relatives could encode uniqueness. One possibility is that the feature content of his and my form differs slightly after all. Another possibility is that the fact that his form combines with a preposition and an overt nouns leads to a change in interpretation.
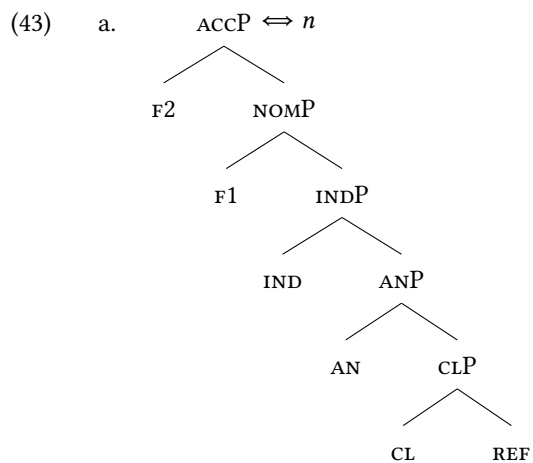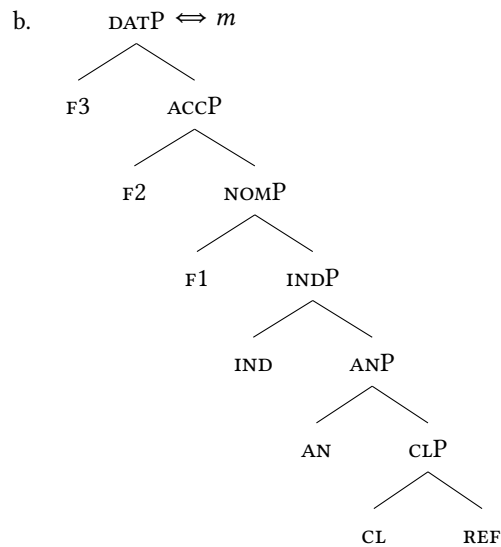
b.   m

ELH.AN.DAT

In Chapter 6, I suggested that the relative pronoun contains at least one feature more than the extra light head. In my proposal, it is actually two features, namely WH and REL. This leaves the functional sequence for the extra light head as shown in (42).

(42)

```
          KP
         /  \
        K   INDP
           /    \
         IND    ANP
               /    \
             AN     CLP
                   /    \
                 CL     REF
```
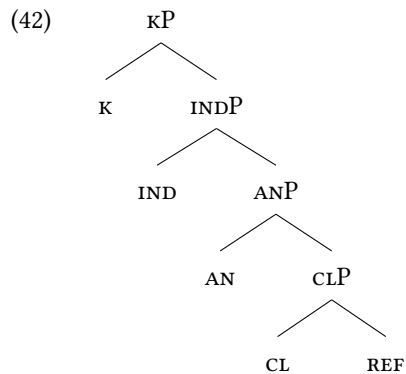
It contains the pronominal feature REF, the gender features CL and AN, the number feature IND and case features K.

I introduced the lexical entries that are required to spell out these features in Section 7.1. I repeat them in (43).

(43)   a.

```
          ACCP  ⟺ n
         /    \
        F2    NOMP
             /    \
           F1     INDP
                 /    \
               IND    ANP
                     /    \
                   AN     CLP
                         /    \
                       CL     REF
```

b.   DATP ⟺ *m*
         /   \
      F3   ACCP
              /   \
            F2   NOMP
                    /   \
                  F1   INDP
                          /   \
                       IND   ANP
                               /   \
                             AN   CLP
                                    /   \
                                  CL   REF

The derivations of the extra light heads are straight-forward ones. The features are merged one by one, and after each new phrase is created, it is spelled out as a whole. I still go through them step by step.

First, the features REF and CL is merged, and the CLP is created. The syntactic structure forms a constituent in the lexical tree in (43a). Therefore, the CLP is spelled out as *n*. Exactly the same happens for the features AN, IND and F1. They are merged, they form a constituent in the lexical tree in (43a), and they are spelled out as *n*.

The last feature that is merged for the accusative extra light head is the F2. It is merged, and the ACCP is created. The syntactic structure forms a constituent in the lexical tree in (43a). Therefore, the ACCP is spelled out as *n*, as shown in (44).

(44)
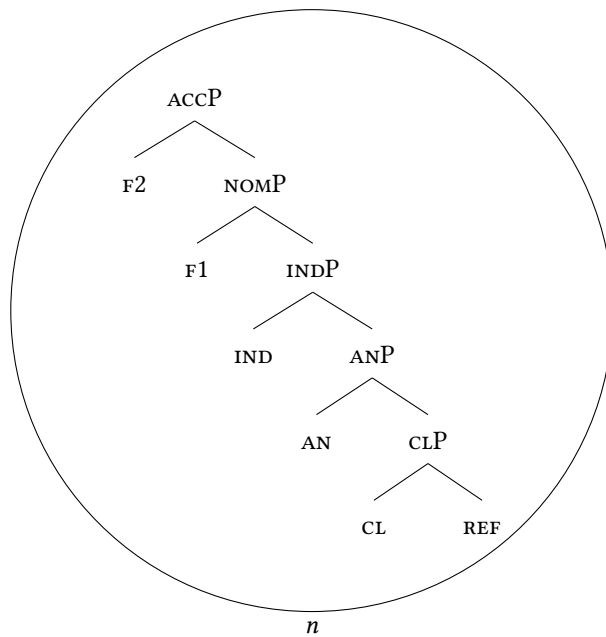
For the dative extra light head another feature is merged: the F3. The feature F3 is merged, and the DATP is created. The syntactic structure forms a constituent in the lexical tree in (43b). Therefore, the DATP is spelled out as *m*, as shown in (45).

(45)
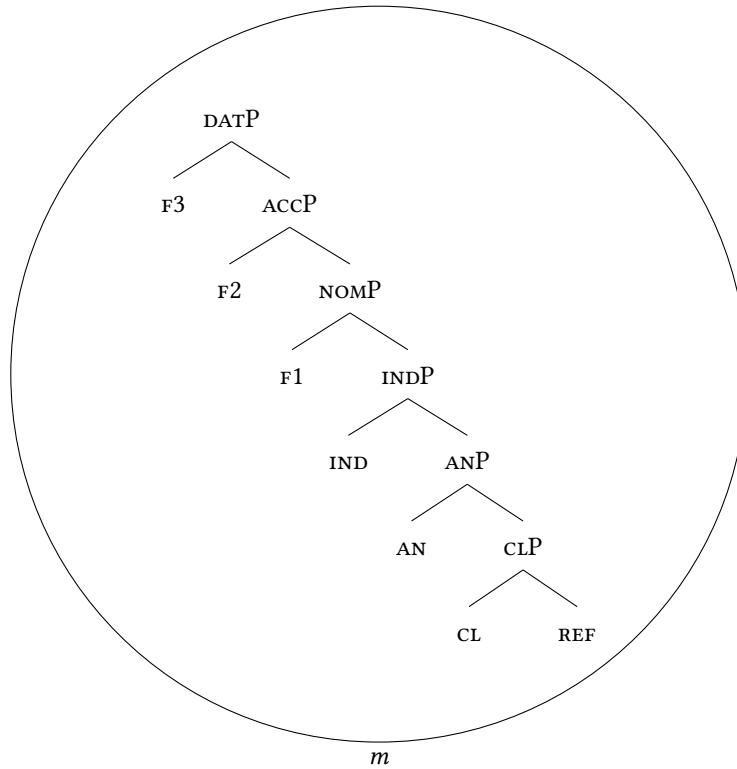
In sum, Modern German headless relatives are derived from a the light-headed relative with an extra light head. This extra light head is spelled out by a single phi and case feature portmanteau. The lexical entries used to spell this light head out are also used to spell out part of the internal syntax of the relative clause.

7.4   Comparing Modern German constituents

In this section, I compare the constituents of extra light heads to those of relative pronouns in Modern German. This is the worked out version of the comparisons in Section 6.2.1. What is different here is that I show the comparison for Modern German specifically, and that the content of the constituents that are being compared are motivated earlier in this chapter.

I give three examples, in which the internal and external case vary. I start with an example with matching cases, in which the internal and the external case are both accusative. Then I give an example in which the internal dative case is more complex than the external accusative case. I end with an example in which the external dative case is more complex than the internal accusative case. I show that the first two examples are grammatical and the last one is not. I derive this by showing that only in the first two situations the light head is a constituent that is structurally contained within the relative pronoun, and that it can therefore then be deleted. In the last example, neither the light head nor the relative pronoun is a constituent that is structurally contained in the other element. I do not discuss formal constituent containment in this chapter, because it never leads to a successful deletion when structural constituent containment does not.

I start with the situation in which the cases match. Consider the example in (46), in which the internal accusative case competes against the external accusative case. The relative clause is marked in bold. The internal case is accusative, as the predicate *mögen* 'to like' takes accusative objects. The relative pronoun *wen* 'REL.AN.ACC' appears in the accusative case. This is the element that surfaces. The external case is accusative as well, as the predicate *einladen* 'to invite' also takes accusative objects. The extra light head *n* 'ELH.AN.ACC' appears in the accusative case. It is placed between square brackets because it does not surface.

(46)   Ich   lade ein   [n],   **wen**   **auch**
       1SG.NOM invite.PRES.1SG[Acc] ELH.AN.ACC RP.AN.ACC Maria.NOM

       Maria   **mag**.
       like.PRES.3SG[Acc]
       'I invite who Maria also likes.'

                                              (Modern German, adapted from **vogel2001**: 344)

In Figure 7.3, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.
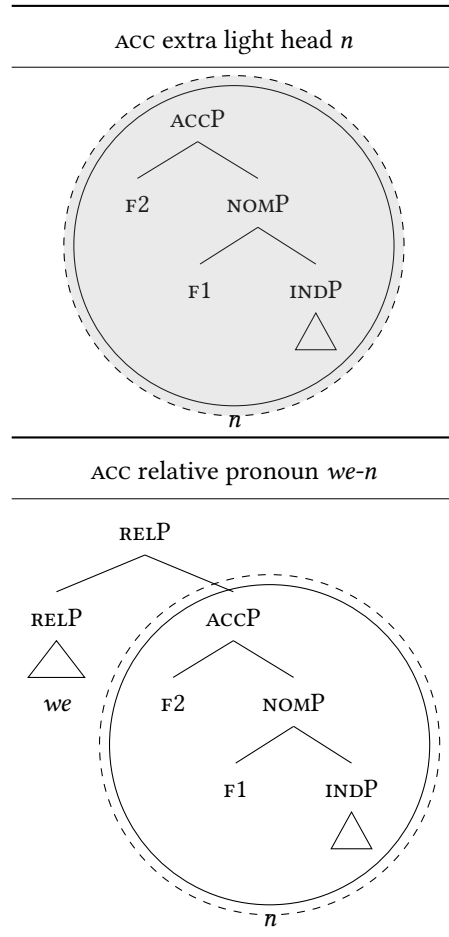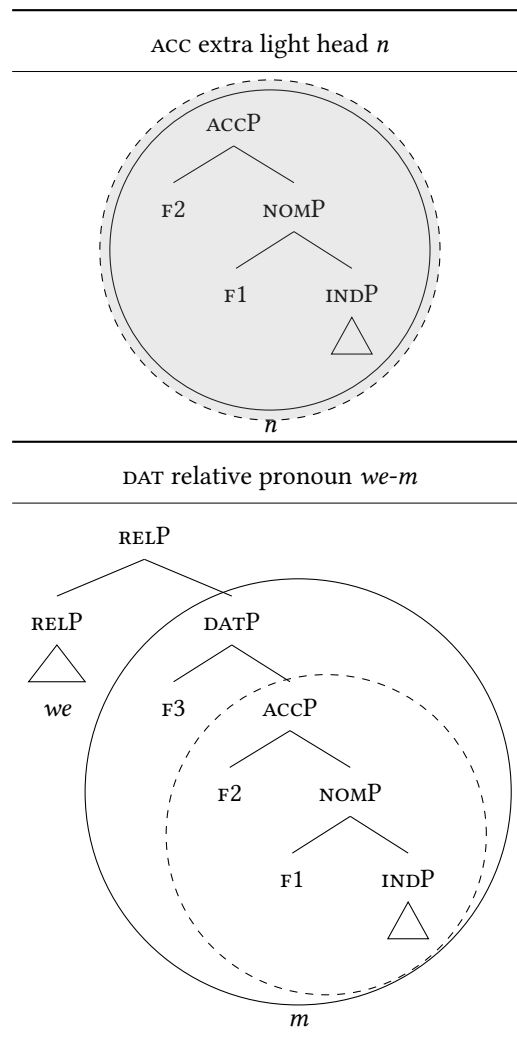

Figure 7.3: Modern German EXT$_{ACC}$ vs. INT$_{ACC}$ → *wen*

The relative pronoun consists of two morphemes: *we* and *n*. The extra light head consists of a single morpheme: *n*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around each constituent that is a structurally constituent in both the extra light head and the relative pronoun.

The extra light head consists of a single constituent: the AccP. This AccP is a constituent that is structurally contained within the relative pronoun. Therefore, the extra light head can be deleted. I signal the deletion of the extra light head by marking the content of its circle gray. The surface pronoun is the relative pronoun that bears the internal case: *wen*.

I continue with the situation in which the internal case is the more complex one.

Consider the example in (47), in which the internal dative case competes against the external accusative case. The relative clause is marked in bold. The internal case is dative, as the predicate *vertrauen* 'to trust' takes dative objects. The relative pronoun *wem* 'REL.AN.DAT' appears in the dative case. This is the element that surfaces. The external case is accusative, as the predicate *einladen* 'to invite' takes accusative objects. The extra light head *n* 'ELH.AN.ACC' appears in the accusative case. It is placed between square brackets because it does not surface.

(47) Ich   lade ein   [n],   **wem**   **auch Maria**
      1SG.NOM invite.PRES.1SG[ACC] ELH.AN.DAT RP.AN.DAT also   Maria.NOM

      vertraut.
      trust.PRES.3SG[DAT]

      'I invite whoever Maria also trusts.'

                                          (Modern German, adapted from **vogel2001**: 344)

In Figure 7.4, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.
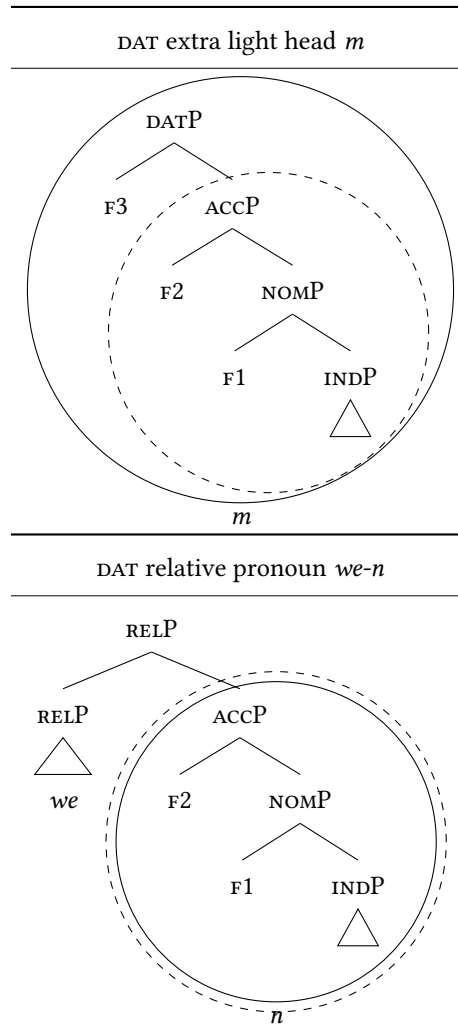
The relative pronoun consists of two morphemes: *we* and *m*. The extra light head consists of a single morpheme: *n*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around each constituent that is structurally a constituent in both the extra light head and the relative pronoun.

The extra light head consists of a single constituent: the ACCP. This ACCP is a constituent that is structurally contained within the relative pronoun. Therefore, the extra light can be deleted. I signal the deletion of the extra light head by marking the content of its circle gray. The surface pronoun is the relative pronoun that bears the internal case: *wem*.

I end with the situation in which the external case is the more complex one. Consider the examples in (48), in which the internal accusative case competes against the external dative case. The relative clauses are marked in bold. It is not possible to make a grammatical headless relative in this situation. The internal case is accusative, as the predicate *mögen* 'to like' takes accusative objects. The relative pronoun *wen* 'REL.AN.ACC' appears in the accusative case. The external case is dative, as the predicate *vertrauen* 'to trust' takes dative objects. The extra light head *m* 'ELH.AN.DAT' appears in the dative case. (48a) is the variant of the sentence in which the extra light head is absent (indicated by the square brackets) and the relative pronoun surfaces, which is ungrammatical. (48b) is the variant of the sentence in which the relative pronoun is absent (indicated by the square brackets) and the extra light head surfaces, which is ungrammatical too.

ACC extra light head *n*

DAT relative pronoun *we-m*

Figure 7.4: Modern German EXT_ACC vs. INT_DAT → *wem*

(48)   a.   *Ich   vertraue   [m],   **wen**   **auch Maria**
        1SG.NOM trust.PRES.1SG_[DAT] ELH.AN.DAT RP.AN.ACC also   Maria.NOM

        mag.
        like.PRES.3SG_[ACC]

        'I trust whoever Maria also likes.'

                              (Modern German, adapted from **vogel2001**: 345)

  b.   *Ich   vertraue   m,   [**wen**]   **auch Maria**
        1SG.NOM trust.PRES.1SG_[DAT] ELH.AN.DAT RP.AN.ACC also   Maria.NOM

        mag.
        like.PRES.3SG_[ACC]

        'I trust whoever Maria also likes.'

(Modern German, adapted from **vogel2001**: 345)

In Figure 7.5, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

Figure 7.5: Modern German EXT$_{\text{DAT}}$ vs. INT$_{\text{ACC}}$ $\nrightarrow$ *m*/*wen*

The relative pronoun consists of two morphemes: *we* and *n*. The extra light head consists of a single morpheme: *m*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around each constituent that is structurally a constituent in both the extra light head and the relative pronoun.

In this case, the light head is not a constituent that is structurally contained

within the relative pronoun. The extra light head consists of a single constituent: the
DATP. The relative pronoun only contains the ACCP, and it lacks the F3 that makes
a DATP. Since the weaker feature containment requirement is not met, the stronger
constituent containment requirement cannot be met either.

The relative pronoun is not a constituent that is structurally contained within
the light head. It namely lacks the complete constituent and RELP. Therefore, the
extra light cannot be deleted, and the relative pronoun cannot be deleted either. As
a result, there is no grammatical headless relative possible.

7.5   Summary

Modern German is an example of an internal-only type of language. This means
that headless relatives are grammatical in the language, as long as the internal and
external case match or the internal case is the more complex one.

I derive this from the internal syntax of light heads and relative pronouns in
Modern German. The features of the light head are spelled out by a single lexical
entry, which spells out phi and case features. The features of the relative pronoun
are spelled out by the same lexical entry plus one which amongst other spells out a
relative feature. The internal syntax of the Modern German light head and relative
pronoun are shown in Figure 7.6.
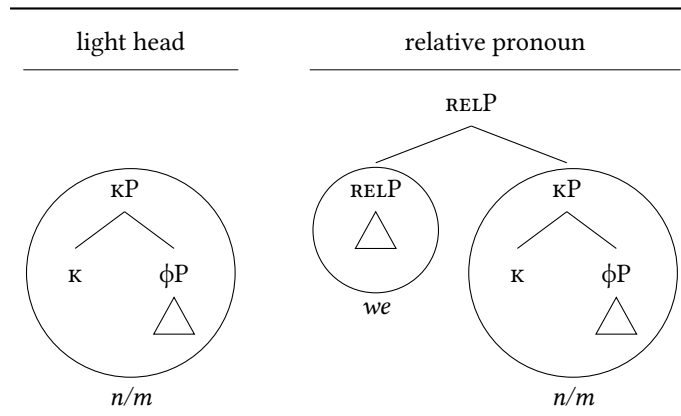
Figure 7.6: ELH and RP in Modern German (repeated)

A crucial characteristic of internal-only languages such as Modern German is
that they have a portmanteau for phi and case features. Therefore, the light head is
a constituent that is contained within the relative pronoun when the internal and
the external case match and when the internal case is the more complex one. As a
result, the light head can be deleted, and the relative pronoun can surface, bearing
the internal case.

When the internal case is the more complex one, neither the light head nor the relative pronoun is a constituent that is structurally contained within the other element. None of the elements can be deleted, and there is no grammatical headless relative possible.

Chapter 8

Deriving the matching type

In Chapter 6, I suggested that languages of the matching type have a lexical entry that spells out phi features and another one that spells out case features. This is the crucial difference with internal-only languages such as Modern German, that have a portmanteau for phi and case features. It means that the internal syntax of light heads and relative pronouns looks as shown in Figure 8.1.
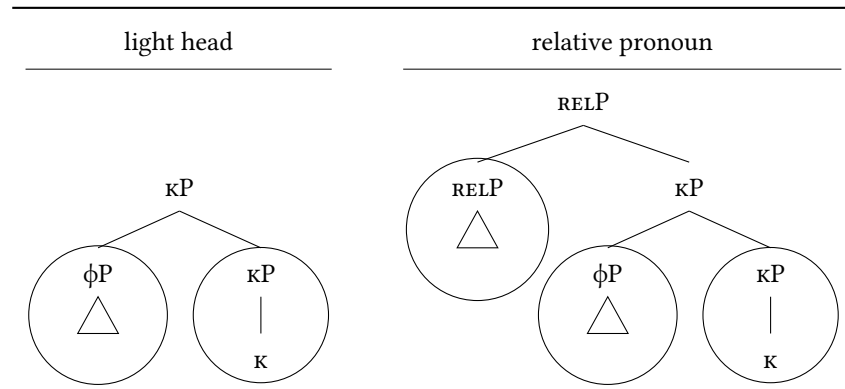
Figure 8.1: LH and RP in the matching type

These lexical entries lead to the grammaticality pattern shown in Table 8.1.

Table 8.1: Grammaticality in the matching type

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$\kappa_{INT} = \kappa_{EXT}$	$[\kappa_1], [\phi]$	$[REL], [\kappa_1], [\phi]$	structure	LH	RP_{INT}
$\kappa_{INT} > \kappa_{EXT}$	$[\kappa_1], [\phi]$	$[REL], [\kappa_2[\kappa_1]], [\phi]$	no	none	*
$\kappa_{INT} < \kappa_{EXT}$	$[\kappa_2[\kappa_1]], [\phi]$	$[REL], [\kappa_1], [\phi]$	no	none	*

Consider first the situation in which the internal and the external case match. The light head consists of a phi feature morpheme and a case feature morpheme. The relative pronoun consists of the same two morphemes plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is a constituent that is structurally contained within the relative pronoun. Therefore, the light head can be deleted, and the relative pronoun surfaces, bearing the internal case. In this situation, whether there is a phi and case feature portmanteau (as in internal-only languages) or two separate morphemes for the features (as in matching languages) does not make a difference for whether or not the light head can be deleted. It can in both cases.

Consider now the situation in the internal case wins the case competition. The light head consists of a phi feature morpheme and a case feature morpheme. The relative pronoun consists of the same phi feature morpheme, a case morpheme that that contains at least one more case feature than the light head (κ_2 in Figure 8.1) plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is a constituent that is contained within the other element. Therefore, none of the elements can be deleted, and there is no headless relative construction possible. In this situation, whether there is a phi and case feature portmanteau (as in internal-only languages) or two separate morphemes for the features (as in matching languages) makes crucial difference for whether or not the light head can be deleted. It can when there is a phi and case feature portmanteau and it cannot when there are two separate morphemes for the features.

Finally, consider the situation in which the external case wins the case competition. The relative pronoun consists of a phi feature morpheme, a case feature morpheme and an additional morpheme that spells out the feature REL. Compared to the relative pronoun, the light head lacks the morpheme that spells out REL, and it contains at least one more case feature (κ_2 in Figure 8.1). The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is a constituent that is contained within the other element. Therefore, none of the elements can be deleted, and there is no headless relative construction possible. In this situation, whether there is a phi and case feature portmanteau (as in internal-only languages) or two separate morphemes for the features (as in matching languages) does not make a difference for whether or not the light head or the relative pronoun can be deleted. It cannot in both cases.

In Chapter 4, I showed that Polish is a language of the matching type. In this chapter, I show that Polish light heads and relative pronouns have the type of internal syntax described in Figure 8.1. I give a compact version of the internal syntax of Polish light heads and relative pronouns in Figure 8.2.

Consider the light head in Figure 8.2. Light heads (i.e. the phi and case features)

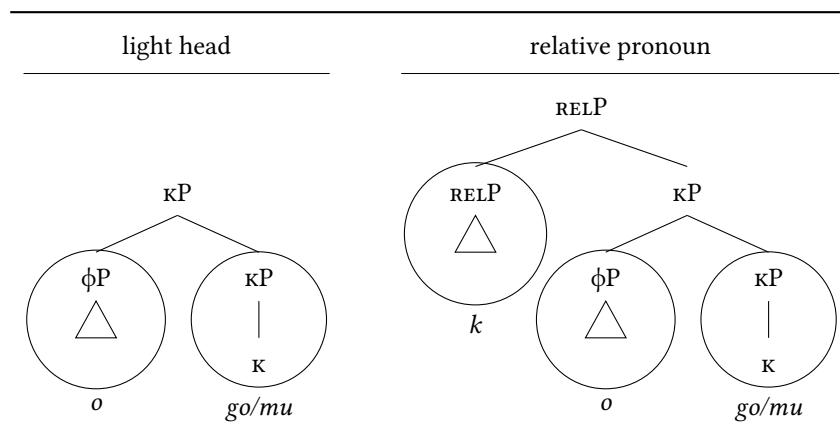| light head	relative pronoun

Figure 8.2: LH and RP in Polish

in Polish are spelled out by two morphemes, which are both circled. The phi features are spelled out as *o* and the case features are spelled out as *go* or *mu*, depending on which case they realize. Consider the relative pronoun in Figure 8.2. Relative pronouns in Polish consist of three morphemes: the constituent that forms the light head (i.e. phi and case feature morphemes) and the RELP, again indicated by the circles. The constituent that forms the light head has the same spellout as in the light head (*o* and *go* or *mu*), and the RELP is spelled out as *k*. Throughout this chapter, I discuss the exact feature content of relative pronouns and light heads, I give lexical entries for them, and I show how these lexical entries lead to the internal syntax of light heads and relative pronoun as shown in Figure 8.2.

The chapter is structured as follows. First, I discuss the relative pronoun. I decompose it into the three morphemes I showed in Figure 8.2. Then I show which features each of the morphemes corresponds to. Then I discuss the light head. I argue that Polish headless relatives are, just as Modern German headless relatives, derived from a type of light-headed relative clause that does not surface in the language. I show that the light head corresponds to one of the morphemes of the relative pronoun (the κP in Figure 8.2). Importantly, the features that form the Polish light head and relative pronoun are the same ones that form the Modern German light head and relative pronoun. The only difference between the two languages is how the features are spelled out. Finally, I compare the constituents of the light head and the relative pronoun. I show that the light head can only be deleted when the internal case matches the external case. When the internal and external case differ, none of the elements can be deleted.

8.1   The Polish relative pronoun

In the introduction of this chapter, I suggested that the internal syntax of relative pronouns in Polish looks as shown in (1).
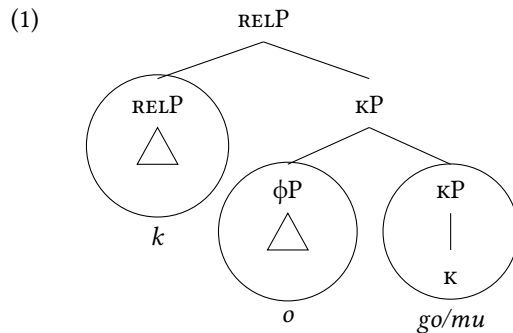
(1)

In Chapter 6, I suggested that relative pronouns consist of at least three features: REL, φ and κ. I showed that Modern German relative pronouns contain more features than that in Chapter 7. In this section, I show that Polish relative pronouns consist of the same features. Still, the crucial claim I made in Chapter 6 remains unchanged: matching languages (of which Polish is an example) have a separate morpheme for phi features, one for case features and one for the features the light head does not contain. Actually, the morpheme for case features contains a number feature and the phi feature morpheme does not contain one, but this does not influence the point here. I show the complete structure that I work towards in this section in (2).
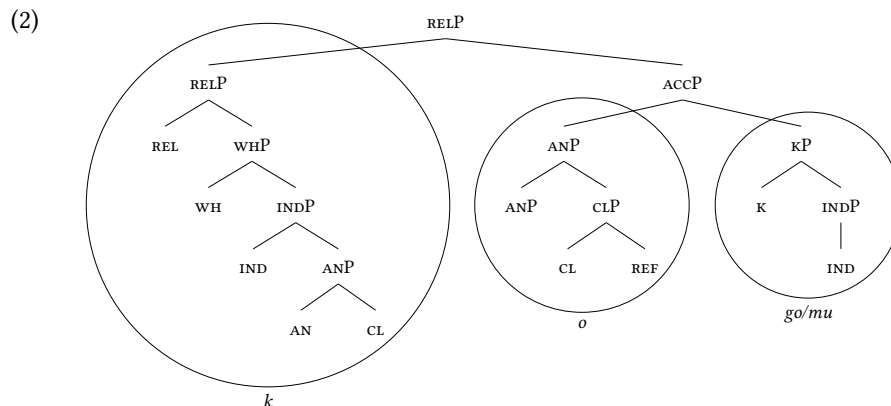
(2)

I discuss two relative pronouns: the animate accusative and the animate dative. These are the two forms that I compare the constituents of in Section 8.3. I show them in (3).

(3)   a.   k-o-go
            RP.AN.ACC

    b.   k-o-mu

          RP.AN.DAT

I decompose the relative pronouns into three morphemes: *k*, *o* and the suffix (*go* or *mu*). For each morpheme, I discuss which features they spell out, I give their lexical entries, and I show how I construct the relative pronouns by combining the separate morphemes.

I start with the suffixes *go* and *mu*. These two morphemes correspond to what I called the case feature morpheme in Chapter 6 and the introduction to this chapter. In addition, the morphemes spell out a number feature.

To determine their exact feature content, I first focus on *mu*. Then, I extend the analysis to *go*. The morpheme *mu* (and also the *go*) do not only appear in relative pronouns. They also show up as nominal endings, adjectival endings and in other pronominal forms. Interestingly, forms containing *mu* are often syncretic between masculine dative and neuter dative. Consider Table 8.2.

Table 8.2: Syncretic N/M dative forms (**swan2002**)

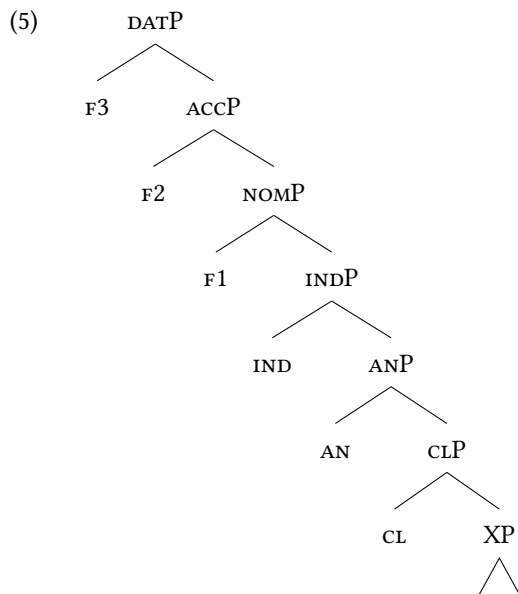|	M.DAT	N.DAT
je-pronoun	je-mu	je-mu
ni-pronoun	nie-mu	nie-mu
DEM	te-mu	te-mu

The table shows three forms in which there is a syncretism between the neuter and the masculine in the dative case. The complete pronouns are syncretic. I set up a system that can derive the syncretism between the two genders. Doing this allows me to establish which features the morpheme *mu* spells out.

I discussed in Chapter 3 that syncretisms can be derived in Nanosyntax via the Superset Principle. The lexicon contains a lexical entry that is specified for the form that corresponds to the most features. To illustrate this, I repeat the lexical entry for the Dutch *jullie* 'you' in (4).

(4)   DATP ⟺ *jullie*
         ╱ ╲
       F3   ACCP
            ╱ ╲
          F2   NOMP
               ╱ ╲
             F1   2PLP
                   △
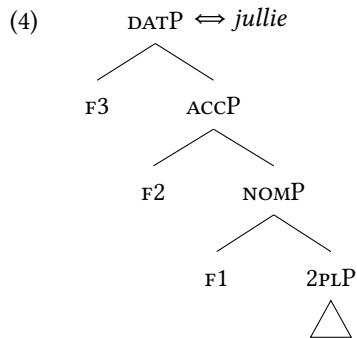
Jullie is syncretic between nominative, accusative and dative. It is specified for dative in the lexicon, it is the most complex case of the three. The nominative, the accusative and the dative second person plural in Dutch are spelled out as *jullie*, because the DATP, the ACCP and the NOMP are all contained in the lexical tree in (4) (Superset Principle), and there is no more specific lexical entry available in Dutch (Elsewhere Condition). Importantly, the potentially unused features (so the F3 or F3 and the F2) are at the top, so that the constituent that needs to be spelled out is still contained in the lexical tree.
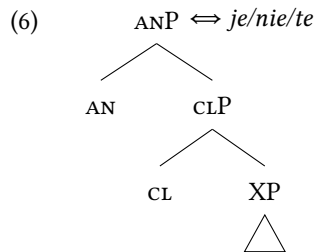
In what follows, I show how I can derive the syncretisms for the forms in Table 8.2. I propose that *jemu*, *niemu* and *temu* spell out the syntactic structure in (5).

(5)   DATP
         ╱ ╲
       F3   ACCP
            ╱ ╲
          F2   NOMP
               ╱ ╲
             F1   INDP
                  ╱ ╲
                IND   ANP
                      ╱ ╲
                    AN   CLP
                         ╱ ╲
                       CL   XP
                             △

I do not discuss the feature content that distinguishes *jemu*, *niemu* and *temu*, but I call them XP. Following the functional sequence I suggested in Chapter 7, all forms
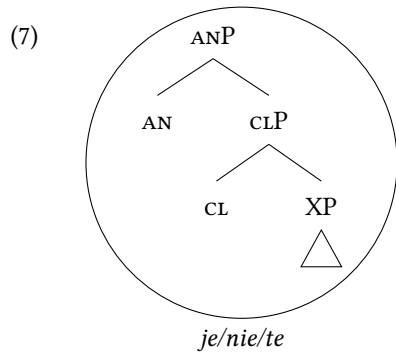
contain the feature CL for inanimate/neuter gender, AN for animate/masculine gender and IND for singular number and case features up to the dative.

The forms *jemu*, *niemu* and *temu* are syncretic between the masculine and the neuter. This can be captured if the highest feature in the lexical tree is the feature that distinguishes masculine and neuter gender. This distinguishing feature is the feature AN (**harley2002**), which is not the the highest feature in (5). Fortunately, different from *jullie*, *jemu*, *niemu* and *temu* are bimorphemic: they contain morphemes *je*, *nie* or *te* and the morpheme *mu*. The highest feature of one of the two morphemes needs to be the feature AN. I suggest that this is the case for *je*, *nie* and *te* is AN, as shown in (6).

(6)

ANP ⟺ *je/nie/te*

```
        ANP  ⟺  je/nie/te
        /\
      AN   CLP
           /\
         CL   XP
              /\
             /__\
```

Since the feature AN can be either present or absent, the forms can easily spell both the structure with or without the feature AN.

In (7), I give the syntactic structure of a masculine form.

(7)

```
          ( ANP )
          ( /\  )
          (AN  CLP)
          (    /\ )
          (  CL  XP)
          (      /\)
          (     /__\)
             je/nie/te
```

The syntactic structure forms a constituent within the lexical tree in (6), and the structure can be spelled out as *je/nie/te*.

In (8), I give the syntactic structure of a neuter form.
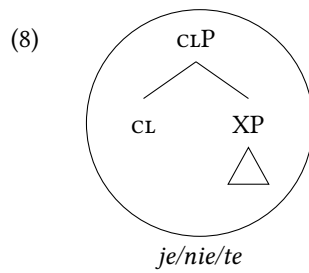
(8)

CLP

CL   XP

je/nie/te

Again, the syntactic structure forms a constituent within the lexical tree in (6), and the structure can be spelled out as *je/nie/te*.
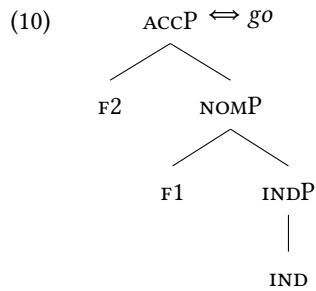
This means that the lexical tree for the suffix *mu* should contain all features in (5) that are not spelled out by *je/nie/te* so far. These are the feature IND and all case features up to the dative. I give the lexical entry for *mu* in (9).

(9)   DATP ⟺ *mu*

F3   ACCP

F2   NOMP

F1   INDP

IND
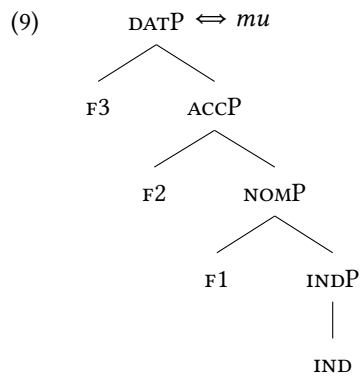
Notice here that *mu* has a unary bottom, just as the morpheme *e:l* in Khanty (see Chapter 3 and Chapter 6). Therefore, it can be inserted as the result of movement. It also means that the inserted phonology form follows the already present phonology and is spelled out as a suffix. This is how the correct order of *je/nie/te* and *mu* comes about. I illustrate the movement operation and how it is a step of the Spellout Algorithm later on in this section.

The morpheme *go* is identical to the morpheme *mu*, except for that it expresses accusative case instead of dative case. Therefore, the morpheme *go* differs from *mu* in that it lacks the feature F3 in its lexical entry, as shown in (10).

(10)

$$\text{ACCP} \Longleftrightarrow go$$

```
              ACCP  ⟺ go
             /    \
           F2     NOMP
                 /    \
               F1     INDP
                       |
                      IND
```

In sum, the morphemes *go* and *mu* spell out case features and a number feature.

This leaves the two morphemes *k* and *o*. First I discuss the *o*. This morpheme corresponds to what I called the phi feature morpheme in Chapter 6 and the introduction to this chapter. I show that this morpheme corresponds to pronominal features and gender features.

First I show that the *o* does not only appear in animate relative pronouns, but also in the inanimate relative pronoun and even in other pronouns. I go through this rather long reasoning to show that *o* is present in enviroments, even though it does not surface. Consider the relative pronouns in Table 8.3.

Table 8.3: Polish (in)animate relative pronouns (**swan2002**: 160)

	AN	INAN
NOM	kto	c-o
ACC	k-o-go	c-o
GEN	k-o-go	cz-e-go
DAT	k-o-mu	cz-e-mu
INS	k-i-m	cz-y-m

I ignore the nominative and accusative for now and come back to them later in this section. From the genitive on, the final suffixes in the animate and the inanimate paradigm are the same.[1] The forms differ in their initial consonant and the vowel. The animates have a *k* and an *o* or *i*, and the inanimates have a *cz* and a *e* or *y*.

There are several ways to analyze this. The first possibility is to not decompose the portion before the suffix. Under this analysis, Polish has the morphemes *ko*,

---

[1]I include genitive and the instrumental in the paradigms to show that the patterns observed in the dative are not standing on themselves. Instead, they are more generally attested in Polish, and they deserve an explanation. In Polish, the genitive comes between the accusative and the dative, i.e. it is more complex than the accusative and less complex than the dative. However, I do not incorporate them in the syntactic structures. This does not change anything about the main point about case I want to make: the dative is more complex than the accusative.

ki, *cze* and *czy*. The point that is missed is that the animates always have a *k* and inanimates always have a *cz*.

A second possibility that captures this observation is an analysis in which Polish has the morphemes *k*, *o*, *i* and *cz*, *e* and *y*.[2] What is not captured now is that numerous wн-elements in Polish start with a *k*. I give some examples in (11).[3]

(11) a. k-tóry
          which

      b. k-iedy
          when

      c. g-dzie
          where

(Polish, **swan2002**: 180,183-184)

Moreover, *cz* is not a primary consonant in Polish but a derived one (**swan2002**: 23). The consonants *cz* and *c* are derived from *k*.

I propose that the *k* is underlyingly present in the inanimate relative pronouns. They appear as a consequence of being combined with an *i*.[4] I show the proposed decomposition in Table 8.4.

Table 8.4: Polish (in)animate relative pronouns (underlying forms) (**swan2002**: 160)

	AN	INAM
NOM	kto	k-i-o
ACC	k-o-go	k-i-o
GEN	k-o-go	k-i-o-go
DAT	k-o-mu	k-i-o-mu
INS	k-i-m	k-i-i-m

Under this analysis, Polish only has the morphemes *k*, *o* and *i* that can be observed in the animate plus an *i* that is present throughout the whole paradigm in the inanimate.[5] I put the underlying forms and the surface form side by side in Table 8.5.

---

[2]This is more or less what **wiland2019** proposes.

[3]The *k* in (11c) gets voiced into *g* because it is followed by *d*.

[4]In this dissertation I do not discuss the exact feature content that corresponds to *i*. I assume it spells out features that have to do with being strong pronouns. For why the morpheme is not inserted in animate relative pronouns, see footnote 8 of this chapter.

[5]As first sight, there seems to be a contradiction here: the inanimate is featurally speaking less complex than the animate (**harley2002**), but morphologically the inanimate is more complex than the animate: it contains the additional morpheme *i*. I return to this point in footnote 8 of this chapter to show how this

Table 8.5: Polish inanimate relative pronouns (underlying + surface forms) (**swan2002**: 160)

	underlying	surface
NOM	k-i-o	c-o
ACC	k-i-o	c-o
GEN	k-i-o-go	cz-e-go
DAT	k-i-o-mu	cz-e-mu
INS	k-i-i-m	cz-y-m

The sequence *k-i-i* becomes *czy* in the instrumental, and the sequence *k-i-o* becomes *cze* in the genitive and dative.[6] To get from the underlying form to the surface form, several phonological processes are taking place, which are all independently observed within Polish. I start with *k* becoming *c* when it precedes *i*, as shown in (12).

(12)   /k/ $\rightarrow$ /c/ / ___/i/

Consider the paradigm for the singular of *lampa* 'light' and the singular of *córka* 'daugther' in Table 8.6.

Table 8.6: Polish nouns (**swan2002**: 47,57)

	light.SG	daughter.SG
NOM	lamp-a	córk-a
ACC	lamp-ę	córk-ę
GEN	lamp-y	córk-i
DAT	lamp-i-e	córc-e
INS	lamp-ą	córk-ą

The stem and the suffixes are identical in both paradigms, except for in the dative.[7] There, the stem of *córka* does no longer end with a *k*, but with a *c*. Also, part of the suffix, namely the *i* has disappeared. Analyzing *córc-e* as *córk-i-e* brings back regularity in the paradigm.

---

apparent contradiction can be resolved. hoi

   [6]Under this analysis, the WH-element *czyj* 'whose' is underlyingly *k-i-i-j*.

   [7]There is also the change from /i/ to /y/ in the genitive of *lampa*.

Consider the forms after this first phonological change and the surface forms in Table 8.7.

Table 8.7: Polish inanimate relative pronouns (after change 1 + surface forms) (**swan2002**: 160)

	after change 1	surface
NOM	c-i-o	c-o
ACC	c-i-o	c-o
GEN	c-i-o-go	cz-e-go
DAT	c-i-o-mu	cz-e-mu
INS	c-i-i-m	cz-y-m

I continue with the combination of *c*, *i* and *i* becoming *czy*, as shown in (13).

(13)   a.   /c/ + /i/ + /i/ → /czy/

Assuming that the two *i*s merge into one, this change can be independently observed in (14).

(14)   walc-ik: walczyk
        waltz-DIM waltz.DIM

<div align="right">(**swan2002**: 26)</div>

The noun *walc* 'waltz' combines with the diminutive marker *ik*. The sequence *c-ik* changes to *czyk*.

Consider the forms after this second phonological change and the surface forms in Table 8.8.

Table 8.8: Polish inanimate relative pronouns (after change 1 + surface forms) (**swan2002**: 160)

	after change 1	surface
NOM	c-i-o	c-o
ACC	c-i-o	c-o
GEN	c-i-o-go	cz-e-go
DAT	c-i-o-mu	cz-e-mu
INS	cz-y-m	cz-y-m

The last phonological change is the combination of *c*, *i* and *o* becoming *cze* in the genitive and dative.

(15)   a.   /c/ + /i/ + /o/ → /cze/

Note, however, that the *co* in the nominative and the accusative does not become *cze*. I assume that the *o* in the nominative and accusative resists the process in (15). This is because the *o* in the nominative and accusative is a 'different' *o* than the *o* in the genitive and dative. This *o* spells out different features than the *o*, such as nominative and accusative case, which in the case of the genitive and dative are realized by *go* and *mu*.

I am not aware of an example that independently shows this change as a whole. However, there are examples that show the change step by step. That is, I have an example in which the combination of *i* and *o* becomes *e*, and I have an example in which *c* and *e* become *cze*. I give them in

(16)   a.   /i/ + /o/ → /e/
              (i)   /c/ + /e/ → /cze/

Consider the paradigm for the singular of *biurko* 'desk' and the singular of *słońce* 'sun' in Table 8.9.

Table 8.9: Polish nouns (**swan2002**: 116,117)

	desk.SG	sun.SG
NOM	biurk-o	słońc-e
ACC	biurk-o	słońc-e
GEN	biurk-a	słońc-a
DAT	biurk-u	słońc-u

The stem and the suffixes are identical in both paradigms, except for in the nominative and the accusative. There, the suffix is *o* on the stem *biurk*, and the suffix is *e* on the stem *słońc*. Analyzing *słońc-e* as *słońc-i-o* brings back regularity in the paradigm.

I give the example in which the combination of *c* and *e* results in *cze* in (17).

(17)   ojc-e: ojcze
        father-VOC father.VOC

(**swan2002**: 26)

The noun *ojc* 'father' combines with the vocative marker *e*. The sequence *c-e* changes

to *cze.*

The conclusion I draw from this rather long reasoning is that the morpheme *o* is not specific to animate relative pronouns, but it also appears elsewhere, for instance in inanimate relative pronouns, demonstratives and in the *ni-* and *je-*pronouns, as shown in Table 8.10.

Table 8.10: Polish dative pronouns (underlying and surface)

	underlying	surface
DEM	t-i-o-mu	t-e-mu
nie-pronoun	ni(-i)-o-mu	n-i-e-mu
je-pronoun	j(-i)-o-mu	j-e-mu

What these elements all have in common is that they are pronouns. Moreover, they can all appear in both animate and inanimate gender. Therefore, I assume that the *o* spells out pronominal features and gender features. I give the lexical entry in (18).
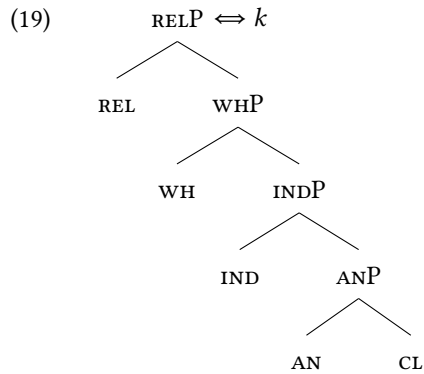
(18)   ANP ⟺ *o*

        AN   CLP

            CL   REF
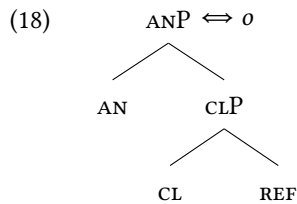
Finally, I discuss morpheme *k.* This morpheme corresponds to what I called the REL-feature in Chapter 6 and in the introduction to this chapter. I argue that this morpheme actually spells out the operator features WH and REL and number and gender features.

I start with the operator features WH and REL. The Polish relative pronouns are WH-pronouns, and they are also used as interrogatives. Therefore, just like the Modern German *we*, the Polish *k* spells out the features WH and REL.
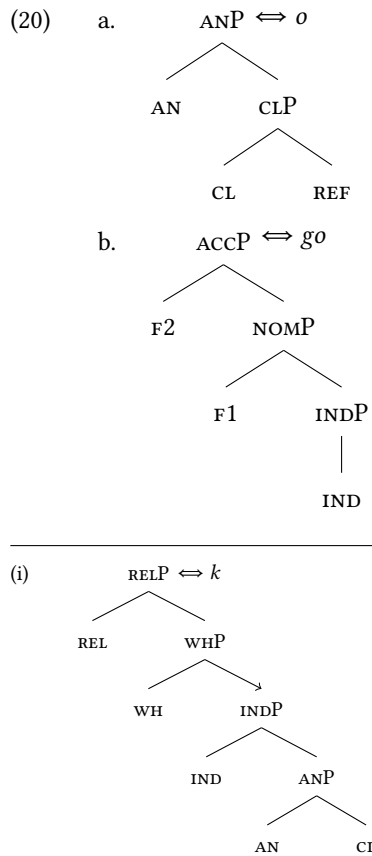
Finally, since the relative pronouns do not have a morphological plural, I assume that *k* contains the feature IND. Lastly, I assume that *k* also contains the features AN and CL. For this I do not have any independent support. I make this assumption to make room for the *i* to be inserted in the inanimate.[8]

In sum, the morpheme *k* realizes the features WH, REL, IND, AN and CL.

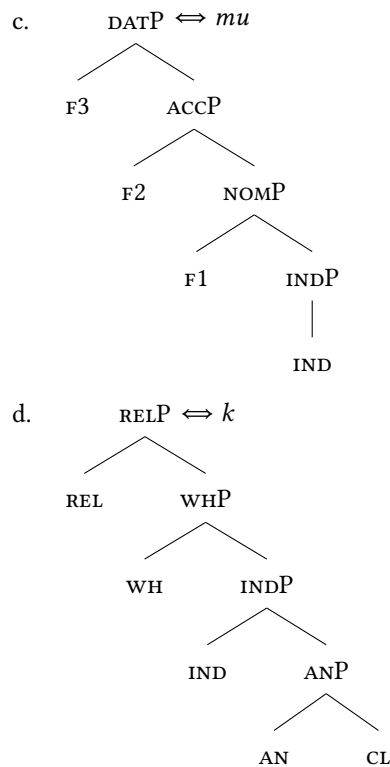[8] To be able to derive the inanimate relative pronoun, I also assume that there is a pointer in the lexical entry for *k*, as shown in (i).

(19)

RELP ⟺ *k*
```
        RELP ⟺ k
        /  \
      REL   WHP
            /  \
          WH    INDP
                /  \
              IND   ANP
                    /  \
                  AN    CL
```

In what follows, I show how the Polish relative pronouns are constructed. I follow the same functional sequence as I did for Modern German. Also, of course, the spellout procedure is identical. The outcome is different because of the different lexical entries Polish has. I repeat the available lexical entries in (20).

(20)   a.

ANP ⟺ *o*
```
      ANP ⟺ o
      /  \
    AN    CLP
          /  \
        CL    REF
```

b.

ACCP ⟺ *go*
```
      ACCP ⟺ go
      /  \
    F2    NOMP
          /  \
        F1    INDP
                |
               IND
```

(i)

RELP ⟺ *k*
```
        RELP ⟺ k
        /  \
      REL   WHP
            /  ↘
          WH    INDP
                /  \
              IND   ANP
                    /  \
                  AN    CL
```

The pointer is situated above the INDP. That means that if there is no animate feature in the structure, the IND can also not be spelled out with *k*. Then there is another morpheme necessary that contributes the feature IND. I propose that this is *i*, which causes the phonological processes described in this section.

c.

$$\text{DATP} \Longleftrightarrow mu$$

```
            DATP ⟺ mu
           /    \
         F3     ACCP
               /    \
             F2     NOMP
                   /    \
                 F1     INDP
                          |
                         IND
```

d.

```
            RELP ⟺ k
           /    \
         REL    WHP
               /    \
             WH     INDP
                   /    \
                 IND    ANP
                       /    \
                     AN     CL
```

Starting from the bottom, the first two features that are merged are REF and CL, creating a CLP. The syntactic structure forms a constituent in the lexical tree in (20a), which corresponds to *o*. Therefore, the CLP is spelled out as *o*, which I do not show here. Then, the feature AN is merged, and a ANP is created. The syntactic structure forms a constituent in the lexical tree in (20a). Therefore, the ANP is spelled out as *o*, shown in (21).

(21)

```
        ( ANP
         /   \
       AN    CLP
            /   \
          CL    REF )
            o
```
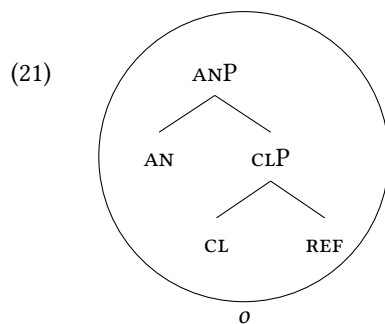
The next feature in the functional sequence is the feature IND. It is merged, and an INDP is created. This syntactic structure does not form a constituent in the lexical tree in (20a). There is no other lexical tree that contains the syntactic structure as a constituent. Therefore, there is no succesfull spellout for the syntactic structure in

the derivational step in which the structure is spelled out as a single phrase ((22a) in the Spellout Algorithm, repeated from Chapter 7).

(22)   **Spellout Algorithm** (as in **caha2020a**, based on **starke2018**)

    a.   Merge F and spell out.

    b.   If (a) fails, move the Spec of the complement and spell out.

    c.   If (b) fails, move the complement of F and spell out.

The first movement option in the Spellout Algorithm is moving the specifier, as described in (22b). As there is no specifier in this structure, the first movement option irrelevant. The second movement option in the Spellout Algorithm is moving the complement, as described in (22c). In this case, the complement of IND, the ANP, is moved to the specifier of INDP. I show this movement in (23).[9]
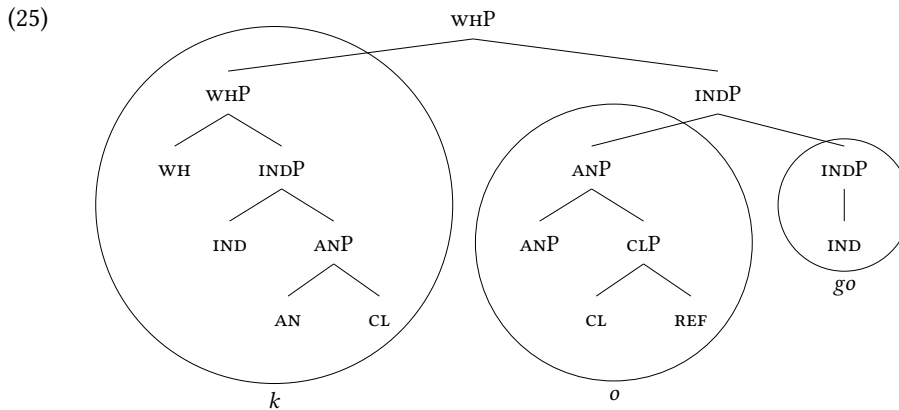
(23)
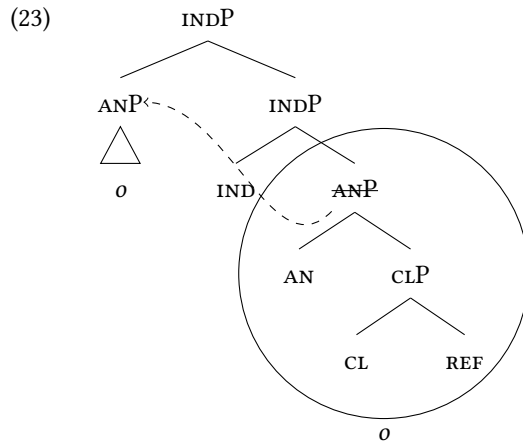
The INDP has a different internal syntax now. It still contains the feature IND, but the ANP is no longer a sister of IND. Now the ANP is moved away, the INDP forms a constituent in the lexical tree of (20b). Therefore, the INDP is spelled out as *go*, as shown in (24).

(24)

---
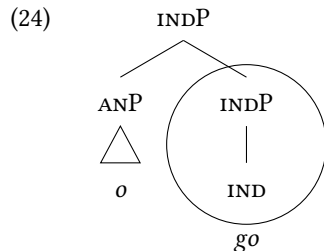
[9]In its landing position the internal structure of the ANP is no longer shown (to save some space), and its phonological form is placed under the triangle. The strikethrough of the lower ANP indicates that the complement of IND disappears.

Next, the feature wh is merged. The derivation for this feature resembles the derivation of wh in Modern German. The feature is merged with the existing syntactic structure, creating a whP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Therefore, in a second workspace, the feature wh is merged with the feature ind (the previous syntactic feature on the functional sequence) into a whP. This syntactic structure does not form a constituent in any of the lexical trees in the language's lexicon. Therefore, the feature wh combines not only with the feature merged before it, but with a phrase that consists of the two features merged before it: ind and an. Also this syntactic structure does not form a constituent in any of the lexical trees in the language's lexicon. Therefore, the feature wh combines with a phrase that consists of the three features merged before it: ind, an and cl. This syntactic structure forms a constituent in the lexical tree in (20d), which corresponds to the *k*. Therefore, the whP is spelled out as *k*. The newly created phrase is merged as a whole with the already existing structure, and projects to the top node, as shown in (25).

(25)

```
                                whP
           whP                              indP
       wh      indP                 anP              indP
            ind      anP         anP    clP          ind
                  an    cl             cl   ref       go
            k                      o
```

The next feature in the functional sequence is the feature rel. The derivation for this feature resembles the derivation of rel in Modern German. The feature is merged with the existing syntactic structure, creating a relP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the whP from the indP. The feature rel is merged in both workspaces, so with whP and and with indP. The spellout of rel is successful when it is combined with the whP. It namely forms a constituent in the lexical tree in (20d), which corresponds to the *k*. The relP is spelled out as *k*, and it is merged back to the existing syntactic structure.

The next feature on the functional sequence is f1. This feature should somehow end up merging with indP, because it forms a constituent in the lexical tree in (20b),

which corresponds to the *go*. This is achieved via Backtracking in which phrases are split up and going through the Spellout Algorithm. I go through the derivation step by step. The feature F1 is merged with the existing syntactic structure, creating a NOMP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the INDP. The feature F1 is merged in both workspaces, so with the RELP and and with the INDP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon. The first movement option in the Spellout Algorithm is moving the specifier. In the RELP there is no specifier, so this movement option is irrelevant. In the INDP, however, there is a specifier, which is moved to the specifier of NOMP. This syntactic structure forms a constituent in the lexical tree in (20b), which corresponds to the *go*. The NOMP is spelled out as *go*, and the NOMP is merged back to the existing syntactic structure.

For the accusative relative pronoun, the last feature on the functional sequence is the feature F2. Its derivation proceeds the same as the one for the feature F1. The feature F2 is merged with the existing syntactic structure, creating a ACCP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the NOMP. The feature F2 is merged in both workspaces, so with the RELP and and with the NOMP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon. The first movement option in the Spellout Algorithm is moving the specifier. In the RELP there is no specifier, so this movement option is irrelevant. In the NOMP, however, there is a specifier, which is moved to the specifier of ACCP. This syntactic structure forms a constituent in the lexical tree in (20b), which corresponds to the *go*. The ACCP is spelled out as *go*, and the ACCP is merged back to the existing syntactic structure, as shown in (26).

(26)
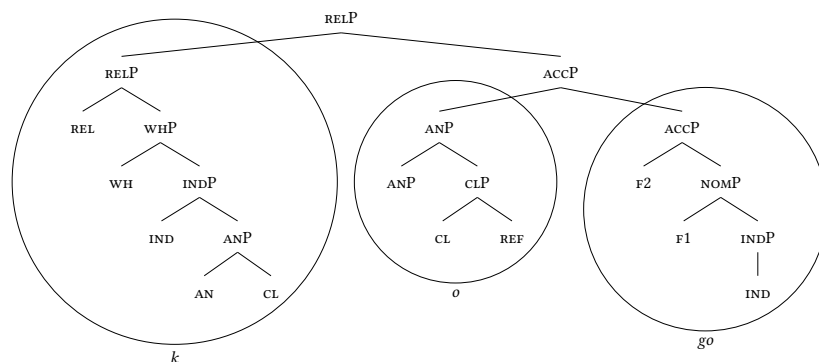
For the dative relative pronoun, the last feature on the functional sequence is the

feature F3. Its derivation proceeds the same as the one for the feature F2. The feature F3 is merged with the existing syntactic structure, creating a DATP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the ACCP. The feature F3 is merged in both workspaces, so with the RELP and and with the ACCP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon. The first movement option in the Spellout Algorithm is moving the specifier. In the RELP there is no specifier, so this movement option is irrelevant. In the ACCP, however, there is a specifier, which is moved to the specifier of DATP. This syntactic structure forms a constituent in the lexical tree in (20c), which corresponds to the *mu*. The DATP is spelled out as *mu*, and the DATP is merged back to the existing syntactic structure, as shown in (27).

(27)
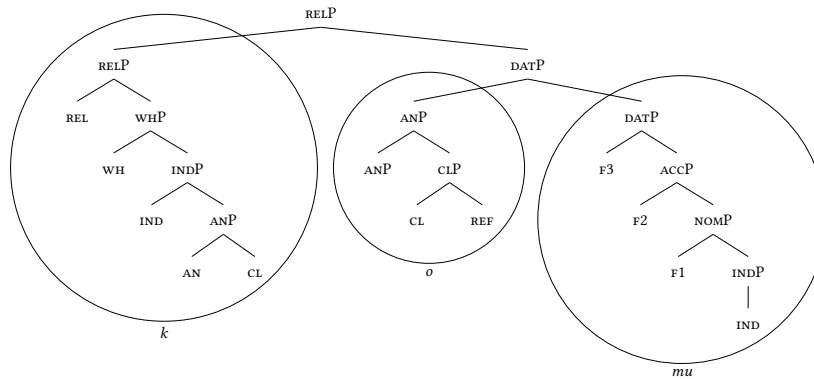
To summarize, I decomposed the relative pronoun into three morphemes: *k*, *o* and the suffix (*go* and *mu*). I showed which features each of the morphemes spells out and what the internal syntax looks like that they are combined into. It is this internal syntax that determines whether the light head can be deleted or not.

8.2   The Polish extra light head

I have suggested that headless relatives are derived from light-headed relatives. The light head or the relative pronoun can be deleted when either of them is a constituent that is contained within other. In the introduction of this chapter, I claimed that the internal syntax of light heads in Polish looks as shown in (28).
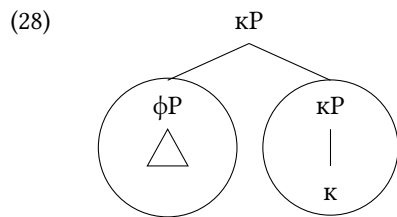
(28)

In Chapter 6, I suggested that light heads consist of at least two features: φ and κ. In this section, I determine the exact feature content of the light head. Like I suggested in Chapter 7 for Modern German, I end up claiming that the phi and case features of the relative pronoun is the light head in headless relatives. I show the complete structure that I work towards in this section in (29).

(29)
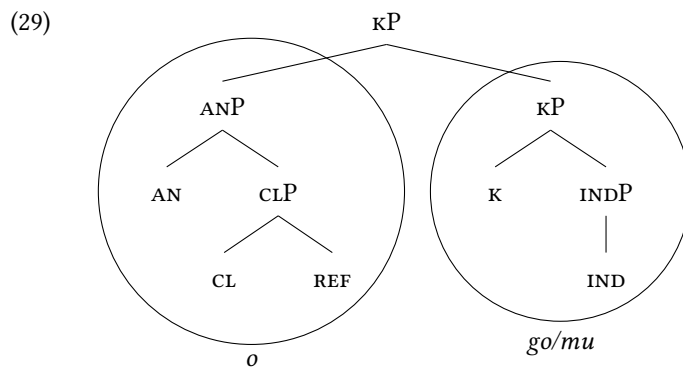
For Modern German, I considered two kinds of headless relatives as the source of the headless relative. First, the headless relative is derived from an existing light-headed relative, and the deletion of the light head is optional. Second, the headless relative is derived from a light-headed relative that does not surface in Polish, and the deletion of the light head is obligatory. For Modern German I concluded it was the second, and I determined which features this extra light head should consist of. I do the same investigation for Polish, and I reach the same conclusion as I did for Modern German.

Consider the existing Polish light-headed relative in (30).

(30) Jan śpiewa to,   co   Maria śpiewa.
      Jan sings   DEM.M.SG.ACC RP.AN.ACC Maria sings
      'John sings what Mary sings.'   (Polish, **citko2004**: 103)

This light-headed relative, in which the demonstrative is the light head, could potentially be the source for headless relatives.

For Modern German, I gave two arguments for not taking this existing light-headed relative as source of the headless relative. In what follows, I show that these arguments hold for Polish in the same way as they did for Modern German.

First, in headless relatives the morpheme *kolwiek* 'ever' can appear, as shown in (31).

(31)   Jan śpiewa co   -kolwiek Maria śpiewa.
        Jan sings   RP.AN.ACC ever   Maria sings
        'Jan sings everything Maria sings.'   (Polish, **citko2004**: 116)

Light-headed relatives do not allow this morpheme to be inserted, illustrated in (32).

(32)   *Jan śpiewa to,   co   -kolwiek Maria śpiewa.
        Jan sings   DEM.M.SG.ACC RP.AN.ACC ever   Maria sings
        'John sings what Mary sings.'   (Polish, **citko2004**: 116)

Just like for Modern German, I assume that the headless relative is not derived from an ungrammatical structure.[10]

The second argument against the existing light-headed relatives being the source of headless relatives comes from their interpretation. Headless relatives have two possible interpretations, and light-headed relatives have only one of these. Just like in Modern German, Polish headless relatives can be analyzed as either universal or definite (**citko2004**: 103). Light-headed relatives, such as the one in (30), only have the definite interpretation.

In the remainder of this section, I discuss the two extra light heads that I compare the constituents of in Section 8.3. The are the accusative animate and the dative animate, shown in (33).

(33)   a.   o-go
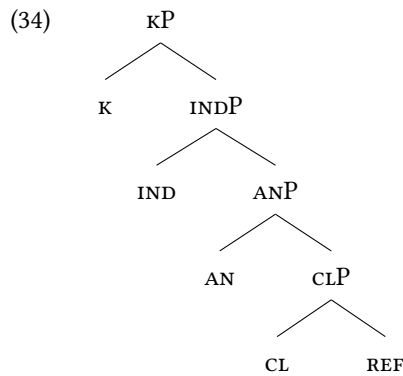   ELH.AN.ACC

---

[10]**citko2004** takes the complementary distribution of *kolwiek* 'ever' and the light head to mean that they share the same syntactic position. I have nothing to say about the exact syntactic position of *ever*, but in my account it cannot be the head of the relative clause, as this position is reserved for the extra light head. My reason for the incompatibility of *ever* and the light head is that they are semantically incompatible.

For concreteness, I assume *ever* to be situated within the relative clause. Placing it in the main clause generates a different meaning, illustrated by the contrast in meaning between (ia) and (ib) in Czech.

(i)   a.   Sním, co   -koliv mi   uvaříš.
              eat.1sg what ever   I.DAT cook.2SG
              'I will eat whatever you will cook for me.'
        b.   Sním co   -koliv, co   mi   uvaříš.
              eat.1sg what ever   what I.DAT cook.2SG
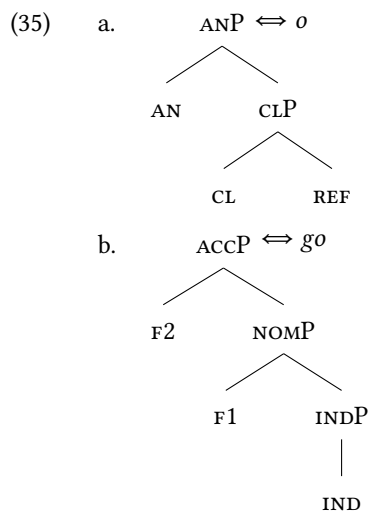   'I will eat anything that you will cook for me.'   (Czech, **simik2016**: 115)

b. o-mu

ELH.AN.DAT

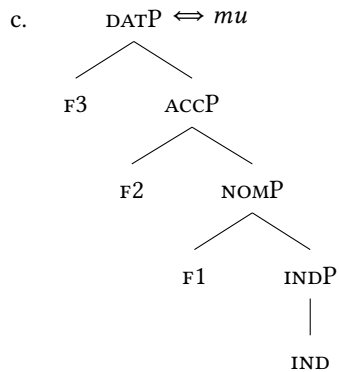In Chapter 7, I showed that the relative pronoun contains two features more than the extra light head, namely WH and REL. This means that the functional sequence for the extra light head is as shown in (34).

(34)

```
              KP
            /    \
           K     INDP
                /    \
              IND    ANP
                    /    \
                  AN     CLP
                        /    \
                      CL     REF
```

The functional sequence contains the pronominal feature REF, the gender features CL and AN, the number feature IND and case features K.

I introduced the lexical entries that are required to spell out these features in Section 8.1. I repeat them in (35).

(35) a.

```
           ANP  ⟺  o
          /    \
        AN     CLP
              /    \
            CL     REF
```

b.

```
           ACCP  ⟺  go
          /    \
        F2     NOMP
              /    \
            F1     INDP
                     |
                    IND
```

c.   DATP ⟺ *mu*

```
        DATP ⟺ mu
        /\
      F3   ACCP
           /\
         F2   NOMP
              /\
            F1   INDP
                  |
                 IND
```
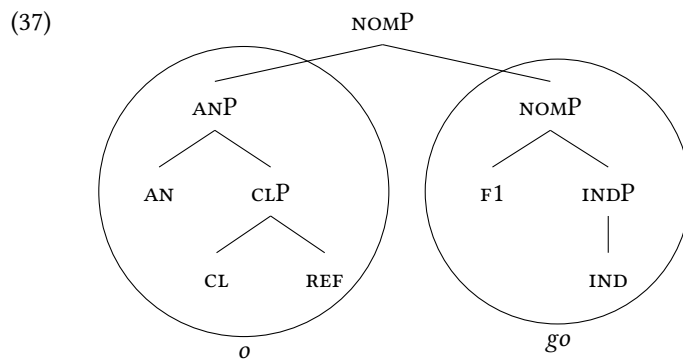
In what follows, I construct the Polish extra light heads. Until the feature IND, the derivation is identical to the one of the relative pronoun. I give the syntactic structure at that point in (36).
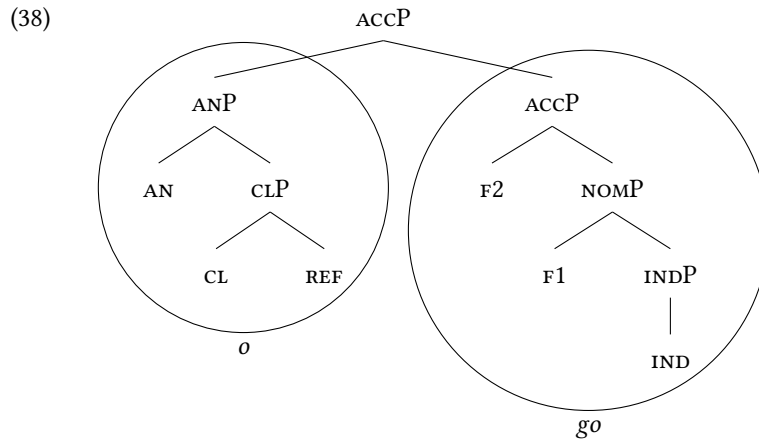
(36)

```
        INDP
        /\
     ANP   INDP
      △     |
      o     IND
            go
```
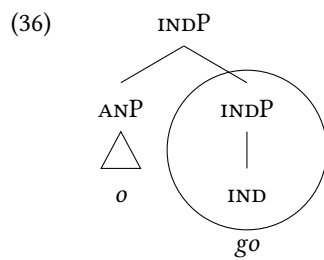
Then, the feature F1 is merged. The feature F1 is merged with the INDP, forming an NOMP. This phrase is not contained in any of the Polish lexical entries. The first movement is tried, and the specifier of the INDP, the ANP, is moved to the specifier of NOMP. This phrase is contained in the lexical tree in (35b), so it is spelled out as *go*, as shown in (37).

(37)

```
                NOMP
         _____/_____
        /                  \
       ANP                 NOMP
       /\                  /\
     AN   CLP            F1   INDP
          /\                   |
        CL   REF              IND
          o                   go
```
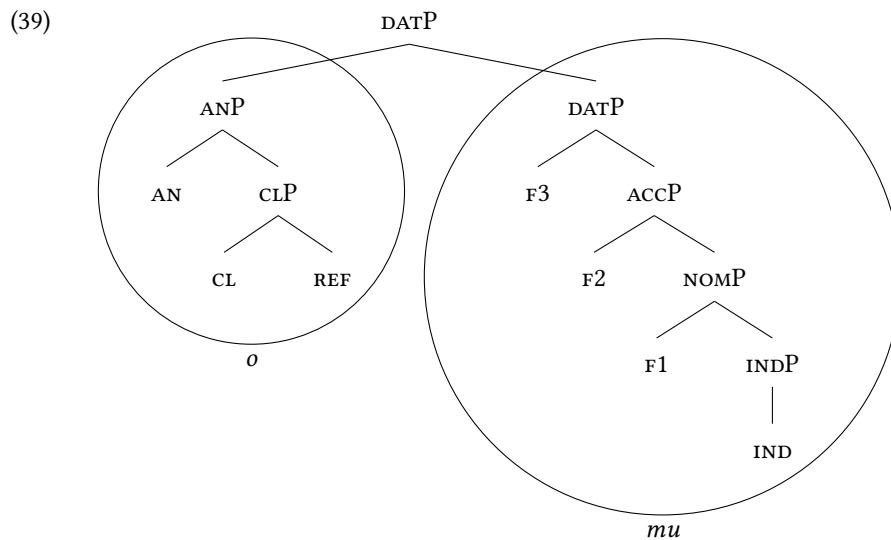
For the accusative extra light head, the last feature is merged: the F2. The feature is merged with the NOMP, forming an ACCP. This phrase is not contained in any of the lexical entries. The first movement is tried, and the specifier of the NOMP, the ANP, is

moved to the specifier of ACCP. This phrase is contained in the lexical tree in (35b), so it is spelled out as *go*, as shown in (38).

(38)

```
                              ACCP
          ┌───────────────────────────────────┐
      ⎛       ANP          ⎞   ⎛       ACCP          ⎞
      ⎜      /   \         ⎟   ⎜      /    \         ⎟
      ⎜   AN      CLP      ⎟   ⎜   F2      NOMP      ⎟
      ⎜         /   \      ⎟   ⎜         /    \      ⎟
      ⎜      CL      REF   ⎟   ⎜      F1      INDP   ⎟
      ⎝                    ⎠   ⎜             |       ⎟
                                ⎝           IND      ⎠
             o                          go
```

For the dative relative pronoun, one more feature is merged: the F3. The feature is merged with the ACCP, forming an DATP. This phrase is not contained in any of the lexical entries. The first movement is tried, and the specifier of the ACCP, the ANP, is moved to the specifier of DATP. This phrase is contained in the lexical tree in (35c), so it is spelled out as *mu*, as shown in (39).

(39)

```
                                DATP
          ┌─────────────────────────────────────────┐
      ⎛       ANP          ⎞   ⎛          DATP             ⎞
      ⎜      /   \         ⎟   ⎜         /    \            ⎟
      ⎜   AN      CLP      ⎟   ⎜      F3      ACCP         ⎟
      ⎜         /   \      ⎟   ⎜            /    \         ⎟
      ⎜      CL      REF   ⎟   ⎜         F2      NOMP      ⎟
      ⎝                    ⎠   ⎜               /    \      ⎟
                               ⎜            F1      INDP   ⎟
             o                 ⎜                   |       ⎟
                               ⎝                  IND      ⎠
                                          mu
```

In sum, Polish headless relatives are derived from a the light-headed relative with an extra light head, just like they are in Modern German. The extra light head is spelled out a lexical entry that spells out phi features and another one that spells out case features. The lexical entries used to spell this light head out are also used to spell out part of the internal syntax of the relative clause.

8.3   Comparing Polish constituents

In this section, I compare the constituents of extra light heads to those of relative pronouns in Polish. This is the worked out version of the comparisons in Section 6.2.2. What is different here is that I show the comparison for Polish specifically, and that the content of the constituents that are being compared are motivated earlier in this chapter.

I give three examples, in which the internal and external case vary. I start with an example with matching cases, in which the internal and the external case are both accusative. Then I give an example in which the internal dative case is more complex than the external accusative case. I end with an example in which the external dative case is more complex than the internal accusative case. I show that the first example is grammatical and that the last two are not. I derive this by showing that only in the first situation the light head is a constituent that is structurally contained within the relative pronoun, and that it can therefore then be deleted. In the other two examples, neither the light head nor the relative pronoun is a constituent that is structurally contained in the other element. I do not discuss formal constituent containment in this chapter, because it never leads to a successful deletion when structural constituent containment does not.

I start with the matching cases. Consider the example in (40), in which the internal accusative case competes against the external accusative case. The relative clause is marked in bold. The internal case is accusative, as the predicate *lubić* 'to like' takes accusative objects. The relative pronoun *kogo* 'RP.AN.ACC' appears in the accusative case. This is the element that surfaces. The external case is accusative as well, as the predicate *lubić* 'to like' also takes accusative objects. The extra light head *ogo* 'ELH.AN.ACC' appears in the accusative case. It is placed between square brackets because it does not surface.

(40)   Jan lubi   [ogo]   **kogo   -kolkwiek Maria lubi**.
       Jan like.3SG[Acc] ELH.ACC.AN.SG RP.ACC.AN ever   Maria like.3SG[Acc]
       'Jan likes whoever Maria likes.'
                    (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

In Figure 8.3, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *k*, *o* and *go*. The extra light head consists of two morphemes: *o* and *go*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around each constituent that is structurally a constituent in both the extra light head and the relative pronoun.
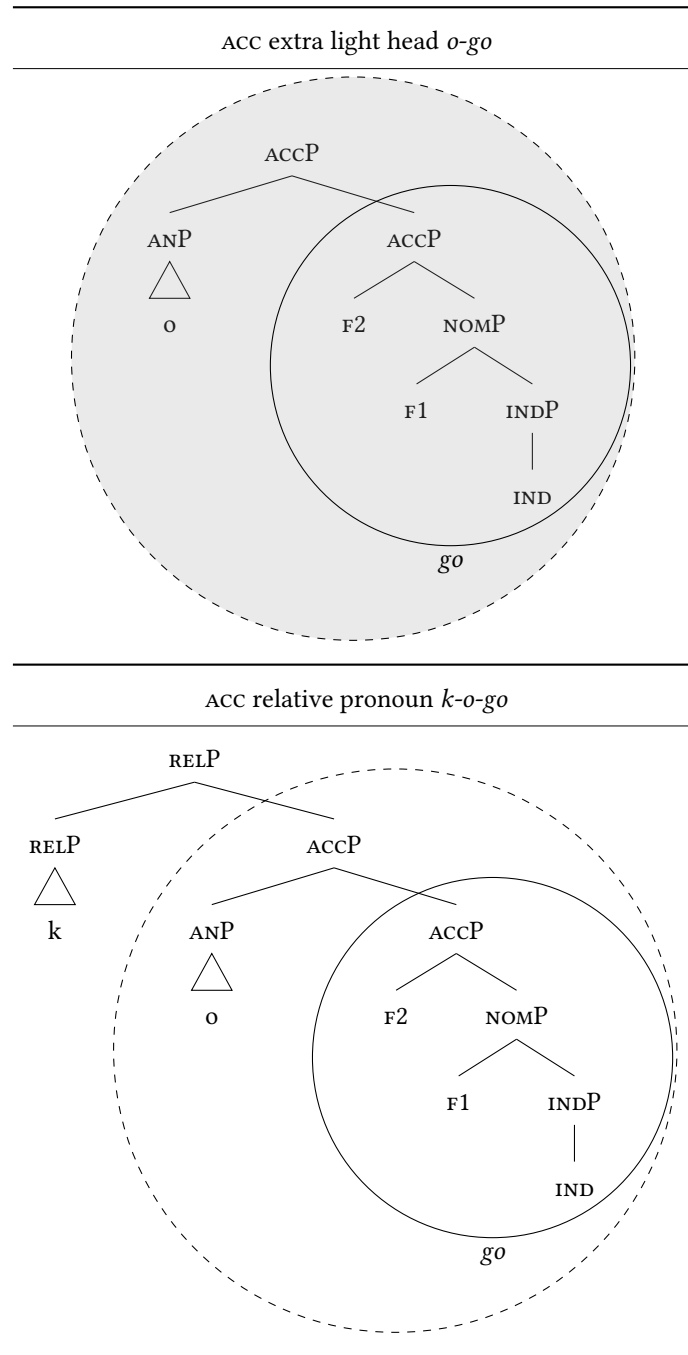
Figure 8.3: Polish EXT_ACC vs. INT_ACC → *kogo*

The extra light head consists of two constituents: the ᴀɴP and the (lower) ᴀᴄᴄP. Together they form the (higher) ᴀᴄᴄP. This (higher) ᴀᴄᴄP is a constituent that is structurally contained within the relative pronoun. Therefore, the extra light head can be deleted. I signal the deletion of the extra light head by marking the content of its circle gray. The surface pronoun is the relative pronoun that bears the internal case: *kogo*.

I continue with the example in which the internal case is more complex than the external case. Consider the examples in (41), in which the internal dative case competes against the external accusative case. The relative clauses are marked in bold. It is not possible to make a grammatical headless relative in this situation. The internal case is dative, as the predicate *dokuczać* 'to tease' takes dative objects. The relative pronoun *komu* 'ʀP.ᴀɴ.ᴅᴀᴛ' appears in the dative case. The external case is accusative, as the predicate *lubić* 'to like' takes accusative objects. The extra light head *ogo* 'ᴇʟʜ.ᴀɴ.ᴀᴄᴄ' appears in the accusative case. (41a) is the variant of the sentence in which the extra light head is absent (indicated by the square brackets) and the relative pronoun surfaces, which is ungrammatical. (41b) is the variant of the sentence in which the relative pronoun is absent (indicated by the square brackets) and the extra light head surfaces, which is ungrammatical too.

(41) a. *Jan lubi   [ogo]   **komu   -kolkwiek dokucza**.
          Jan like.3sɢ[ᴀᴄᴄ] ᴇʟʜ.ᴀᴄᴄ.ᴀɴ ʀP.ᴅᴀᴛ.ᴀɴ.sɢ ever   tease.3sɢ[ᴅᴀᴛ]
          'Jan likes whoever he teases.'
                        (Polish, adapted from **citko2013** after **himmelreich2017**: 17)
      b. *Jan lubi   ogo   **[komu]   -kolkwiek dokucza**.
          Jan like.3sɢ[ᴀᴄᴄ] ᴇʟʜ.ᴀᴄᴄ.ᴀɴ ʀP.ᴅᴀᴛ.ᴀɴ.sɢ ever   tease.3sɢ[ᴅᴀᴛ]
          'Jan likes whoever he teases.'
                        (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

In Figure 8.4, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *k*, *o* and *mu*. The light head consists of two morphemes: *o* and *go*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around each constituent that is structurally a constituent in both the extra light head and the relative pronoun.

In this case, the light head is not a constituent that is structurally contained within the relative pronoun. The extra light head consists of two constituents: the ᴀɴP and the (lower) ᴀᴄᴄP. Together they form the (higher) ᴀᴄᴄP. Both of these constituents are also constituents that are structurally contained within the relative pro-
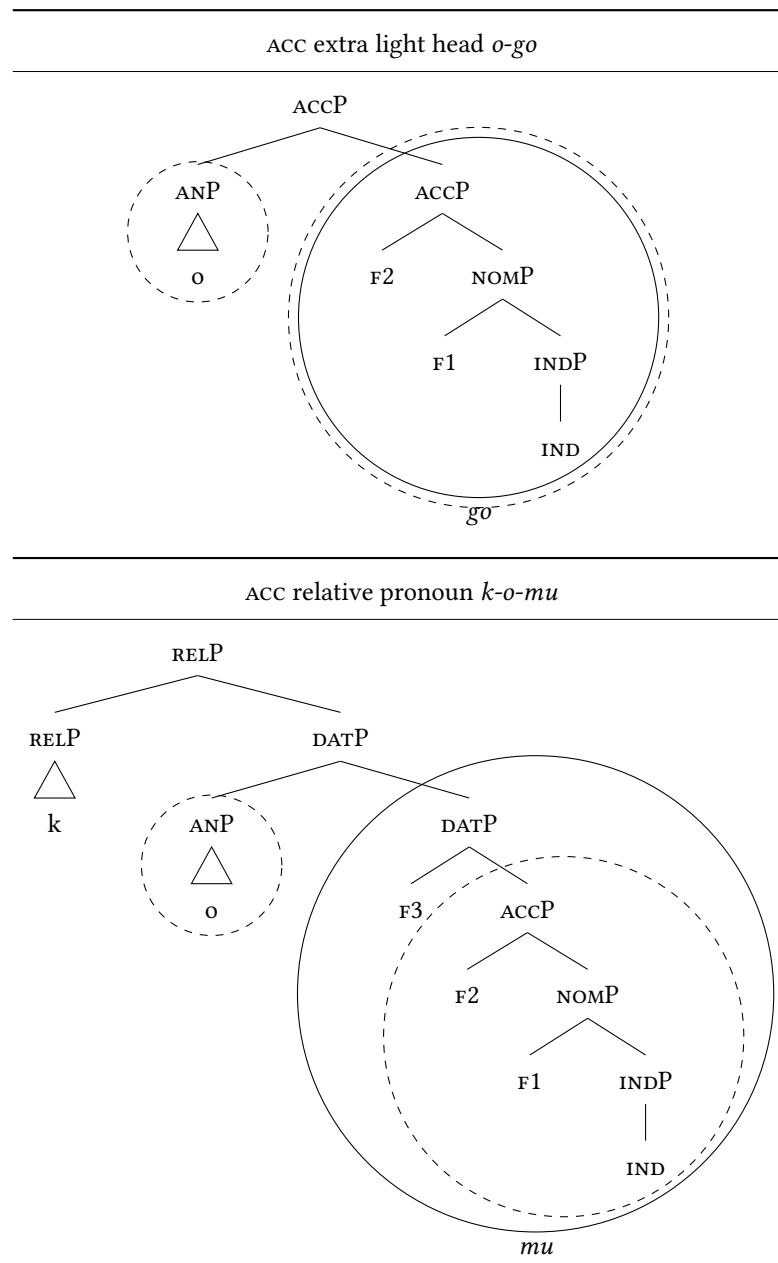
Figure 8.4: Polish EXT_ACC vs. INT_DAT ↛ *ogo/komu*

noun. However, the (higher) ᴀᴄᴄP is not a constituent that is structurally contained within the relative pronoun. The constituent in which the ᴀᴄᴄP is contained namely also contains the feature ꜰ3 that makes it a ᴅᴀᴛP. In other words, each feature and even each subconstituent of the extra light head is contained in the relative pronoun. However, they do not form a single constituent that is structurally contained within the relative pronoun. Therefore, the extra light head cannot be deleted.

Recall from Section 7.4 that this is the crucial example in which Modern German and Polish differ. The contrast lies in that the extra light head in Modern German corresponds to a single lexical entry and in Polish it corresponds to two lexical entries. In Modern German, extra light heads in a less complex case form a constituent that is structurally contained within the relative pronoun. In Polish, they do not. Relative pronouns in a complex case still contain all features of the extra light head in a less complex case, but the extra light head does not form a single constituent that is structurally contained within the relative pronoun. That is, the weaker feature containment requirement is met, but the stronger constituent containment requirement is not. This shows the necessity of formulating the proposal in terms of containment as a single constituent.

The relative pronoun is not a constituent that is structurally or formally contained within the light head. It namely lacks the complete constituent and ʀᴇʟP. Therefore, the extra light cannot be deleted, and the relative pronoun cannot be deleted either. As a result, there is no grammatical headless relative possible.

I end with the example in which the external case is more complex than the internal case. Consider the examples in (42), in which the internal dative case competes against the external accusative case. The relative clauses are marked in bold. It is not possible to make a grammatical headless relative in this situation. The internal case is accusative, as the predicate *wpuścić* 'to let' takes accusative objects. The relative pronoun *kogo* 'ʀᴘ.ᴀɴ.ᴀᴄᴄ' appears in the accusative case. The external case is dative, as the predicate *ufać* 'to trust' takes dative objects. The extra light head *omu* 'ᴇʟʜ.ᴀɴ.ᴅᴀᴛ' appears in the dative case. (42a) is the variant of the sentence in which the extra light head is absent (indicated by the square brackets) and the relative pronoun surfaces, which is ungrammatical. (42b) is the variant of the sentence in which the relative pronoun is absent (indicated by the square brackets) and the extra light head surfaces, which is ungrammatical too.

(42) a. *Jan ufa   [omu]   **kogo   -kolkwiek wpuścil   do**
          Jan trust.3sɢ_{[ᴅᴀᴛ]} ᴇʟʜ.ᴅᴀᴛ.ᴀɴ ʀᴘ.ᴀᴄᴄ.ᴀɴ ever   let.3sɢ_{[ᴀᴄᴄ]} to
          domu.
          home
          'Jan trusts whoever he let into the house.'
                    (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

b. Jan ufa   omu   **[kogo]** **-kolkwiek wpuścil   do**
    Jan trust.3SG_[DAT] ELH.DAT.AN RP.ACC.AN ever   let.3SG_[ACC] to
    domu.
    home
    'Jan trusts whoever he let into the house.'
            (Polish, adapted from **citko2013** after **himmelreich2017**: 17)

In Figure 8.5, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *k*, *o* and *go*. The light head consists of two morphemes: *o* and *mu*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around each constituent that is structurally a constituent in both the extra light head and the relative pronoun.

In this case, the light head is not a constituent that is structurally contained within the relative pronoun. The extra light head consists of a single constituent: the DATP. The relative pronoun only contains the ACCP, and it lacks the F3 that makes a DATP. Since the weaker feature containment requirement is not met, the stronger constituent containment requirement cannot be met either.

The relative pronoun is not a constituent that is structurally contained within the light head. It namely lacks the complete constituent and RELP. Therefore, the extra light cannot be deleted, and the relative pronoun cannot be deleted either. As a result, there is no grammatical headless relative possible.

8.4   Summary

Polish is an example of a matching type of language. This means that headless relatives are grammatical in the language only when the internal and external case match.

I derive this from the internal syntax of light heads and relative pronouns in Polish. The features of the light head are spelled out by two lexical entries, which respectively spell out phi and case features. The features of the relative pronoun are spelled out by the same lexical entries plus one that amongst other spells out the relative feature. The internal syntax of the Polish light head and relative pronoun are shown in Figure 8.6.

A crucial characteristic of matching languages such as Polish is that they have separate morphemes for phi and case features. Therefore, the light head is a constituent that is contained within the relative pronoun when the internal and the ex-

DAT extra light head *o-mu*

ACC relative pronoun *k-o-go*
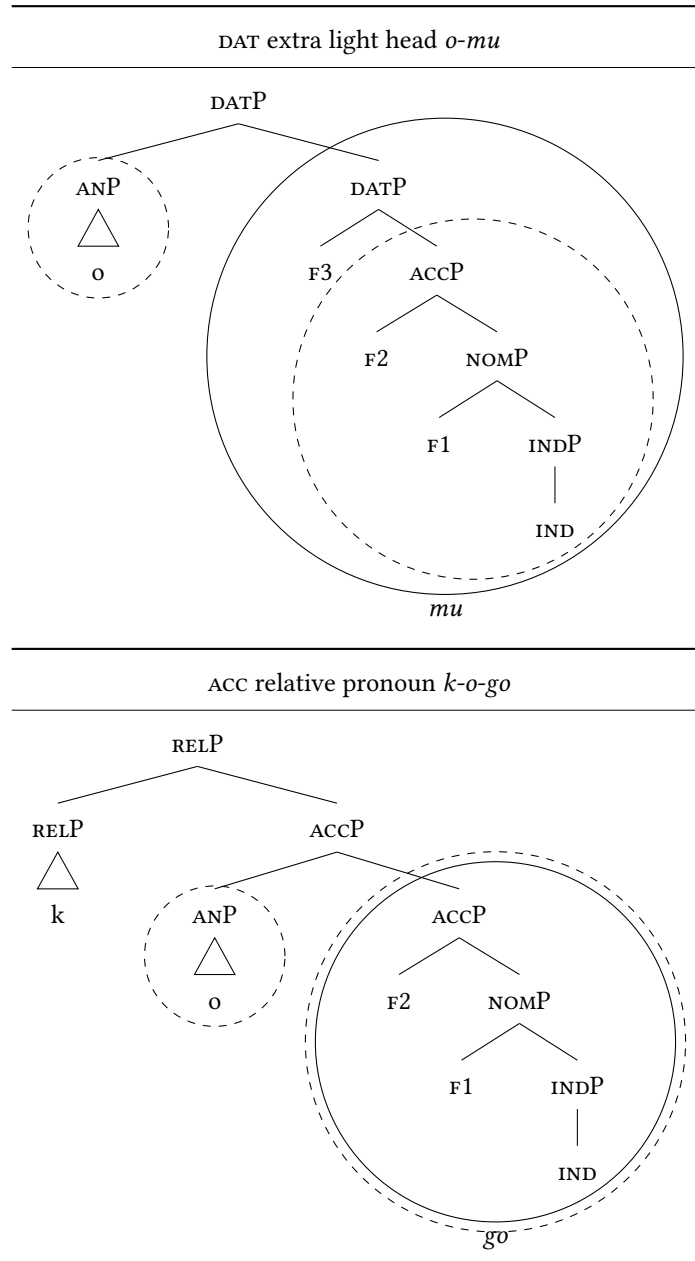
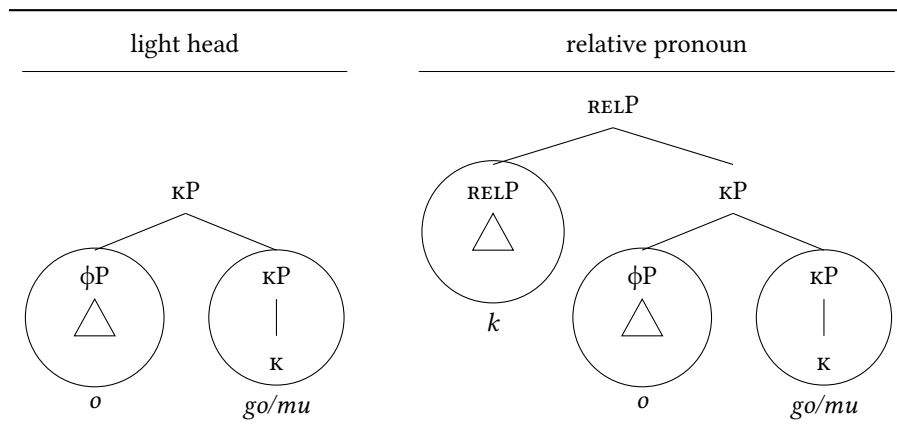Figure 8.5: Polish EXT_DAT vs. INT_ACC ↛ *omu/kogo*

Figure 8.6: ʟʜ and ʀᴘ in Polish (repeat ed)

ternal case match. As a result, the light head can be deleted, and the relative pronoun can surface, bearing the internal case.

When the internal and external case differ, neither the light head nor the relative pronoun is a constituent that is contained within the other element. None of the elements can be deleted, and there is no grammatical headless relative possible.

Chapter 9

Deriving the unrestricted type

In Chapter 6, I suggested that languages of the unrestricted type have two possible light heads, which are part of the derivation under different circumstances. The first possible light head derives the pattern correctly for for the situation in which cases match and the situation in which internal case is more complex than the external case. The second possible light head derives the pattern correctly for for the situation in which cases match and the situation in which external case is more complex than the internal case.

The first possible light head has the same internal syntax as the extra light head in internal-only languages, such as Modern German. It is spelled out by a portmanteau for phi and case features. The relative pronoun is spelled out by that same portmanteau plus a separate lexical entry that spells out the feature REL. This means that the internal syntax of light heads and relative pronouns looks as shown in Figure 9.1.
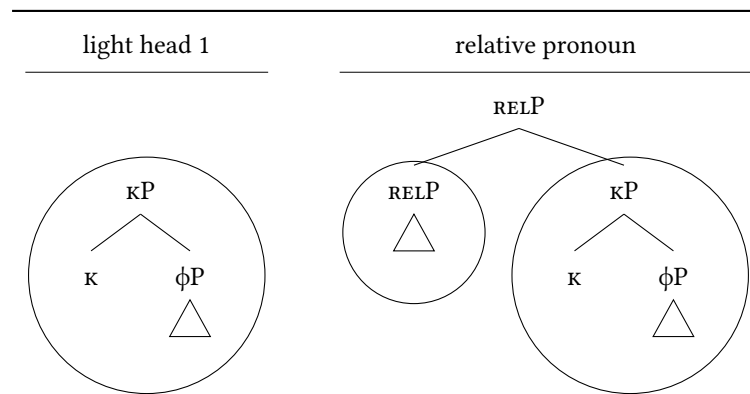

Figure 9.1: LH-1 and RP in the unrestricted type

These lexical entries lead to the grammaticality pattern shown in Table 9.1.

Consider first the situation in which the internal and the external case match. The situation here is identical to the one in the internal-only type of language. The light

Table 9.1: Grammaticality in the unrestricted type (part 1)

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$\kappa_{INT} = \kappa_{EXT}$	$[\kappa_1[\phi]]$	$[REL], [\kappa_1[\phi]]$	structure	LH	RP_{INT}
$\kappa_{INT} > \kappa_{EXT}$	$[\kappa_1[\phi]]$	$[REL], [\kappa_2[\kappa_1[\phi]]]$	structure	LH	RP_{INT}
$\kappa_{INT} < \kappa_{EXT}$	$[REL], [\kappa_1[\phi]]$	$[\kappa_2[\kappa_1[\phi]]]$	no	none	*

head consists of a phi and case feature portmanteau. The relative pronoun consists of the same morpheme plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is a constituent that is structurally contained within the relative pronoun. Therefore, the light head can be deleted, and the relative pronoun surfaces, bearing the internal case.

Consider now the situation in the internal case wins the case competition. Here the situation is identical to the one in the internal-only type of language too. The light head consists of a phi and case feature portmanteau. The relative pronoun consists of a phi and case feature portmanteau that contains at least one more case feature than the light head (κ_2 in Figure 9.1) plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is a constituent that is structurally contained within the relative pronoun. Therefore, the light head can be deleted, and the relative pronoun surfaces, bearing the internal case.

Consider now the situation in the internal case wins the case competition. Also here the situation is identical to the one in the internal-only type of language. The relative pronoun consists of a phi and case feature portmanteau and an additional morpheme that spells out the feature REL. Compared to the relative pronoun, the light head lacks the morpheme that spells out REL, and it contains at least one more case feature (κ_2 in Figure 9.1). The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is a constituent that is contained within the other element. Therefore, none of the elements can be deleted, and there is no headless relative construction possible.

In Chapter 4, I showed that Old High German is a language of the unrestricted type. In this chapter, I show that Old High German has light heads and relative pronouns of type of structure described in Figure 9.1. I give a compact version of the structures in Figure 9.2.

Consider the first possible light head in Figure 9.2. These light heads (i.e. phi and case features) in Old High German are spelled out by a single morpheme, indicated by the circle around the structure. They are spelled out as *ër* or *ën*, depending on which
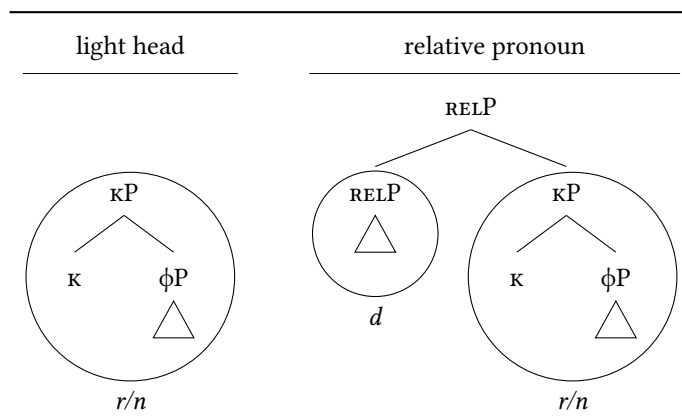
Figure 9.2: LH-1 and RP in Old High German

case they realize. Consider the relative pronoun in Figure 9.2. Relative pronouns in Old High German consist of two morphemes: the constituent that forms the light head (i.e. phi and case features) and the RELP, again indicated by the circles. The constituent that forms the light head has the same spellout as in the light head (*ën* or *m*), and the RELP is spelled out as *d*. Throughout this chapter, I discuss the exact feature content of light heads and relative pronouns, I give lexical entries for them, and I show how these lexical entries lead to the internal syntax of light heads and relative pronoun as shown in Figure 9.2.

The second possible light head differs from the first possible head in that it contains an additional feature X. The phi and case features are still spelled out by the phi and case portmanteau. The additional feature X is spelled out by its own lexical entry. The relative pronoun is spelled out by that same portmanteau plus a separate lexical entry that spells out the feature X and the feature REL. This means that the internal syntax of light heads and relative pronouns looks as shown in Figure 9.1.
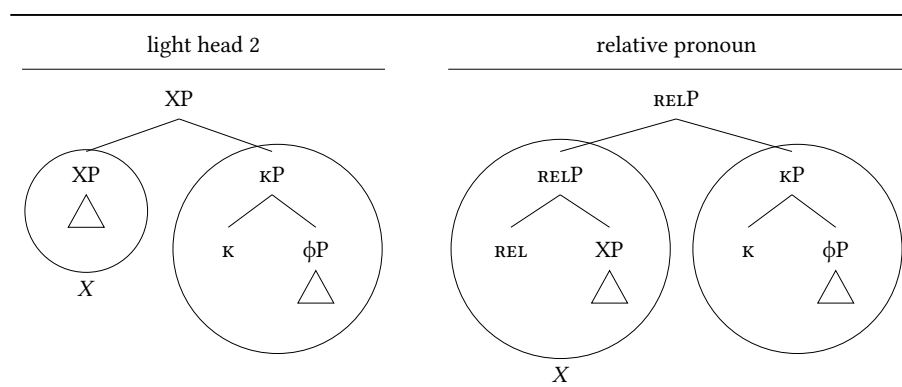
Figure 9.3: LH-2 and RP in the unrestricted type

These lexical entries lead to the grammaticality pattern shown in Table 9.2.

Table 9.2: Grammaticality in the unrestricted type (part 2)

situation	lexical entries		containment	deleted	surfacing
	LH-2	RP			
$K_{INT} = K_{EXT}$	/X/, /Y/	/X/, /Y/	form	RP	LH_{EXT}
$K_{INT} > K_{EXT}$	/X/, /Y/	/X/, /Z/	no	none	*
$K_{INT} < K_{EXT}$	/X/, /Y/	/X/, /Y/	form	RP	LH_{EXT}

Consider first the situation in which the internal and the external case match. The light head consists of a phi and case feature portmanteau plus a morpheme that spells out the feature X, which corresponds to phonological form *X*. The relative pronoun consists of the same phi plus case feature morpheme and a morpheme that spells out the feature X and the feature REL, which corresponds to the phonological form *X* too. The lexical entries create a syntactic structure such that the light head and the relative pronoun are syncretic, so they both form a constituent that is formally contained within the other element. Therefore, the one of the elements can be deleted, and the other one surfaces, bearing the internal and external case.

Consider now the situation in the internal case wins the case competition. The light head consists of a phi and case feature portmanteau plus a morpheme that spells out the feature X, which corresponds to phonological form *X*. The relative pronoun consists of a phi and case feature portmanteau that contains at least one more case feature than the light head (K_2 in Figure 9.2) plus a morpheme that spells out the feature X and the feature REL, which corresponds to the phonological form *X* too. The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is a constituent that is contained within the other element. Therefore, none of the elements can be deleted, and there is no headless relative construction possible.

Finally, consider the situation in which the external case wins the case competition. The relative pronoun consists of the same phi plus case feature morpheme and a morpheme that spells out the feature X and the feature REL, which corresponds to the phonological form *X*. Compared to the relative pronoun, the light head lacks the feature REL and only the feature X spells out as *X*, and it contains at least one more case feature (K_2 in Figure 7.1). The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is a constituent that is contained within the other element. Therefore, none of the elements can be deleted, and there is no headless relative construction possible. However, the derivation in which the external case is more complex than the internal one goes through a stage in which

the internal and the external case match. Therefore, at that stage, these lexical entries create a syntactic structure such that the light head and the relative pronoun are syncretic, so the relative pronoun forms a constituent that is formally contained within the light head. Therefore, the relative pronoun can be deleted, and the light head remains, bearing external case. Then, the remaining complex case features are merged to the light head, and the light head surfaces, bearing the more complex external case.

In Chapter 4, I showed that Old High German is a language of the unrestricted type. In this chapter, I show that Old High German has light heads and relative pronouns of type of structure described in Figure 9.3. The feature I so far called X is replaced here by D. I give a compact version of the structures in Figure 9.4.
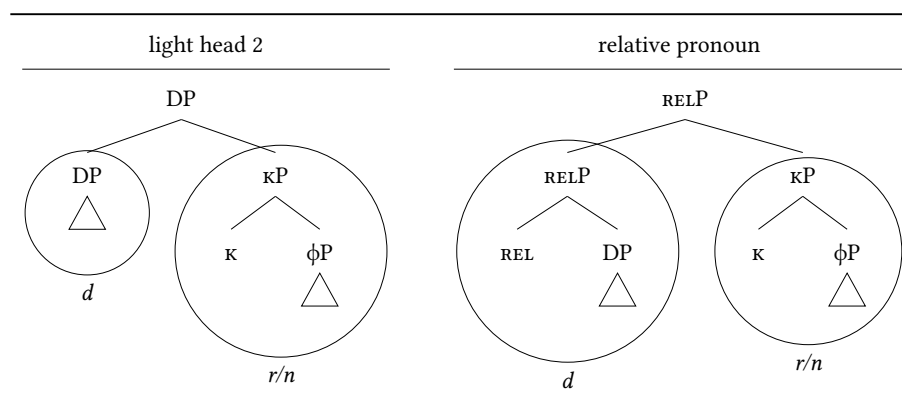

Figure 9.4: LH-2 and RP in Old High German

Consider the first possible light head in Figure 9.4. Light heads (i.e. the phi and case features and the feature D) in Old High German are spelled out by two morphemes, which are both circled. The feature D is spelled out as *d* and the phi and case features are spelled out as *ër* or *ën*, depending on which case they realize. Consider the relative pronoun in Figure 9.4. Relative pronouns in Old High German consist of two morphemes: the constituent that spells out phi and case features and the constituent that spells out the feature D and the feature REL, again indicated by the circles. The constituent that spells out phi and case features has the same spellout as in the light head (*ër* or *ën*), and the RELP is spelled out as the XP in the light head: as *d*. Throughout this chapter, I discuss the exact feature content of light heads and relative pronouns, I give lexical entries for them, and I show how these lexical entries lead to the internal syntax of light heads and relative pronoun as shown in Figure 9.4.

The chapter is structured as follows. First, I discuss the relative pronoun. I decompose it into the two morphemes I showed in Figure 9.2 and Figure 9.2. Then I show which features each of the morphemes corresponds to. Then I discuss the two

possible light heads. The first possible light head is one that does not surface as a light head in Old High German light-headed relatives, just as I argued for for Modern German and Polish. I show that the light head corresponds to one of the morphemes of the relative pronoun (the κP in Figure 9.2). The features that form the Old High German light head and relative pronoun are largely the same ones that form the Modern German light head and relative pronoun. The only difference in features is the the wh operator feature from Modern German and Polish relative pronouns is replaced by the feature D in Old High German. The second difference between the two languages is how the features are spelled out. The second possible head does surface as a light head in a Old High German light-headed relatives. This light head corresponds the κP in the relative pronoun plus the additional feature D (see Figure 9.4). The feature D is the only feature that is different in Old High German light heads compared to light heads in Modern German and Polish. Next, I compare the constituents of the light head and the relative pronoun. I show that the first possible light head can be deleted when the internal case and external case match and when the internal case is more complex than the external case via structural containment. The second possible light head can be deleted when the internal case and external case match and when the internal case is more complex than the external case via formal containment. In order to illustrate how this works, I need to make a few assumptions about the larger syntactic structure of headless relative clauses explicit.
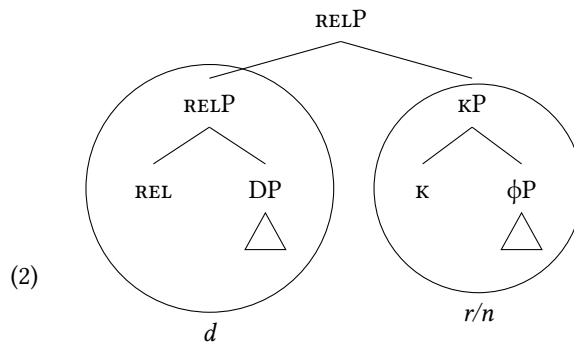
9.1   The Old High German German relative pronoun

In the introduction of this chapter, I suggested in Figure 9.2 that the internal syntax of relative pronouns in Old High German looks as shown in (1).
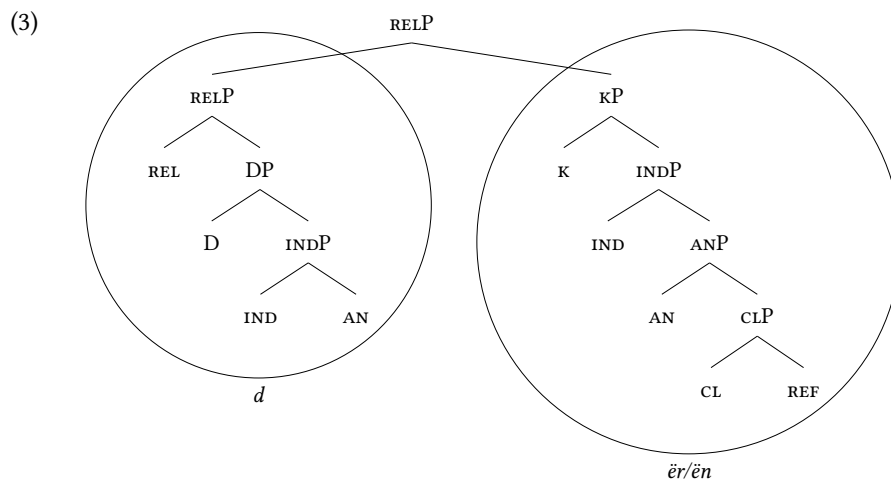
(1)
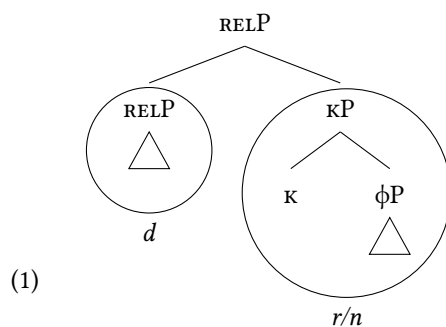
In Figure 9.2, I suggested that the internal syntax of relative pronouns in Old High German looks as shown in (2).

(2)

```
                              RELP
              ┌───────────────┴───────┐
          RELP                        κP
        ┌──┴──┐                     ┌──┴──┐
      REL     DP                   κ      ϕP
              △                           △
              d                          r/n
```

In this chapter, I show that both structures show the internal syntax of Old High German relative pronouns. The structure in (2) is just a bit more detailed version of (1). As I also showed in Chapter 7 for Modern German and in Chapter 8 for Polish, relative pronouns contain more features than only REL, ϕ and κ. In this section, I show that Old High German relative pronouns consist of the same features, except for that the operator feature WH is replaced by the feature D. Still, the crucial claim I made in Chapter 6 remains unchanged: unrestricted languages (of which Old High German is an example) have a portmanteau for the features that correspond to phi and case features and a morpheme that spells out the features the first light head does not contain. I show the complete structure that I work towards in this section in (3).

(3)

```
                                   RELP
            ┌──────────────────────┴──────────┐
          RELP                                κP
        ┌──┴──┐                            ┌──┴──┐
      REL     DP                          κ     INDP
            ┌──┴──┐                            ┌──┴──┐
           D     INDP                        IND    ANP
                ┌──┴──┐                            ┌──┴──┐
              IND     AN                          AN     CLP
                                                       ┌──┴──┐
                                                      CL     REF
               d                                       ër/ën
```

I discuss two relative pronouns: the animate nominative and the animate accusative. These are the two forms that I compare the constituents of in Section 9.3. I show them in (4).

(4) a. d-ër
         'RP.AN.NOM'

b.   d-ën
      'RP.AN.ACC'

I decompose the relative pronouns into two morphemes: the *d* and the final conso-
nant (*ër* or *ën*). For each morpheme, I discuss which features they spell out, I give
their lexical entries, and I show how I construct the relative pronouns by combining
the separate morphemes.

I start with the suffixes: *ër* and *ën*. These two morphemes correspond to what
I called the phi and case feature portmanteau in Chapter 6 and the introduction to
this chapter. I argue that the phi features actually correspond to gender features,
number features and pronominal features. Adding this all up, I claim that the final
consonants correspond to number features, gender features, pronominal features and
case features. Consider Table 9.3, which shows Old High German relative pronouns
in two numbers, three genders and three cases.[1]

Table 9.3: Relative pronouns in Old High German (**braune2018**: 339)

	N.SG	M.SG	F.SG
NOM	d-az̧	d-ër	d-iu
ACC	d-az̧	d-ën	d-ea/d-ia
DAT	d-ëmu/d-ëmo	d-ëmu/d-ëmo	d-ëru/d-ëro
	N.PL	**M.PL**	**F.PL**
NOM	d-iu	d-ē/d-ea/d-ia/d-ie	d-eo/-io
ACC	d-iu	d-ē/d-ea/d-ia/d-ie	d-eo/-io
DAT	d-ēm/d-ēn	d-ēm/d-ēn	d-ēm/d-ēn

The suffixes in Table 9.3 change depending on number, gender and case. These
different suffixes can be observed in several contexts besides relative pronouns. Table
9.4 gives an overview of the adjective *jung* 'young' in Old High German.

For some forms, the table gives two different forms, the first one being nomi-
nal inflection and the second one being pronominal inflection (**braune2018**). The
pronominal endings are the same as can be observed in the Table 9.3. Note here that
the situation in Old High German is slightly from the one in Modern German, in
which only the final consonant expresses gender, number and case features.

Besides gender, number and case features, I assume that the suffix also
contains pronominal features. I do so not only because the suffix is called
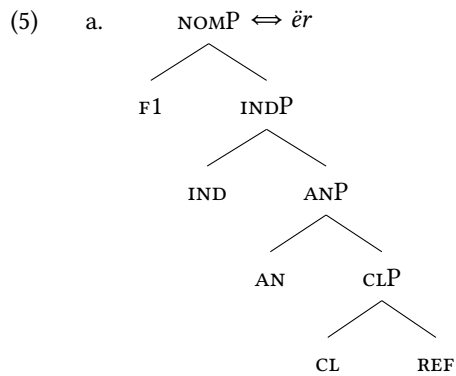pronominal inflection (*Pronominalflexion*) in the literature (**braune2018**: 338),

---

[1]*d* can also be written as *dh* and *th*, *ë* and *ē* can also be *e* and *é* (**braune2018**: 339).
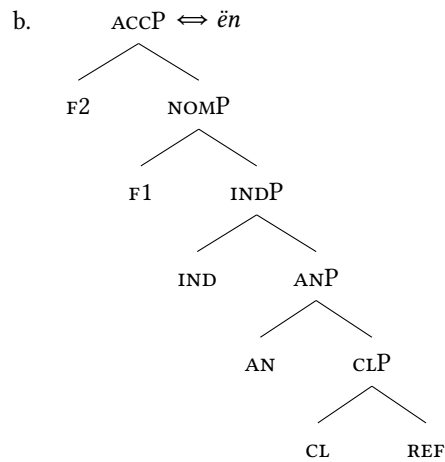
Table 9.4: Adjectives on *-a-/-ō-* in Old High German **braune2018**: 300

	N.SG	M.SG	F.SG
NOM	jung, jung-az̧	jung, jung-ēr	jung, jung-iu
ACC	jung, jung-az̧	jung-an	jung-a
DAT	jung-emu/jung-emo	jung-emu/jung-emo	jung-eru/jung-ero
	N.PL	M.PL	F.PL
NOM	jung-iu	jung-e	jung-o
ACC	jung-iu	jung-e	jung-o
DAT	jung-ēm/jung-ēn	jung-ēm/jung-ēn	jung-ēm/jung-ēn

but also because it appears in other pronominal forms too, such as possessives (**braune2018**: 337-338), demonstratives with the *dës*-stem (**braune2018**: 342) interrogatives (**braune2018**: 345).

I give the lexical entries for *ër* and *ën* in (5a) and (5b). The *ër* is the nominative masculine singular, so it spells out the features REF, CL, AN, IND and F1. The *ën* is the accusative masculine singular, so it spells out the features that the *ën* spells out plus F2.

(5) a. NOMP ⟺ *ër*

b.   ACCP ⟺ *ën*

```
        b.          ACCP ⟺ ën
                    /    \
                  F2     NOMP
                        /    \
                      F1     INDP
                            /    \
                          IND    ANP
                                /   \
                              AN    CLP
                                   /   \
                                  CL   REF
```
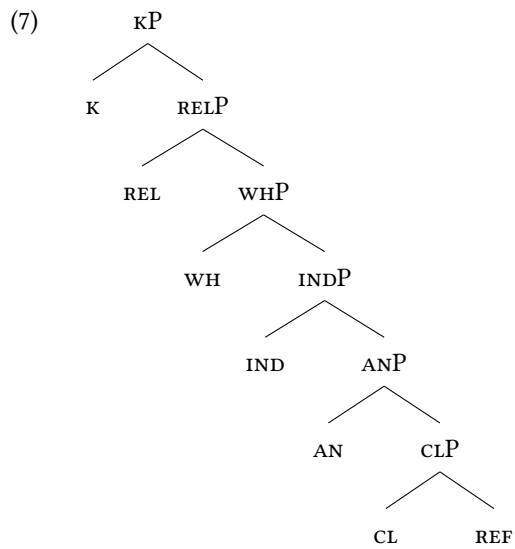
I continue with the morpheme *d*. This morpheme corresponds to what I called the REL-feature in Chapter 6 and in the introduction to this chapter. I argue that this morpheme actually spells out the feature REL, the feature D and number and gender features. Notice here that Old High German relative pronouns differ from Modern German and Polish relative pronouns in that they do not contain the operator feature WH. Instead, Old High German relative pronouns contain the feature D.

Relative and demonstrative pronouns are syncretic in Old High German (**braune2018**: 338). They contain the morpheme *d*, which is responsible for establishing a definite reference. The feature REL is present to establish a relation. I assume that *d* also contains the features IND. For this I do not have any independent support. I make this assumption to allow myself to build a complex specifier.

In sum, the morpheme *d* corresponds to the features D, REL and IND as shown in (6).

(6)   RELP ⟺ *d*

```
(6)        RELP ⟺ d
          /    \
        REL    DP
              /   \
             D    IND
```
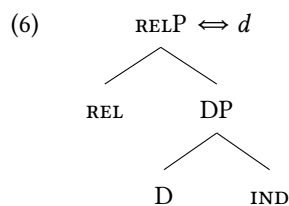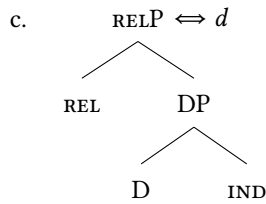
In what follows, I show how the Old High German relative pronouns are constructed. I follow the same functional sequence as I did for Modern German and Polish, except for substituting the feature WH by the feature D. I give the functional sequence in (7).

(7)

```
              ΚP
           ╱      ╲
          K       RELP
               ╱      ╲
             REL      WHP
                   ╱      ╲
                 WH      INDP
                      ╱      ╲
                    IND      ANP
                          ╱      ╲
                        AN      CLP
                             ╱      ╲
                           CL      REF
```

Of course, the spellout procedure is identical. The outcome is different because of the different lexical entries Old High German has. I repeat the available lexical entries in (8).
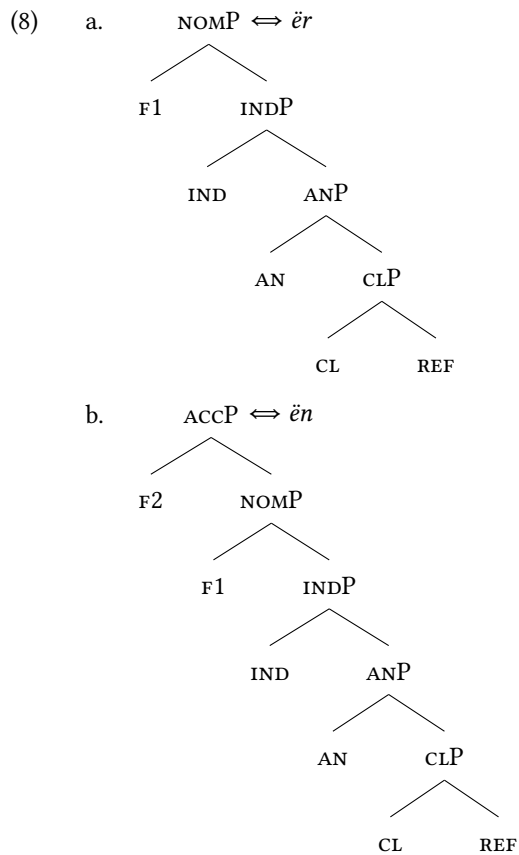
(8)　　a.

```
        NOMP  ⟺  ër
     ╱      ╲
   F1      INDP
        ╱      ╲
      IND      ANP
            ╱      ╲
          AN      CLP
               ╱      ╲
             CL      REF
```

　　b.

```
        ACCP  ⟺  ën
     ╱      ╲
   F2      NOMP
        ╱      ╲
      F1      INDP
            ╱      ╲
          IND      ANP
                ╱      ╲
              AN      CLP
                   ╱      ╲
                 CL      REF
```

c.   RELP ⟺ *d*

```
        RELP ⟺ d
        /\
     REL   DP
           /\
          D   IND
```

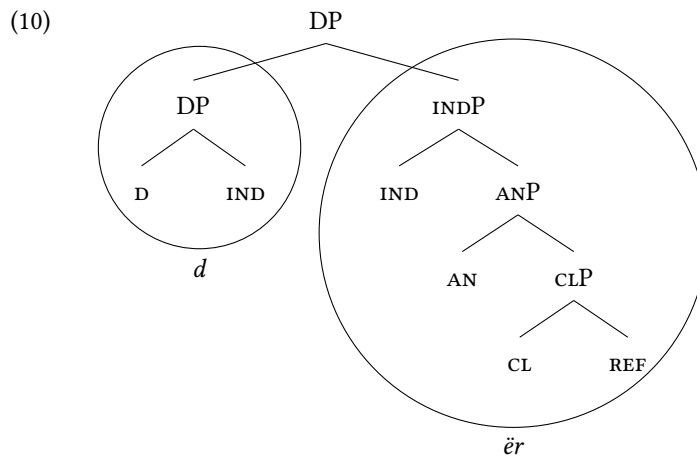Starting from the bottom, the first two features that are merged are REF and CL, creating a CLP. The syntactic structure forms a constituent in the lexical tree in (8a), which corresponds to *r*. Therefore, the CLP is spelled out as *ër*, which I do not show here. Then, the feature AN is merged, and a ANP is created. The syntactic structure forms a constituent in the lexical tree in (8a). Therefore, the ANP is spelled out as *ër*, which I do not show here either. Then, the feature IND is merged, and a INDP is created. The syntactic structure forms a constituent in the lexical tree in (8a). Therefore, the INDP is spelled out as *ër*, which I show in

(9)

```
            INDP
            /\
         IND  ANP
              /\
            AN   CLP
                 /\
               CL   REF
```
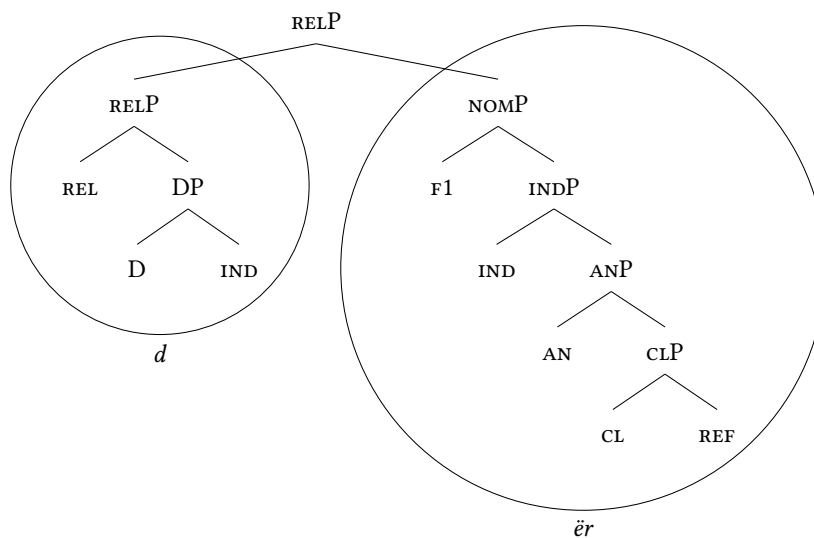
ër
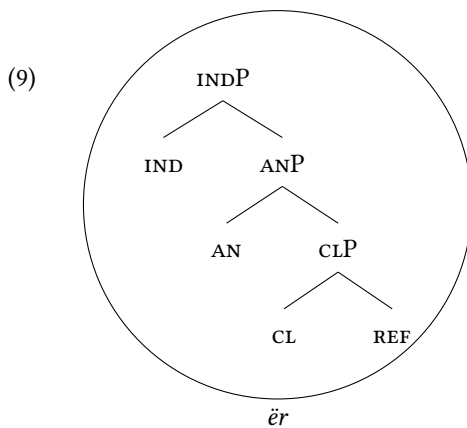
Next, the feature D is merged. The derivation for this feature resembles the derivation of WH in Modern German and Polish. The feature is merged with the existing syntactic structure, creating a DP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Therefore, in a second workspace, the feature D is merged with the feature IND (the previous syntactic feature on the functional sequence) into a DP. This syntactic structure forms a constituent in the lexical tree in (8c), which corresponds to the *d*. Therefore, the DP is spelled out as *d*. The newly created phrase is merged as a whole with the already existing structure, and projects to the top node, as shown in (10).

(10)

```
                              DP
             _____/    _____
            /                                   \
         DP                                    INDP
        /  \                                  /    \
       D    IND                            IND     ANP
                                                  /    \
                                                AN     CLP
                                                      /   \
                                                    CL    REF
```

d

ër

The next feature in the functional sequence is the feature REL. The derivation for this feature resembles the derivation of REL in Modern German and Polish. The feature is merged with the existing syntactic structure, creating a RELP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the DP from the INDP. The feature REL is merged in both workspaces, so with DP and and with INDP. The spellout of REL is successful when it is combined with the DP. It namely forms a constituent in the lexical tree in (8c), which corresponds to the *d*. The RELP is spelled out as *d*, and it is merged back to the existing syntactic structure.
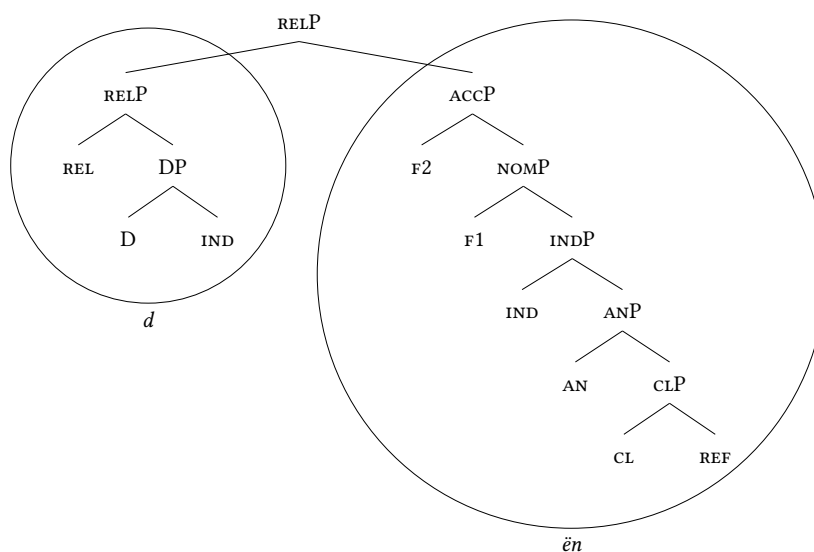
For the nominative relative pronoun, the last feature is merged: the F1. This feature should somehow end up merging with INDP, because it forms a constituent in the lexical tree in (8a), which corresponds to the *ër*. This is achieved via Backtracking in which phrases are split up and going through the Spellout Algorithm. I go through the derivation step by step. The feature F1 is merged with the existing syntactic structure, creating a NOMP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the INDP. The feature F1 is merged in both workspaces, so with the RELP and and with the INDP. The spellout of F1 is successful when it is combined with the INDP. It namely forms a constituent in the lexical tree in (8a), which corresponds to the *ër*. The NOMP is spelled out as *ër*, and all constituents are merged back into the existing syntactic structure, as shown in (11).

(11)

```
                              RELP
        ┌─────────────┐         ╱          ┌──────────────────────────┐
       ╱   RELP        ╲     ╱           ╱        NOMP               ╲
      │    ╱╲            │   │          │         ╱╲                  │
      │  REL   DP        │   │          │       F1   INDP            │
      │       ╱╲         │   │          │          ╱╲                │
      │      D   IND     │   │          │       IND   ANP           │
       ╲               ╱    │          │            ╱╲              │
        └──────┬──────┘     │          │          AN   CLP          │
               d            │          │              ╱╲            │
                            │          │            CL   REF        │
                             ╲                                     ╱
                              └──────────────┬──────────────────┘
                                            ër
```

For the accusative relative pronoun, the last feature is merged: the F2. The derivation for F2 resembles the derivation of F1. The feature is merged with the existing syntactic structure, creating a ACCP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the NOMP. The feature F2 is merged in both workspaces, so with the RELP and and with the NOMP. The spellout of F2 is successful when it is combined with the NOMP. It namely forms a constituent in the lexical tree in (8b), which corresponds to the *ën*. The ACCP is spelled out as *ën*, and all constituents are merged back into the existing syntactic structure, as shown in (12).

(12)

```
                              RELP
        ┌───────────┐          ╱       ┌────────────────────────────────┐
       ╱   RELP      ╲      ╱         ╱          ACCP                    ╲
      │    ╱╲          │   │         │           ╱╲                      │
      │  REL   DP      │   │         │         F2   NOMP                 │
      │       ╱╲       │   │         │             ╱╲                    │
      │      D   IND   │   │         │           F1   INDP               │
       ╲             ╱    │         │               ╱╲                   │
        └─────┬─────┘     │         │             IND   ANP             │
              d           │         │                  ╱╲               │
                          │         │                AN   CLP           │
                          │         │                    ╱╲             │
                          │         │                  CL   REF         │
                           ╲                                           ╱
                            └──────────────┬──────────────────────────┘
                                          ën
```

To summarize, I decomposed the relative pronoun into the two morphemes: *d* and the suffix (*ër* and *ën*). I showed which features each of the morphemes spells out and what the internal syntax looks like that they are combined into. It is this internal syntax that determines whether the light head can be deleted or not.

9.2 The Old High German light heads

9.2.1 The extra light head

Headless relatives in which the relative pronoun starts with a *d*, such as in Old High German, seem to be linked to individuating or definite readings and not to generalizing or indefinite readings (**fuss2017**). I illustrate this with the two examples I repeat from Chapter 4.

Consider the example in (23), repeated from Chapter 4. In this example, the author refers to the specific person which was talked about, and not to any or every person that was talked about.

(13) Thíz   ist   **then**   **sie**   **zéllent**
      DEM.SG.N.NOM be.PRES.3SG$_{[NOM]}$ REL.SG.M.ACC 3PL.M.NOM tell.PRES.3PL$_{[ACC]}$
      'this is the one whom they talk about'
      not: 'this is whoever they talk about'   (Old High German, Otfrid III 16:50)

Consider also the example in (23), repeated from Chapter 4. In this example, the author refers to the specific person who spoke to someone, and not to any or every person who spoke to someone.

(14) enti aer   ant uurta   demo   **zaimo**
      and 3SG.M.NOM reply.PST.3SG$_{[DAT]}$ REL.SG.M.DAT to 3SG.M.DAT

      sprah
      speak.PST.3SG$_{[NOM]}$
      'and he replied to the one who spoke to him'
      not: 'and he replied to whoever spoke to him'
                (Old High German, Mons. 7:24, adapted from **pittner1995**: 199)

9.2.2 The light head

Old High German is special because the relative pronoun in its headless relatives is syncretic with the relative pronoun in its light-headed relatives.[2]

---

[2]What about Modern German *der - der*? Modern German has two different relative pronouns, so there is actually the choice!

This light head story never works for Modern German or Polish because for them the relative pronoun and the light head are not syncretic.

Consider the light-headed relative in (15). *Thér* 'DEM.SG.M.NOM' is the head of the relative clause, which is the external element. *Then* 'RP.SG.M.ACC' is the relative pronoun in the relative clause, which is the internal element.

(15)   eno nist   thiz   thér   then   ir
       now not be.3SG DEM.SG.ËN.NOM DEM.SG.M.NOM RP.SG.M.ACC 2PL.NOM

       suochet zi arslahanne?
       seek.2PL to kill.INF.SG.DAT

       'Isn't this now the one, who you seek to kill?'

I assume that whether both or only one of the elements surfaces is determined by information structure. In (15), the external element *thér* 'DEM.SG.M.NOM' is the candidate to be absent. However, it seems plausible that this is emphasized in this sentence and that it, therefore, cannot be absent.

9.3   Comparing constituents

In this section, I compare the constituents of extra light heads and light heads to those of relative pronouns in Old High German. This is the worked out version of the comparisons in Section 6.2.3. What is different here is that I show the comparison for Old High German specifically, and that I motivated the content of the constituents that are being compared.

I give three examples, in which the internal and external case vary. I start with an example with matching cases, in which the internal and the external case are both nominative. I show that the grammaticality of the example can be derived by either taking the extra light head or by taking the light head as the present light head. Then I give an example in which the external accusative case is more complex than the internal nominative case. I show that the grammaticality of this example can only be derived by taking the light head as the present light head and not the extra light head. Before I can properly do that, I need to take a small detour into the larger syntactic structure of headless relatives. I end with an example in which the internal accusative case is more complex than the external nominative case. I show that the grammaticality of this example can only be derived by taking the extra light head as the present light head and not the light head.

I start with the situation in which the cases match. Consider the example in (16), in which the internal nominative case competes against the external nominative case. The relative clause is marked in bold. (16a) shows the example with the extra light head as the present light head and (16b) shows the example with the light head

as the present light head. The internal case is nominative, as the predicate *senten* 'to send' takes nominative subjects. In both examples, the relative pronoun *dher* 'REL.SG.M.NOM' appears in the nominative case. The external case is nominative as well, as the predicate *queman* 'to come' also takes nominative subjects. In (16a), the extra light head *ër* 'ELH.SG.M.NOM' appears in the nominative case. It is placed between square brackets because it does not surface. In (16b), the light head *dher* 'DEM.SG.M.NOM' appears in the nominative case. Here the relative pronoun is placed between square brackets because it does not surface.

(16)   a.   quham   [r]   **dher**   **chisendit**
            come.PST.3SG[NOM] ELH.SG.M.NOM REL.SG.M.NOM send.PST.PTCP[NOM]

            scolda   **uuerdhan**
            should.PST.3SG become.INF

            'the one, who should have been sent, came'

                                                    (Old High German, Isid. 35:5)

       b.   quham   dher   [**dher**]   **chisendit**
            come.PST.3SG[NOM] DEM.SG.M.NOM REL.SG.M.NOM send.PST.PTCP[NOM]

            scolda   **uuerdhan**
            should.PST.3SG become.INF

            'the one, who should have been sent, came'

                                                    (Old High German, Isid. 35:5)

Both examples in (16) can be the light-headed relative clause that the headless relative is derived from. First I show the comparison of the two constituents for (16a) and then the one for (16b).

In Figure 9.5, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of two morphemes: *dhe* and *ër*. The extra light head consists of a single morpheme: *ër*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology below it, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around each constituent that is a constituent in both the extra light head and the relative pronoun.

The extra light head consists of a single constituent: the NOMP. This NOMP is also a constituent within the relative pronoun. Therefore, the extra light head can be deleted. I signal the deletion of the extra light head by marking the content of its circle gray.

In Figure 9.6, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of two morphemes: *dhe* and *ër*. The light head also
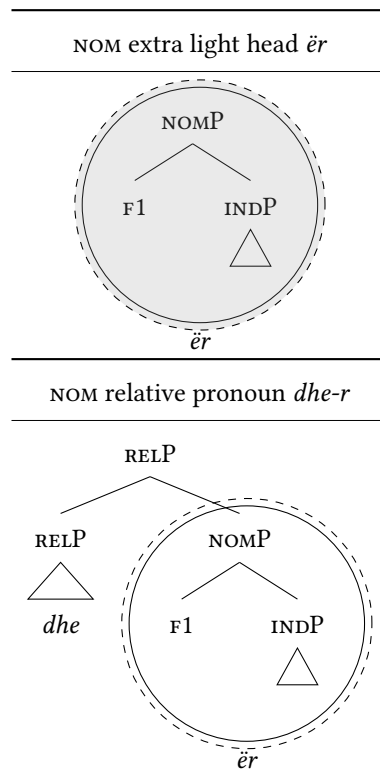
Figure 9.5: Old High German EXT$_{\text{NOM}}$ vs. INT$_{\text{NOM}}$ → *dher* (ELH)

consists of two morphemes: *dhe* and *ër*. I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology below it, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dotted circle around each constituent that is a constituent in both the light head and the relative pronoun.

The light head (the DP realized by *dher*) is syncretic with the relative pronoun (the RELP realized by *dher*). As the two forms are entirely syncretic, either the light head or the relative pronoun can be deleted. I delete the relative pronoun here, as I discuss the situation in which the relative pronoun is deleted. I illustrate this by marking the content of the dotted circle for the relative pronoun gray.

The external case is nominative as well, as the predicate *queman* 'to come' also takes nominative subjects. In (16a), the extra light head *ër* 'ELH.SG.M.NOM' appears in the nominative case. It is placed between square brackets because it does not surface. In (16b), the light head *dher* 'DEM.SG.M.NOM' appears in the nominative case. Here the relative pronoun is placed between square brackets because it does not surface.

I continue with the situation in which the external case is the more complex one. Consider the examples in (17), in which the internal nominative case competes against the external accusative case. The relative clause is marked in bold. (17a)
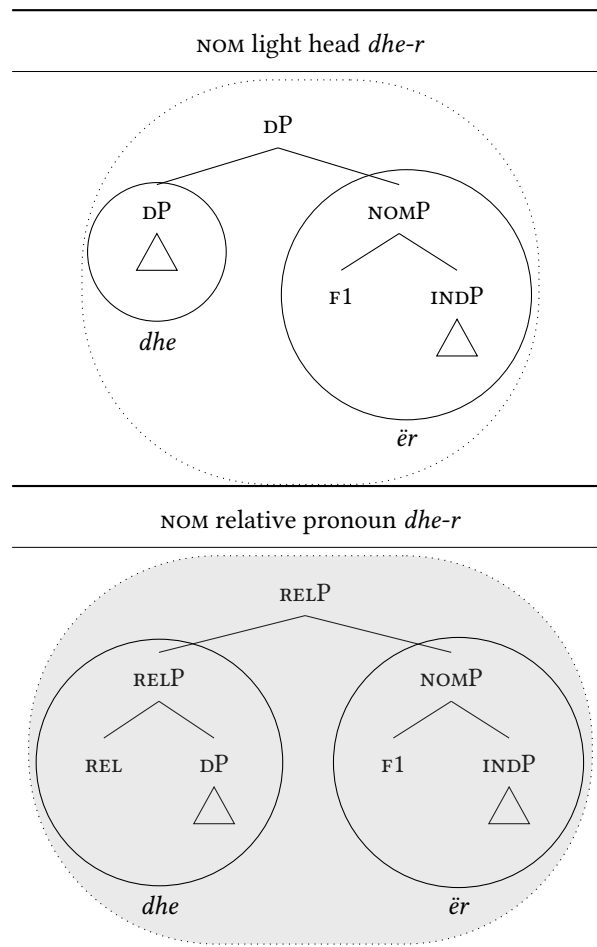
Figure 9.6: Old High German EXT_NOM vs. INT_NOM → *dher* (ELH)

shows the example with the extra light head as the present light head and (17b) shows the example with the light head as the present light head. The internal case is nominative, as the predicate *gisizzen* 'to possess' takes nominative subjects. In both examples, the relative pronoun *dher* 'REL.SG.M.NOM' appears in the nominative case. The external case is accusative, as the predicate *bibringan* 'to create' takes accusative objects. In (17a), the extra light head *ën* 'ELH.SG.M.ACC' appears in the accusative case. It is placed between square brackets because it does not surface. In (17b), the light head *dhen* 'DEM.SG.M.ACC' appears in the accusative case. Here the relative pronoun is placed between square brackets because it does not surface.

(17)   a.   *ih   bibringu   fona iacobes   samin   endi fona
            1SG.NOM   create.PRES.1SG_[ACC]   of   Jakob.GEN   seed.SG.DAT   and of

iuda   [n]   **dher**   **mina**

Judah.DAT REL.SG.M.ACC my.ACC.M.PL mountain.ACC.PL

berga   **chisitzit**

possess.PRES.3SG[NOM]

'I create of the seed of Jacob and of Judah the one, who possess my

mountains'   (Old High German, Isid. 34:3)

    b.   ih   bibringu   fona iacobes   samin   endi fona

1SG.NOM create.PRES.1SG[ACC] of   Jakob.GEN seed.SG.DAT and of

iuda   dhen   [**dher**]   **mina**

Judah.DAT REL.SG.M.ACC my.ACC.M.PL mountain.ACC.PL

berga   **chisitzit**

possess.PRES.3SG[NOM]

'I create of the seed of Jacob and of Judah the one, who possess my

mountains'   (Old High German, Isid. 34:3)

Only (17b) can be the light-headed relative that the headless relative is derived from.
First I show by comparing the constituents that no headless relative can be derived
from the (17a). Then I show the comparison of the two constituents for (17b), which
does derive a grammatical result.

In Figure 9.7, I give the syntactic structure of the extra light head at the top and
the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of two morphemes: *dhe* and *ër*. The extra light
head consists of a single morpheme: *ën*. Again, I circle the part of the structure that
corresponds to a particular lexical entry, and I place the corresponding phonology
below it, or I reduce the structure to a triangle, and I place the corresponding phonol-
ogy below it. I draw a dashed circle around each constituent that is a constituent in
both the extra light head and the relative pronoun.

The extra light head consists of a single constituent: the ACCP. In this case, the
relative pronoun does not contain this constituent. The relative pronoun only con-
tains the NOMP, and it lacks the F2 that makes a ACCP. Since the weaker feature con-
tainment requirement is not met, the stronger constituent containment requirement
cannot be met either. The extra light head also does not contain all constituents or
features that the relative pronoun contains, because it lacks the complete constituent
and RELP. Therefore, the extra light cannot be deleted, and the relative pronoun can-
not be deleted either.

In what follows, I show that the light-headed relative that contains the light head
is the structure that the headless relative is derived from. I cannot show this by di-
rectly comparing the constituents that the light head and the relative pronoun con-
sist of. I need to make some assumptions I am making regarding the larger syntactic
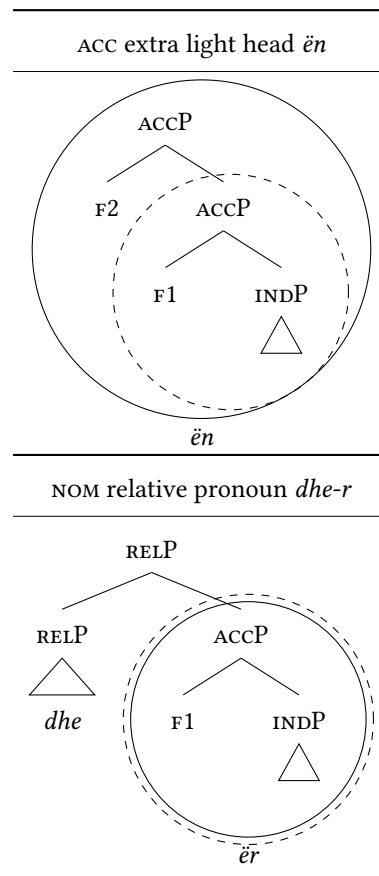
Figure 9.7: Old High German EXT_ACC vs. INT_NOM $\nrightarrow$ *ën/dher* (ELH)

structure explicit. Before I do that, and I derive the grammatical result, I show that a direct comparison of the light head and the relative pronoun does not lead to a grammatical result.

In Figure 9.8, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

this does not work, but the example is grammatical! so by simply comparing the two, we're not gonna get there

as I already alluded to in the basic idea, there is a stage in the derivation, in which the two cases are both nominative, and on that moment, the relative pronoun is deleted

if we start talking about 'stages in the derivation' we need to know more about the derivation. So far, I have only be talking about the light head and the relative pronoun separately. I have not placed them in a larger syntactic structure. For the discussion so far that has also not been relevant: whatever is going on, it is the same for all languages.

NOM light head *dhe-n*

NOM relative pronoun *dhe-r*
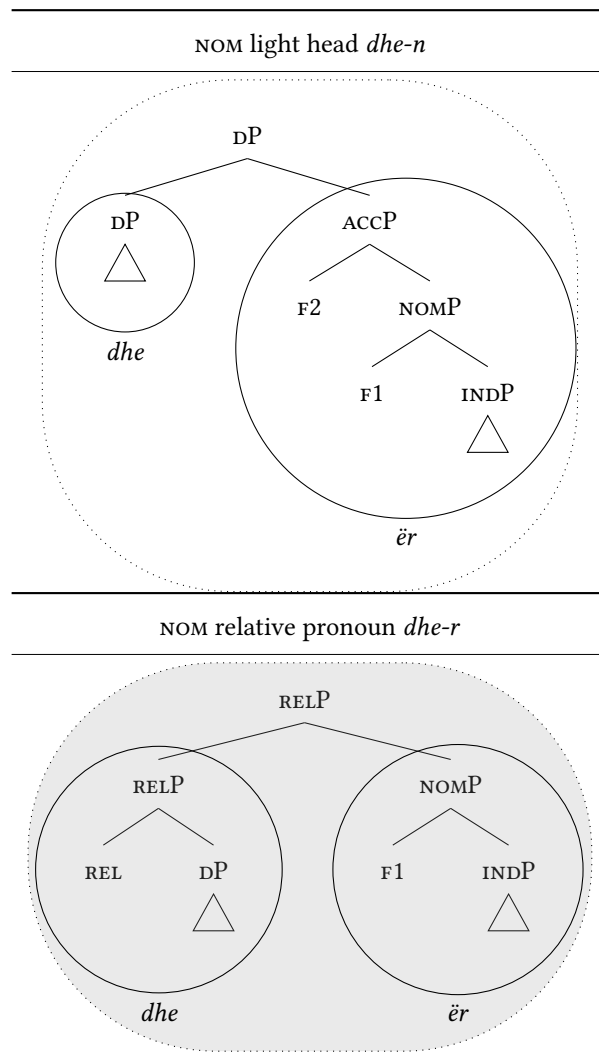
Figure 9.8: Old High German EXT_ACC vs. INT_NOM $\nrightarrow$ *dhen*/*ther* (LH)

now that I need to make reference to a stage in the derivation, we need to know what the larger syntactic structure looks like.

I assume that a syntactic structure of a light-headed relative looks as in X[3]

---

[3]I actually assume that a light-headed relative with an extra light looks as in X

(i)   here an example with a non-D with the head in the low position

here explain what is in the example. This is also what Cinque says: non-definite heads are low, and definite heads are high. Two questions follow from such an analysis: (1) how do the case features end up down there, and (2) what triggers the movement of the light head to the higher position. About (1), Cinque says that it is feature percolation, and I follow that intuition. Technically, what's happening is backtracking, opening up the different workspaces, which leads to the case features finding a match on the element to

(18)   here an example of a high D and the relative clause below it

There is a D, which appears higher in the structure than the relative clause, etc. etc. explanation the relative clause is already complete, including case features This structure for light-headed relatives is also assumed by cf. Cinque etc. etc. the features that are merged last in building a light head are the case features. first we have a D without case features, and then the case features are merged on by one. this means that we have a stage in the dervation dathat looks like:

(19)   no cases, including relative pronoun and relative clause

(20)   only nominative case

now there's deletion!
    then we merge the next case feature, and we get a more complex external case note that we also have c-command for the deletion! great![4]
    - ext wins doesn't work, so first larger syntactic structure: head needs to be up there, for instance cinque (he also says we need to have it up there) then: yes, at some point in the derivation, and then merge the k2
    I continue with the situation in which the internal case is the more complex one. Consider the example in (22), in which the internal accusative case competes against the external nominative case. The relative clause is marked in bold. The internal case is accusative, as the predicate *zellen* 'to tell' takes accusative objects. The relative pronoun *then* 'REL.SG.M.ACC' appears in the accusative case. This is the element that surfaces. The external case is nominative, as the predicate *sin* 'to be' takes nominative objects. The light head *ër* 'ELH.SG.M.NOM' appears in the nominative case. It is placed between square brackets because it does not surface.

(21)   Thíz   ist   [r]   **then**   sie
        DEM.SG.N.NOM be.PRES.3SG$_{[NOM]}$ DEM.SG.M.NOM REL.SG.M.ACC 3PL.M.NOM

        zéllent
        tell.PRES.3PL$_{[ACC]}$
        'this is the one whom they talk about'   (Old High German, Otfrid III 16:50)

(22)   Thíz   ist   ther   **[then]**   sie
        DEM.SG.N.NOM be.PRES.3SG$_{[NOM]}$ DEM.SG.M.NOM REL.SG.M.ACC 3PL.M.NOM

---

the left of the relative clause. Concerning (2), Cinque says it's movement, I'm not sure what it's triggered by. I don't know what it is. If it's movement, then it can be triggered by spellout or by features. I don't see how either of them should work. It could be connected to the formation of a complex spec. It seems that as soon the spec is there, the light head also moves up, and the complex spec does not attach to the relative clause. I leave this for future research.

    [4]coming back the extra light head, we also have c-command there, under the defininteino of kayne

zéllent

tell.PRES.3PL[ACC]

'this is the one whom they talk about'   (Old High German, Otfrid III 16:50)

In Figure 9.9, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.
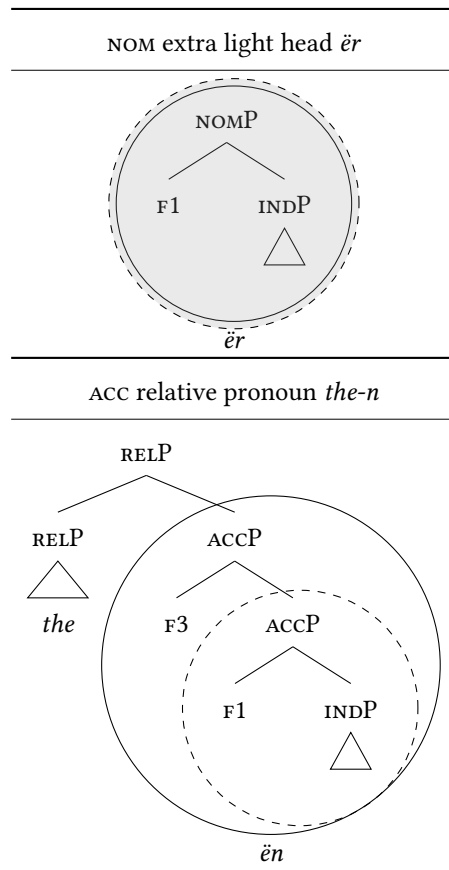

Figure 9.9: Old High German EXT$_{NOM}$ vs. INT$_{ACC}$ $\rightarrow$ *then*

The relative pronoun consists of two morphemes: *the* and *ën*. The extra light head consists of a single morpheme: *ër*. Again, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology below it, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around each constituent that is a constituent in both the extra light head and the relative pronoun.

The extra light head consists of a single constituent: the NOMP. This NOMP is also a constituent within the relative pronoun. Therefore, the extra light can be deleted. I signal the deletion of the extra light head by marking the content of its circle gray.

9.4 Possible predictions

- possible prediction: ext>int = def, int>ext = wh, not what we see, show 4 examples

Consider the example in (23), repeated from Chapter 4. In this example, the author refers to the specific person which was talked about, and not to any or every person that was talked about.

(23) Thíz ist **then** **sie** **zéllent**
DEM.SG.N.NOM be.PRES.3SG[NOM] REL.SG.M.ACC 3PL.M.NOM tell.PRES.3PL[ACC]
'this is the one whom they talk about'
not: 'this is whoever they talk about'   (Old High German, Otfrid III 16:50)

Consider also the example in (23), repeated from Chapter 4. In this example, the author refers to the specific person who spoke to someone, and not to any or every person who spoke to someone.

(24) enti aer ant uurta demo **zaimo**
and 3SG.M.NOM reply.PST.3SG[DAT] REL.SG.M.DAT to 3SG.M.DAT

sprah
speak.PST.3SG[NOM]
'and he replied to the one who spoke to him'
not: 'and he replied to whoever spoke to him'
            (Old High German, Mons. 7:24, adapted from **pittner1995**: 199)

Chapter 10

Discussion

10.1 Gothic

Gothic seems to be a variant of Old High German, in which there is also no single constituent containment. This time, the relative pronoun is not deleted by syncretism. Gothic has a separate suffix that spells out the feature REL. The light head deletes the relative pronoun, except for the suffix that spells out REL. The light head and the relative pronoun phonologically merge together, and the surface pronoun appears in the external case.

10.2 Diachronic part

First, German only had the d-pronoun and attraction. The pattern of attraction that came with that pronoun is ext only. At some point, German invented the wh-pronoun. Helmut showed how it emerged. With that came the other pattern: int only. Some people lost the attraction (but everybody kept the d-pronoun) and with that the pattern disappeared. So the patterns in headless relatives follow from the relative pronouns in the language.

Why are all languages of the 'matching' type dead languages? Was it a common thing that wh-pronouns were not used as relative pronouns?

Wouldn't we now not expect that Modern German patterns with Old High German wrt attraction in headed constructions. Yes, we would. And yes, this is exactly what we see. Paper by Bader on case attraction.

First there was only the relative pronoun with a D. Then we did case competition with this one, in both directions. Later, we only did it with the wh, and we only had internal left. Because this competitor was introduced, the case competition with D disappeared.

10.3 Towards deriving the always-external pattern

grosu: morphological distinctions correlate with 'freedom'

Why FEM does not have WH-pronouns?

10.4 More languages

valita 'choose' takes a partitive object

(1)   Valitsen mista sina piddt. choose-I.el what-el you like-you.part 'I choose what
       you like.'

pitää 'like' takes elative objects

(2)   *Pidan   mista   sind valitset.
       like-I.part what-el you choose-you.el
       'I like what you choose.'

(3)   *Pidan   mita   sind valitset.
       like-I.part what-el you choose-you.el
       'I like what you choose.'

10.5 The missing dative/accusative

The accusative/dative example is missing from Gothic, Old High German and Ancient
Greek. What if I take that seriously?

10.6 Summary

Table 10.1 shows per language type which of the three options in Table **??** is chosen
when the internal and external case differ.

Table 10.1: The surface pronoun with differing cases per language

	$K_{INT} > K_{EXT}$	$K_{EXT} > K_{INT}$	
unrestricted	relative pronoun$_{INT}$	light head$_{EXT}$	Old High German
internal-only	relative pronoun$_{INT}$	*	Modern German
matching	*	*	Polish
external-only	*	light head$_{EXT}$	not attested

The first column list the types of languages. The second column shows the situa-
tion in which the internal case is the most complex. The relative pronoun that bears

the internal case is the potential surface pronoun. The third column shows the situation in which the external case is the most complex. The light head that bears the external case is the potential surface pronoun. The asterix (*) indicates that there is no grammatical form for the surface pronoun. The fourth column gives the example of the language type that I discuss in this chapter. A language of the unrestricted type (like Old High German) allows both the internal case and the external case to surface when either of them wins the case competition. Either the light head with its external case or the relative pronoun with its internal case can be the surface pronoun. A language of the internal-only type (like Modern German) allows only the internal case to surface when it wins the case competition, and it does not allow the external case to do so. The relative pronoun with its internal case can be the surface pronoun and the light head with its external case cannot. A language of the matching type (like Polish) allows neither the internal nor the external case to surface when either of them wins the case competition. Neither the relative pronoun with its internal case nor the light head with its external case can be the surface pronoun.[1] The language type that is not attested is the external-only type. That means that there is no language that allows only the external case to surface when it wins the case competition, and it does not allow the internal case to do so. In other words, there exist no language, in which the surface pronoun can only be the light head and not the relative pronoun.

What I have done in this section so far is reformulate the two descriptive parameters from Figure 6.1 into two other descriptive parameters. Whether the internal case is allowed to surface corresponds to whether the relative pronoun surfaces. That implicates that the light head has been deleted and is therefore absent. Similarly, whether the external case is allowed to surface corresponds to whether the light head surfaces. That implicates that the relative pronoun has been deleted and is therefore absent. I show this in Figure 10.1.

Reformulating these parameters is not just restating the generalization in different terms. With this new formulation, I am able to identify the elements (i.e. the light head and the relative pronoun) that bear the internal and external cases. The difference between languages lies in whether or not it is possible to delete the light head (and with it the external case) and the relative pronoun (and with it the internal case).

10.7 A larger syntactic context

First, I show, independent from case facts, that the surface pronoun is the relative pronoun. The evidence comes from extraposition data.

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[1]This holds for the situation in which the internal and external case differ. In Section 8, I show that the relative pronoun surfaces in matching contexts.
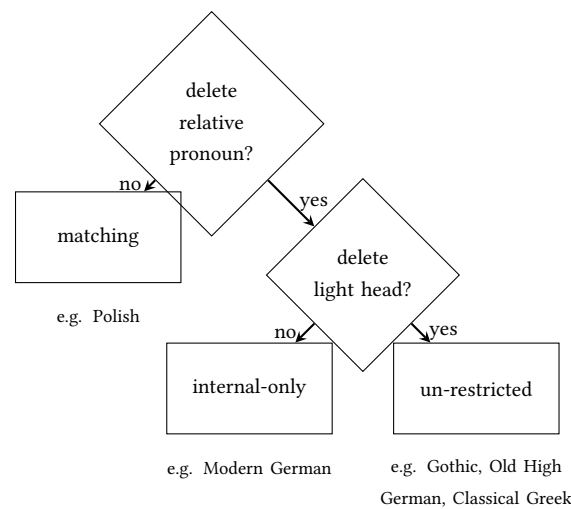
Figure 10.1: Delete relative pronoun/light head as parameters

The sentences in (4) show that it is possible to extrapose a CP. In (4a), the clausal object *wie es dir geht* 'how you are doing', marked here in bold, appears in its base position. It can be extraposed to the right edge of the clause, shown in (4b).

(4) a. Mir   ist **wie es dir   geht** egal.
         1SG.DAT is how it 2SG.DAT goes the same
         'I don't care how you are doing.'

     b. Mir   is egal   **wie es dir   geht**.
         1SG.DAT is the same how it 2SG.DAT goes
         'I don't care how you are doing.'   (Modern German)

(5) illustrates that it is impossible to extrapose a DP. The clausal object of (4) is replaced by the simplex noun phrase *die Sache* 'that matter'. In (5a) the object, marked in bold, appears in its base position. In (5b) it is extraposed, and the sentence is no longer grammatical.

(5) a. Mir   ist **die Sache** egal.
         1SG.DAT is that matter the same
         'I don't care about that matter.'

     b. *Mir   ist egal   **die Sache**.
         1SG.DAT is the same that matter
         'I don't care about that matter.'   (Modern German)

The same asymmetry between CPs and DPs can be observed with relative clauses. A relative clause is a CP, and the head of a relative clause is a DP. The sentences in (6) contain the relative clause *was er gekocht hat* 'what he has stolen'. This is marked in

bold in the examples. The (light) head of the relative clause is *das*.[2] In (6a), the relative clause and its head appear in base position. In (6b), the relative clause is extraposed. This is grammatical, because it is possible to extrapose CPs in Modern German. In (6c), the relative clause and the head are extraposed. This is ungrammatical, because it is possible to extrapose DPs.

(6)   a.   Jan hat das, **was er gekocht hat**, aufgegessen.
           Jan has that what he cooked has eaten
           'Jan has eaten what he cooked.'

       b.   Jan hat das aufgegessen, **was er gekocht hat**.
           Jan has that eaten what he cooked has
           'Jan has eaten what he cooked.'

       c.   *Jan hat aufgegessen, das, **was er gekocht hat**.
           Jan has eaten that what he cooked has
           'Jan has eaten what he cooked.'   (Modern German)

The same can be observed in relative clauses without a head. (7) is the same sentence as in (6) only without the overt head. The relative clause is marked in bold again. In (7a), the relative clause appears in base position. In (7b), the relative clause is extraposed. This is grammatical, because it is possible to extrapose CPs in Modern German. In (7c), the relative clause is extraposed without the relative pronouns. This is ungrammatical, because the relative pronoun is part of the CP. This shows that the relative pronoun in headless relatives in Modern German are necessarily part of a CP, which is here a relative clause.

(7)   a.   Jan hat **was er gekocht hat** aufgegessen.
           Jan has what he cooked has eaten
           'Jan has eaten what he cooked.'

       b.   Jan hat aufgegessen **was er gekocht hat**.
           Jan has eaten what he cooked has
           'Jan has eaten what he cooked.'

       c.   *Jan hat **was** aufgegessen **er gekocht hat**.
           Jan has what eaten he cooked has
           'Jan has eaten what he cooked.'   (Modern German)

In conclusion, extraposition facts show that the surface pronoun in Modern German headless relatives is the relative pronoun.

     If you talk about different patterns, there can be different locations to put your

---

[2]Not all speakers of Modern German accept the combination of *das* as a light head and *was* as a relative pronoun and prefer *das* as a relative pronoun instead. I use the combination of *das* and *was* to have a more minimal pair with the headless relatives (that uses the relative pronoun *was*).

parameters. Himmelreich put her parameters in the structure. I put my parameters in the elements themselves. I show what an analysis like Himmelreich looks like, and I show then that it is difficult to reduce that then to differences in the lexicon (because it has to do with agree?).

So what I do is keep the parameters that she was differing stable. I change the things that she kept constant, the internal and external element. Does her structure then work with what I want? Not entirely, because I have to do a c-command that is going in the wrong direction. Then I show a syntactic structure that could be compatible with mine, and I show why a grafting one is not.

In this dissertation I focus on when languages allow the internal and external case to win the case competition. In my proposal, this depends on the comparison between the internal and external base. The larger syntactic context in which this takes place should be kept stable. For concreteness, I show a possible implementation in Cinque's double-headed analysis of relative clause. I do by no means claim that claim this is the only or even correct implementation.

According to Cinque, every type of relative clause in every language is underlyingly double-headed. Evidence for this claim comes from languages that show this morphologically. An example from Kombai is given in (8). The head of the relative clause is *doü* 'sago', and it appears inside the relative clause and outside.

(8) [**doü** adiyan-o-no]   **doü** deyalukhe
     sago give.3PL.NONFUT-tr-conn sago finished.ADJ
     'The sago that they gave is finished.'   (Kombai, **vries1993**: 78)

The internal and external instances of *doü* correspond to the internal and external element I assume to be there in the headless relatives.

(9) shows the syntactic structure of the sentence in (8).

(9)
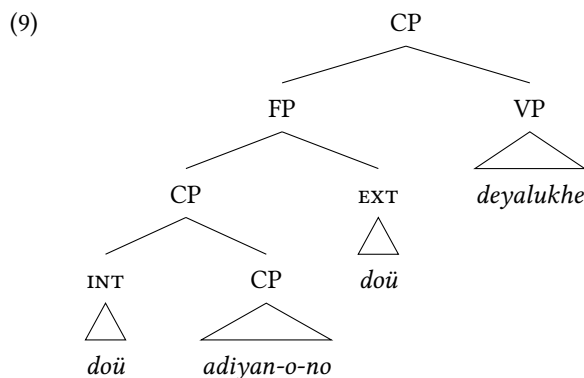
In most languages one of the two heads is deleted throughout the derivation.

According to **cinqueforthcoming**, the internal element can delete the external element, because the internal element c-commands the external element. This is c-
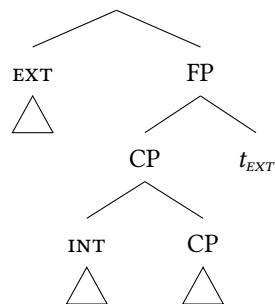
command according to Kayne's definition of it: the internal element is in the specifier of the specifier of the FP.

(10)

```
            CP        EXT
          /    \      /\
       INT      CP   /  \
       /\       /\
      /  \     /  \
```
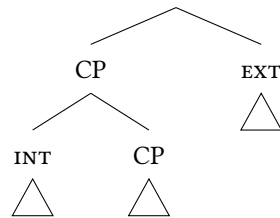
In order for the internal element to be able to delete the external element, a movement needs to take place. The external element moves over the relative clause.[3] From this position, the external element can delete the internal one, because the external element c-commands the internal one.

(11)

```
     EXT          FP
     /\          /    \
    /  \        CP      t_{EXT}
              /    \
           INT      CP
           /\       /\
          /  \     /  \
```

Also talk about D here, and that maybe Old High German deletes a thing without a D when the internal thing wins. does that also have a not so definite interpretation?

What does not work:

For this pattern a single element analysis seems intuitive, if you assume that case is complex and that syntax works bottom-up. First you built the relative clause, with the big case in there. Then you build the main clause and you let the more complex case in the embedded clause license the main clause predicate.

Consider the example in (12). Here the internal case is accusative and the external one nominative.

(12) Uns   besucht   **wen**   **Maria**   **mag**.
      we.ACC visit.3SG$_{[NOM]}$ REL.ACC.AN Maria.NOM like.3SG$_{[ACC]}$
      'Who visits us, Maria likes.'   (adapted from **vogel2001**: 343)

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[3]What remains unclear is what the trigger is for the movement of the external element over relative clause is.

The relative clause is built, including the accusative relative pronoun. Now the main clause predicate can merge with the nominative that is contained within the accusative.

(13)
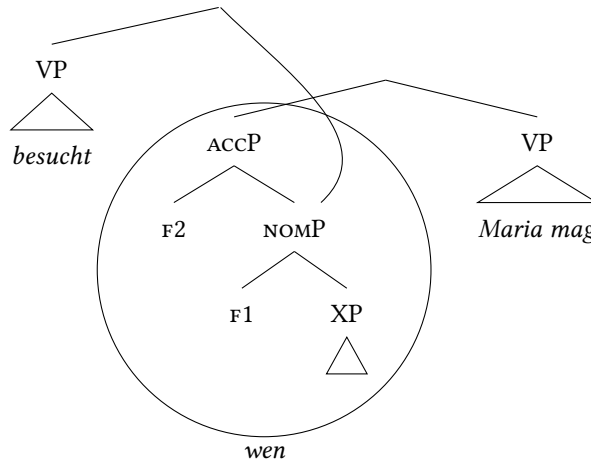
The other way around does not work. Consider (14). This is an example with nominative as internal case and accusative as external case.

(14)   *Ich   lade ein,   wen   **mir sympathisch ist**.
       I.NOM invite.1SG[ACC] REL.ACC.AN I.DAT nice   be.3SG[NOM]
       'I invite who I like.'   (adapted from **vogel2001**: 344)

Now the relative clause is built first again, this time only including the nominative case. There is no accusative node to merge with for the external predicate. Instead, the relative pronoun would need to grow to accusative somehow and then the merge could take place. This is the desired result, because the sentence is ungrammatical.

(15)
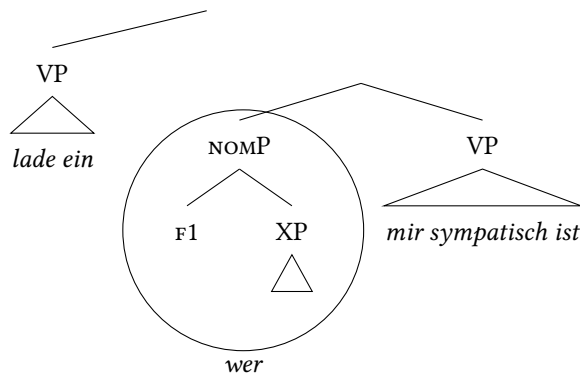
So, this seems to work fine. The assumptions you have to do in order to make this are the following. First, case is complex. Second, you can remerge an embedded

node (grafting). For the first one I have argued in Chapter 3. The second one could use some additional argumentation. It is a mix between internal remerge (move) and external merge, namely external remerge. Other literature on multidominance and grafting, other phenomena. Problems: linearization, .. But even if fix all these theoretical problems, there is an empirical one.

That is, I want to connect this behavior of Modern German headless relatives to the shape of its relative pronouns. These pronouns are WH-elements. The OHG and Gothic ones are not WH, they are D. Their relative pronouns look different, and so their headless relatives can also behave differently.

Himmelreich

there are agree relations between - V_{EXT} and EXT - V_{INT} and INT - INT and EXT

three parameters: 1 relation between V_{EXT} and EXT + V_{INT} and INT are symmetric or asymmetric 2 relation between EXT and INT are symmetric or asymmetric 3 if EXT — INT is asymmetric, EXT or INT probes

I keep the parameters she has stable, the bigger syntactic context is the same everywhere. I vary the content of EXT

Primary texts

Col.	Colossians, New Testament
Hel.	Heliand
Isid.	Der althochdeutsche Isidor
John	John, New Testament
Luke	Luke, New Testament
Mark	Mark, New Testament
Men. DD.	Menander, The Double Deceiver
Mons.	The Monsee fragments
Nib.	Das Nibelungenlied
Otfrid	Otfrid's Evangelienbuch
Pl. Men.	Plato, Menexenus
Rom.	Romans, New Testament
Tatian	Tatian