Case competition in headless relatives

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List of abbreviations

1	first person
2	second person
3	third person
#	number
ABS	absolutive
ACC	accusative
AN	animate
AOR	aorist
AUX	auxiliary
CL	clitic
CMPR	comparative
COMP	complementizer
DAT	dative
DEF	definite
DEM	demonstrative
DET	determiner
ELA	elative
ELH	extra light head
ERG	ergative
EXT	external case
F	feminine
GEN	genitive
INAN	inanimate
INF	infinitive
INT	internal case
K	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
PTV	partitive
REL	relative marker
RP	relative pronoun
SBJV	subjunctive mood
SG	singular
SUBJ	subject
P	phrase

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 takes place is in headless relatives, i.e. relative clauses that lack a head.

This dissertation attempts to achieve two goals. The first one is to give an overview of the data. I show which aspects of case competition in headless relatives are crosslinguistically stable, which differ across languages, and whether all logically possible patterns are attested. My second goal is to provide an account for the observed data. I set up a proposal that generates the attested patterns and excludes the non-attested ones. I let the variation between languages follow from properties of languages that can be independently observed.

In this chapter I first introduce the topic of case competition in headless relatives. Then I give a brief description of the content and structure of the dissertation.

1.1 Decomposing the title

Languages can use case to mark the grammatical role of a noun phrase in a clause (cf. Moravcsik, 2009). Consider the two German sentences in (1). What can descriptively be called the subject of the predicate *mögen* 'like' is marked as nominative. What can be described as the object of *mögen* 'like' is marked as accusative. The case marking of the noun phrases is reflected on the determiner of 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* ‘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* ‘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.’ (German)

Not only full noun phrases, but also other elements can be marked for case. An example of another element is the relative pronoun. German marks its 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* ‘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* ‘like’ in the relative clause. In (2b), the relative clause *den er beim Versteckspiel 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* ‘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* ‘search’ in the relative clause.

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

(German)

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 relative pronouns do not appear in the same case. The case of the relative pronoun in (2b) is accusative, because it is the descriptive object in the relative clause. The case of the relative pronoun in (2a) is not accusative but nominative, because it is the descriptive subject in the relative clause. In (2a), the case of the relative pronoun (which is nominative) differs from the case of the head (which is accusative).

The focus of this dissertation lies on headless relatives. As the name suggests, this type of relative clause lacks a head.[1] Even though German also has case 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* 'pity' takes accusative objects, as indicated by the subscript on the gloss of the verb. The predicate *gaarman* 'pity' also takes accusative objects, indicated again by the subscript. The relative pronoun *þan(a)* 'RP.SG.M.ACC' appears in accusative case.[2]

[1]This 'missing noun' has been interpreted in two different ways. Some researchers argue that the noun is truly missing and that it is absent (cf. Citko, 2005; Van Riemsdijk, 2006). Others claim that there is actually a head, but it is phonologically zero (cf. Bresnan and Grimshaw, 1978; Groos and van Riemsdijk, 1981; Grosu, 2003a). At this point in the discussion this distinction is not relevant. I return to the issue in Part III of the dissertation.

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

(3)

gaarma	þan	-ei	arma
pity.PRES.1SG$_{[\text{ACC}]}$	RP.SG.M.ACC	-COMP	pity.PRES.1SG$_{[\text{ACC}]}$

'I pity him whom I pity'

(Gothic, Rom. 9:15, adapted from Harbert 1978: 339)

A question that can be raised now is where this accusative case comes from. Logically speaking, there are two possible sources: the predicate in the main clause *gaarman* 'pity' and the predicate in the relative clause *arman* 'pity'. Both these predicates take the accusative case. From now on, I use the terms internal and external case to refer to these two possible case sources. In (3), the internal case that comes from *arman* 'pity' is accusative, and the external case that comes from *gaarman* 'pity' is accusative too.[3] Coming back to the issue at hand, the accusative case on *þan(a)* 'RP.SG.M.ACC' can be the internal case or the external case (or both). Because the internal and the external case in (3) match, it is impossible determine what the source of the accusative case is. Therefore, in what follows, I give examples in which the internal and external case differ. I show that the relative pronoun sometimes appears in the internal case and sometimes in the external case.

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* 'love' takes accusative objects, as indicated by the subscript on the predicate. The external case is nominative. The predicate *wisan* '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* '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.

[3]Internal case refers to the case associated with the relative pronoun internal to the relative clause. More precisely, it is the case that 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* 'pity'. The predicate *arman* '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 that 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* 'pity'. The predicate *gaarman* 'pity' takes accusative objects, so the external case is accusative.

(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 Harbert 1978: 342)

The conclusion that I draw from this is that it is possible for the relative pronoun to take the internal case. In other words, the relative pronoun is sensitive to 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* 'be' takes nominative subjects, as indicated by the subscript on the predicate. The external case is accusative. The predicate *ussiggwan* 'read' takes accusative objects, as indicated by the subscript on the predicate.[4] The relative pronoun *þo* 'RP.SG.N.ACC' appears in the accusative case. This accusative can only come from the predicate *ussiggwan* '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]

(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'

[4]Throughout this dissertation, I place subscripts on the glosses of the predicates in headless relatives. 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* 'love' in (4) the subscript indicates which case the complement of the verb appears in. The subscript on *wisan* '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.

[5]Throughout the dissertation, I write the relative clause in bold when the internal and external case differ. When the relative pronoun takes the internal case, I mark the relative pronoun in bold as well, as shown in (4). When the relative pronoun takes the external case, I do not mark the relative pronoun in bold, indicating it patterns with the main clause. An example of that is (5). When the internal and external case match, I do not mark any part of the sentence in bold, as I did in (4).

(Gothic, Col. 4:16, adapted from Harbert 1978: 357)

The conclusion that I draw from this is that it is possible for the relative pronoun to take the external case. In other words, the relative pronoun is sensitive to the external case. At this point it remains unclear what happened to the internal nominative case.

The examples in (4) and (5) show that the relative pronoun in headless relatives can take either the internal or the external case. The internal and the external case are nominative and accusative. In other words, (4) and (5) are both examples in which case competition takes place. In both examples, the relative pronoun appears in accusative case. This means that the accusative wins the case competition between the nominative and the accusative.

1.2 The content of this dissertation

In the previous section I introduced the phenomenon of case competition in headless relatives. This dissertation investigates two aspects of it. The first aspect is which case wins the case competition. The second aspect concerns whether the winner of the competition is allows to surface. In this section I give a brief overview of how the content of the dissertation is structured.

Part I of this dissertation discusses the first aspect I just introduced, which concerns which case wins the case competition. It is a crosslinguistically stable fact that this is determined by the case scale in (6) (cf. Grosu, 2003b).

(6) NOM < ACC < DAT

A case more to the right on the scale wins over a case more to the left on the scale.

The case scale in (6) generates the pattern shown in Table 1.1.

Table 1.1: The winner of the case competition

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

The left column shows the internal case (INT) between square brackets. The top row shows the external case (EXT) between square brackets. The other cells indicate the case of the relative pronoun. The table shows three different instances of case competition and their winners: (1) when the accusative competes against the nominative, the accusative wins, and the relative pronoun appears in the accusative case; (2) when the dative competes against the nominative, the dative wins, and the relative pronoun appears in the dative case; and (3) when the dative competes against the accusative, the dative wins, and the relative pronoun appears in the dative case.

In Chapter 2, I give examples that illustrate the pattern shown in Table 1.1. Additionally, I show that the NOM < ACC < DAT scale is a recurring one. The pattern does not only appear in headless relatives, but also in morphological phenomena. In Chapter 3, I argue that there is a single trigger that is responsible for the case scales in different subparts of language. This trigger is a cumulative case decomposition (Caha, 2009). Informally speaking, cases more on the right on the case scale or syntactically more complex than cases more to the left on the case scale. I show how the case scale in headless relatives is a reflex of this decomposition.

Part II of this dissertation introduces the second aspect that plays a role in case competition headless relatives. This aspect concerns whether the internal and the external case are allowed to surface when either of them wins the case competition. Consider Table 1.2.

Table 1.2: The winner of the case competition (INT/EXT marked)

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

In Table 1.2, the light gray cells are the ones in which the internal case wins, the dark gray cells are the ones in which the external case wins, and the unmarked cells are the ones in which both cases match. It differs across languages whether they allow different winners to surface.

There are four logically possible language types. The first possible type is one in which the internal and the external case are allowed to surface when either of them wins the case competition. Relative pronouns in the unmarked, light gray and dark gray cells are grammatical. I call this type the unrestricted type. The second possible type is one in which only the internal case is allowed to surface when it wins the case competition. Relative pronouns in the unmarked and light gray cells are grammatical but those in the dark gray cells are not. I call this type the internal-only type. The third possible type is one in which only the external case is allowed to surface when it wins the case competition. Relative pronouns in the unmarked and the dark gray cells are grammatical but those in the light gray cells are not. I call this type the external-only type. The fourth possible type is one in which neither the internal case nor in the external case is allowed to surface when either of them wins the case competition. Relative pronouns in the unmarked cells are grammatical, but those in the light and dark gray cells are not. I call this type the matching type.

Chapter 4 introduces these possible patterns in more detail and gives examples of them in different languages. As far as I am aware, only three of the possible language types are attested in natural languages. Gothic, Old High German and Ancient Greek are examples of the unrestricted type, Modern German is an example of the internal-only type (Vogel, 2001), and Polish is an example of the matching type (Citko, 2013). To my knowledge, the external-only type is not attested. Chapter 5 takes a small detour and discusses languages that do not show any case competition. I present an overview of all logically possible patterns in headless relatives across languages, and I show which ones are attested.

In Part III I focus again on the different language types that involve case competition. The goal of this part is to provide an account that generates the attested language types and excludes the non-attested one. Additionally, the variation between the language types should follow from properties that can be independently observed in a language of a particular language type.

In my account, headless relatives are derived from light-headed relatives. These 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 necessary requirement for deletion is that the deleted element is contained within the other element. The difference between languages arises from languages having different lexical entries that spell out the features of the light head and the relative pronoun. The lexical entries are motivated by investigating the morphology of the languages. As a result, different lexical entries ultimately lead to different languages types. My dissertation is embedded in Nanosyntax. In this framework, all languages use the same building blocks and assemble them following the same algorithm. The only way in which languages differ is their postsyntactic lexicon, which interacts with the structure-building algorithm, leading to differences between languages. This way, the framework allows me to make the connection between the morphology of a language (i.e. its light head and relative pronoun) and its syntax (i.e. the grammaticality pattern in headless relatives).

I describe the basic setup of my proposal in Chapter 6, and I show how a different lexical entries ultimately generate the three attested language types and not the unattested one. In Chapter 7, I motivate the analysis for the internal-only type of language Modern German. I first identify the morphemes that Modern German light heads and relative pronouns consist of. Then I show which features each of the morphemes correspond to. I illustrate that the lexical entries in Modern German are such that they lead Modern German to be an internal-only type of language. In Chapter 8 and 9 I do the same for the two other attested language types. I show that Polish has lexical entries that ultimately lead it to be a matching type of language, and that Old High German has lexical entries that ultimately lead it to be an unrestricted type of language. Toward the end of the chapter I briefly sketch what I assume to be the larger syntactic structure of a headless relative.

Chapter 10 compares the proposal I put forward in the dissertation to three earlier proposals. Chapter 11 gives a summary of the dissertation.

Part I

Case competition

Chapter 2

The case scale

In this dissertation I discuss two aspects of case competition in headless relatives. This chapter introduces the first aspect, which concerned with the question which case wins the case competition.

It has been argued in the literature that the two competing cases always adhere a to particular case scale (cf. Harbert, 1978; Pittner, 1995; Vogel, 2001; Grosu, 2003a; Bergsma, 2019; Caha, 2019). I give the scale in (1).[1]

(1) NOM < ACC < DAT

A case more on the right on this scale wins over a case more to the left on this scale. 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. In Section 2.1 I give examples that illustrate that case competition in Gothic headless relative adhere to the case scale.

In the remainder of the chapter I show that the case scale is also adhered to beyond headless relatives. It also leading in case competition in numeral

[1] In the literature about headless relatives, the genitive is often discussed together with the nominative, accusative and dative (cf. Harbert, 1978; Pittner, 1995). In this dissertation I do not discuss the genitive. I do not do so because 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.

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. 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 Keenan and Comrie's (1977) relativization hierarchy.

phrases (Caha, 2019), which I do not discuss in this dissertation. Besides in constructions that involve case competition, the case scale also appears in morphology. Section 2.2 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

In this section I give examples from case competition in Gothic headless relatives. The internal and external case take either nominative, accusative or dative case, and I show all possible combinations. All examples adhere to the case scale in (1).

Before I discuss examples in which the internal and external case differ and the case scale starts to play a role, I give examples in which the internal and external case match. If the internal case and the external case are one and the same case, the relative pronoun simply surfaces in that case.

The description of Gothic is mostly based on (Harbert, 1978). The spelling of the examples follows the Wulfila Project website.[2] The glossing comes from the detailed tagging on that same website. The translations are my own.

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* 'eat' takes nominative subjects. The external case is nominative as well, as the predicate *ga-dauþnan* '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
	COMP	RP.SG.M.NOM	-COMP	DEM.SG.M.GEN	eat.OPT.3SG$_{[\text{NOM}]}$	not
	gadauþnai					
	die.OPT.3SG$_{[\text{NOM}]}$					

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

(Gothic, John 6:50, after Harbert 1978: 337)

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

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

The internal case is accusative, as the predicate *arman* 'pity' takes accusative objects. The external case is accusative as well, as the predicate *gaarman* '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 Harbert 1978: 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* 'prepare' takes dative indirect objects. The external case is dative as well, as the predicate *giban* '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 Harbert 1978: 339)

These findings are summarized as in Table 2.1. The left column shows the internal case between square brackets. The upper 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 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 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.

I start with the competition between the accusative and the nominative. Following the case scale in (1), the relative pronoun appears in the accusative case and never in the nominative.

Consider the example in (5), 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* 'love' takes accusative objects. The external case is nominative, as the predicate *wisan* 'be' takes nominative subjects. The relative pronoun *þan(a)* '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) **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 Harbert 1978: 342)

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

(6)

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 Harbert 1978: 357)

The two examples in which the nominative and the accusative compete are shown 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 (5), 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 (6), in which the external accusative wins the case competition over the internal nominative and the 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.

[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.

Table 2.2: Gothic headless relatives (NOM — ACC)

INT \ EXT	[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 (1), the relative pronoun appears in the dative case and never in the nominative.

Consider the example in (7), in which the internal dative case competes against the external nominative case. The internal case is dative, as the predicate *fraletan* 'forgive' takes dative objects. The external case is nominative, as the predicate *frijon* '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.

(7) iþ **þamm** **-ei** **leitil** **fraletada** leitil frijod
but RP.SG.M.DAT -COMP little forgive.PASS.PRES.3SG$_{[\text{DAT}]}$ little love$_{[\text{NOM}]}$
'but the one whom little is forgiven loves little'
(Gothic, Luke 7:47, adapted from Harbert 1978: 342)

Consider the example in (8), in which the internal nominative case competes against the external dative case. The internal case is nominative, as the predicate *wisan* 'be' takes nominative subjects. The external case is dative, as the predicate *fraþjan* '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 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) **þaim -ei iupa sind**
RP.PL.N.DAT -COMP above be.PRES.3PL$_{[\text{NOM}]}$
fraþjaiþ
think about.OPT.PRES.2PL$_{[\text{DAT}]}$
'think about those which are above'
(Gothic, Col. 3:2, adapted from Harbert 1978: 339)

The two examples in which the nominative and the dative compete are shown in Table 2.3. The light gray marking corresponds to (7), 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 (8), 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)

EXT / INT	[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 (1), the relative pronoun appears in the dative case and never in the accusative.

Consider the example in (9), 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* '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 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.

(9) ushafjands **ana þamm -ei lag**
pick up.PRES.PTCP$_{[\text{ACC}]}$ on$_{[\text{DAT}]}$ RP.SG.N.DAT -COMP lie.PRET.3SG
'picking up that what he lay on'
(Gothic, Luke 5:25, adapted from Harbert 1978: 343)

Consider the example in (10), in which the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *insandjan* 'send' takes accusative objects. The external case is dative, as the predicate *galaubjan* 'believe' takes dative objects. The relative pronoun *þamm(a)* 'RP.SG.M.DAT' appears in the external case: the dative. The relative

[4] *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 (9) refers to a location.

[5] The example in (9) 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. Harbert (1978) 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. Harbert 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 (9)). 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.

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) ei galaubjaiþ þamm **-ei** **insandida**
that believe.OPT.PRES.2PL$_{[\text{DAT}]}$ RP.SG.M.DAT -COMP send.PRET.3SG$_{[\text{ACC}]}$
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 shown in Table 2.4. The light gray marking corresponds to (9), 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 (10), 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.

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

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. They correspond to the examples (2), (3) and (4). 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 (5), (7) and (9). 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 (6), (8) and (10).

To sum up, case competition in headless relative is subject to the case scale, repeated in (11).

(11) 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 Pittner 1995 for Modern and Old High German and Grosu 2003a; Kakarikos 2014 for Ancient Greek).[6]

[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.

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

2.2 In morphology

In this chapter so far I showed that the case scale NOM < ACC < DAT can be observed case competition in headless relatives. In this section, I show that this same case scale can be observed in morphology. First I show that syncretism only targets continuous regions on the case scale. Then I present a language that shows morphological containment that reflects the case scale.

2.2.1 Syncretism

Syncretism refers to the phenomenon whereby two or more different functions are fulfilled by a single form (cf. Baerman, Brown, and Corbett, 2002). 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 (Baerman, Brown, and Corbett, 2005; Caha, 2009; Zompì, 2017) (and see McFadden 2018; Smith et al. 2019 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 crosslinguistically. 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 (Bobaljik, 2012).

Table 2.6 shows examples for each of these possible patterns.

Table 2.6: Syncretism patterns in Germanic pronouns

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

Faroese has an example of three distinct forms. The second person singular is *tú* 'you' for nominative, *teg* 'you' for accusative and *tær* 'you' for dative (Lockwood 1977: 70). Dutch has an example of a complete syncretism for nominative, accusative and dative. The second person plural pronoun is *jullie* 'you.PL' is syncretic between all three cases. Icelandic has an example of a syncretism between accusative and dative but not nominative. The first person singular plural is *okkur* 'us' is syncretic between accusative and dative. The nominative has a separate form: *við* 'we' (Einarsson 1949: 68). German has an example of a syncretism between nominative and accusative but not dative. 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.

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

2.2.2 Morphological case containment

This section shows a second way in which NOM < ACC < DAT is reflected in morphology: morphological case containment (cf. Caha, 2010; Zompì, 2017; Smith et al., 2019). In some languages, the form that is used for the accusative literally contains the form that is used for the nominative. In turn, the form 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 (Nikolaeva 1999: 16 after Smith et al. 2019). Three examples are given in Table 2.7.

Table 2.7: 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

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.* The 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.

Other languages that show this phenomenon are West Tocharian (Gippert, 1987) and Vlakh and Kalderaš Romani (respectively Friedman 1991 and Boretzky 1994).

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

2.2.3 Summary

Case competition in headless relatives adheres to the case scale in (12).

(12) NOM < ACC < DAT

If the internal and external case differ, a case more on the right of the scale wins over a case more to the left on the scale.

This case scale is not only found in case competition in headless relatives, but it can also be observed in morphological patterns. First, if the cases are ordered according to the case scale, syncretism only target continuous forms, and 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 a special process with its own stipulated rule. Instead, it should be anchored deeply into the linguistic system, such that the facts presented in this chapter can follow from it.

2.3 Aside: In syntax

This section takes a small detour to discuss two additional phenomena in which the case scale appears. It does not belong to the core of the story, and it can be skipped over without losing track of the reasoning. 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. I do not provide an analysis that account for the implicational hierarchies in this dissertation.

2.3.1 Agreement

Agreement can be seen as "a systematic covariance between a semantic or formal property of one element and a formal property of another" (Steel, 1978, p. 610). 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 function (following Moravcsik 1978). Later I show that a reformulation in terms of case is actually more accurate (following Bobaljik 2006).

Moravcsik (1978) 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.

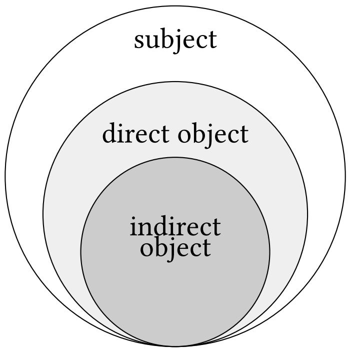


Figure 2.1: Agreement hierarchy

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] Moravcsik (1978) 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, Miyagawa and Tsujioka 2004: 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 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 transitive 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 Arregi and Molina-Azaola 2004: 45)

Putting the languages in Moravcsik's (1978) schema gives the result as shown in Figure 2.2.

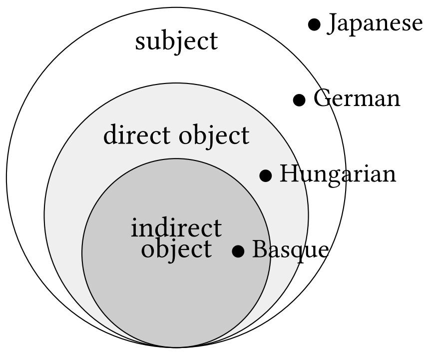


Figure 2.2: Agreement hierarchy with languages

Gilligan (1987) performed a typological study among 100 genetically and areally diverse languages, which confirms the picture. The results are shown in Table 2.8. 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 2.8: 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	-
*	*	*	0	-
*	*	✓	0	-

So far I have discussed the implicational hierarchy in terms of grammatical function. 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.

Bobaljik (2006) 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. Bobaljik 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 Bobaljik 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.' (Harley 1995: 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.'
(Zaenen, Maling, and Thráinsson 1985: 112)

The second type of evidence that Bobaljik 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.

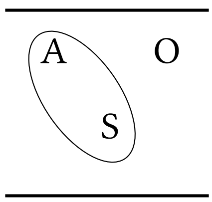


Figure 2.3: Nominative-accusative alignment

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.

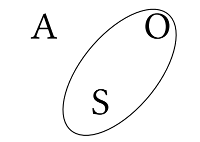


Figure 2.4: Ergative-absolutive alignment

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).

Bobaljik (2006) 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.

Bobaljik (following Marantz 2000) 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.

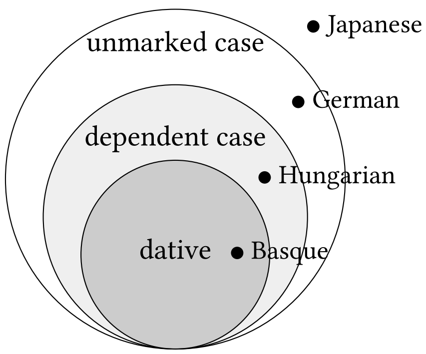


Figure 2.5: Agreement hierarchy (case)

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 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.

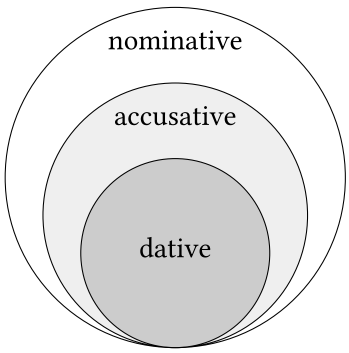


Figure 2.6: Agreement hierarchy (NOM/ACC/DAT)

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

2.3.2 Relativization

Relativization refers to the process in which a relative clause is derived from a non-relative clause. In (19), I give an example of a relative clause.

(19) the woman, who you like

This relative clause is derived from the non-relative clause in (20).

(20) You like the woman.

The head of the relative clause is *woman.* It precedes the relative clause. The relative pronoun *who* directly follows the head. The head is no longer present in the relative clause anymore.

In (19), it is the object of the clause that is relativized. It differs per language which elements can be relativized with a particular strategy. Just as 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.

Keenan and Comrie (1977) 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.

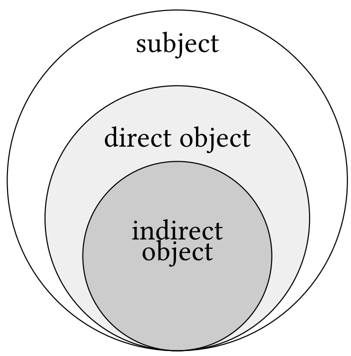


Figure 2.7: Relativization hierarchy

[8]Keenan and Comrie (1977) 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.

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 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. (21) 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'.

(21)

Nahita	ny vehivavy	ny mpianatra.
saw	the woman	the student

'The student saw the woman.'

(Malagasy, Keenan and Comrie 1977: 70)

In (22), 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'.

(22)

ny mpianatra	izay nahita	ny vehivavy
the student	that saw	the woman

'the student that saw the woman'

(Malagasy, Keenan and Comrie 1977: 70, my boldfacing)

The object of (21) cannot be relativized in the same way, as shown in (23). 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.

(23)

*__ny vehivavy__	izay nahita	ny mpianatra
the woman	that saw	the student

'the woman that the student saw'

(Malagasy, Keenan and Comrie 1977: 70, my boldfacing)

Later in this section I draw the parallel between subject and nominative, direct object and accusative and indirect object and dative (after Caha, 2009). 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 (Keenan and Comrie, 1977). This strategy is a secondary strategy that exist besides the main strategy that can be used to relativize direct and indirect objects. (24) 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'.

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

The subject from the declarative in (24), sentence *die Frau* 'the woman', is relativized in (25). 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.

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

The object from the declarative sentence in (24), *den Mann* 'the man', cannot be relativized like the subject, as shown in (26). 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.

(26) ***den** die Frau küssende **Mann**
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. (27) 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.

(27) Ali bunoh **ayam** yang Aminah sedang memakan.
Ali kill chicken that Aminah PROG eat
‘Ali killed the chicken that Aminah is eating.’
(Malay, Keenan and Comrie 1977: 71, my boldfacing)

Indirect objects cannot be relativized using the same strategy. (28) is an example of a ditransitive sentence in Malay. The indirect object *kapada perempuan itu* ‘the woman’ cannot be relativized using *yang*.

(28) Ali beri ubi kentang itu kapada perempuan itu.
Ali give potato the to woman the
‘Ali gave the potato to the woman.’
(Malay, Keenan and Comrie 1977: 71)

This is illustrated by the examples in (29). In (29a), the direct object *perempuan kapada* ‘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 (29b) differs from (29a) 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.

(29) 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, Keenan and Comrie 1977: 71, my boldfacing)

Later in this section I draw the parallel between subject and nominative, direct object and accusative and indirect object and dative (after Caha, 2009). 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 (Keenan and Comrie, 1977).

(30) shows how examples of relativized subjects and direct objects. (30a) 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'. (30b) 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'.

(30) 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, Keenan and Comrie 1977: 71)

Basque is an example of a language that has a particular relativization strategy for subjects, direct objects and indirect objects. (31) 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'.

(31) 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, Keenan and Comrie 1977: 72)

A relative clause in Basque appears in the prenominal position and it is marked by the invariable marker *-n*.[9] (32a) shows the three relativizations that are derived from (31). In (32a), the ergative subject *gizonak* 'the man' from (31) 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 (32b), the absolutive direct object *liburua* 'the book' from (31) 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 (32c), the dative indirect object *emakumeari* 'the woman' from (31) 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.

(32) 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, Keenan and Comrie 1977: 72, my boldfacing)

Putting the languages in the schema gives the result as shown in Figure 2.8.

[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.

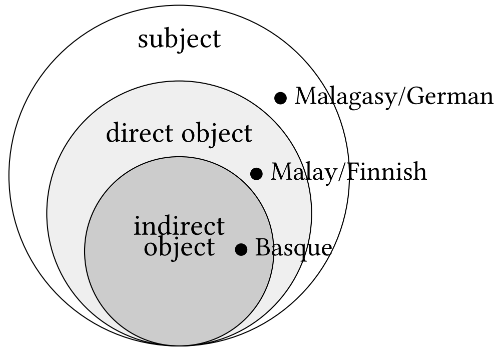


Figure 2.8: Relativization hierarchy with languages

Caha (2009) 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 Bobaljik's (2006) argument with the implicational hierarchy for agreement.

According to Keenan and Comrie (1977), 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 (Dixon 1972: 100).

(33) shows an intransitive and transitive sentence in Dyirbal. In the intransitive sentence in (33a), the subject *balan ḍugumbil* 'the woman' is marked absolutive. In the transtive sentence in (33b), the subject *ŋaḍa* 'I' is marked ergative, and the object *balan ḍugumbil* 'the woman' is marked absolutive.

(33) 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, Dixon 1972: 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 (34a), the absolutive subject *ḍugumbil* 'woman' from (33a) 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 (34b), the absolutive object *ḍugumbil* 'woman' from (33b) 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*.

(34) 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, Dixon 1972: 100, my boldfacing)

b. balan **ḍugumbil** ŋaḍa buṛa-ŋu ɲina-ɲu
DET.ABS woman.ABS I see-REL sit-PASS
'The woman whom I am watching is sitting down.'
(Dyirbal, Dixon 1972: 100, my boldfacing)

Ergatives (for instance the ergative subject *ŋaḍa* 'I' in (33b)) 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 as the agreement hierarchy, the relativization hierarchy is formalized best in terms of morphological case (cf. Caha, 2009). Reformulating Figure 2.8 in terms of case instead of grammatical function gives the schema in Figure 2.9.

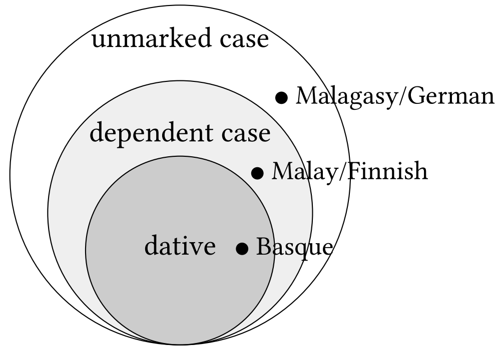


Figure 2.9: Relativization hierarchy (case)

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 (25). 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 (30). 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 (32). 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.

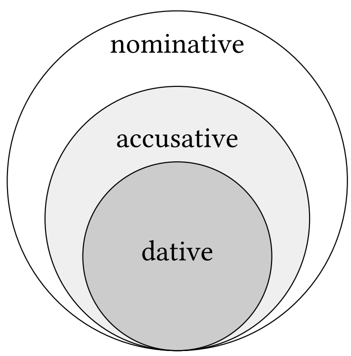


Figure 2.10: Relativization hierarchy (NOM/ACC/DAT)

In sum, this section and the previous one have shown that the case scale that is observed in headless relatives, in syncretism patterns and in formal containment can also be found in syntax. It appears in the form of implicational hierarchies in agreement and relativization patterns. 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.

Chapter 3

Case decomposition

This chapter provides a theory that derives the first aspect of case competition in headless relatives that I discuss in this dissertation. This theory seeks to capture that headless relatives crosslinguistically adhere to the case scale NOM < ACC < DAT.

In most existing accounts for case competition in headless relatives (cf. Harbert 1978; Pittner 1995; Vogel 2001; Grosu 2003a, an exception to this is Himmelreich 2017) the case scale is stipulated. Headless relatives are said to simply obey to that scale. Pittner (1995: 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."

In the previous chapter I showed that the case scale NOM < ACC < DAT is not specific to headless relatives, but it is a wide-spread phenomenon: it can also be observed in morphology (and in syntax). Within morphology it appears in syncretism patterns and morphological case containment. Pittner (1995: 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."

As I already eluded to in the summary of Chapter 1, I am not after a theory in which the case scale is something construction-specific, or one in which syntax and morphology both have their own case scale. Instead, argue that there is a single trigger that is responsible for the case scales in different subparts of language (which is identical to what Caha 2019 suggests for case competition in numeral phrases). I show that the observed case scale naturally follows on the assumption that the case scale is deeply anchored in syntax. The case scales in morphology and syntax are merely reflexes of how case is organized in the linguistic system.[1] Specifically, the idea is that a case wins the competition if it contains all features the losing case has.

This chapter is structured as follows. First, I introduce a specific cumulative case decomposition (Caha, 2009). In the two following sections, I show how this case decomposition is able to derive the syncretism and morphological case containment facts from Chapter 2. I make this concrete in the framework Nanosyntax (Starke, 2009). Finally, I show how the case decomposition relates to the winner in case competition in headless relatives.

3.1 The basic idea

Caha (2009, 2013) (followed by cf. Starke 2009; Bobaljik 2012; McFadden 2018; Van Baal and Don 2018; Smith et al. 2019) 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 K1) plus one extra (here K2). Dative has all the features accusative has (K1 and K2) plus one extra (K3).

Table 3.1: Cumulative case decomposition

case	features
NOM	K1
ACC	K1, K2
DAT	K1, K2, K3

Consider the case scale, repeated in repeated in (1).

(1) NOM < ACC < DAT

This scale actually indicates containment. Nominative corresponds to a set of features (K1) that is contained in the set of features of accusative (K1 and K2). Similarly, nominative corresponds to a set of features that is contained in the set of features of dative (K1, K2 and K3). Lastly, accusative corresponds

[1]Himmelreich (2017) works this intuition out in a different way.

to a set of features (K1 and K2) that is contained in the set of features of dative (K1, K2 and K3).

The decomposition in Table 3.1 forms the basis to derive the case scale effects observed in Chapter 2. The following 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. 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 shown in Table 3.1. In Table 3.2 I repeat the examples that shows the possible and impossible syncretism patterns.

Table 3.2: Syncretism patterns in Germanic pronouns (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 (Baerman, Brown, and Corbett, 2005; Caha, 2009; Zompì, 2017).

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'. I elaborate on the terms lexical entry and lexicon shortly. 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 attested patterns can be derived (and the unattested one cannot), 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 (see Baunaz and Lander 2018a for an introduction to Nanosyntax, Caha 2020 for a description of key features of Nanosyntax and a comparison to Distributed Morphology, and Caha in press for differences concerning the lexicon in Nanosyntax and standard minimalism). Lastly, I discuss how multiple features (like κ1, κ2 and κ3 from Table 3.1) can be spelled out by a single phonological element using phrasal spellout.

In Nanosyntax, syntax starts with atomic features, and it builds complex syntactic trees. Specifically, there are no 'feature bundles' (from a presyntactic lexicon) that enter the syntax. The only way complex feature structures come to exist is 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.[2]

In Nanosyntax, the lexicon contains lexical entries, which are links between lexical trees, phonological representations and conceptual representations (Starke, 2014).[3] I leave the conceptual representation out of discussion

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

[3]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

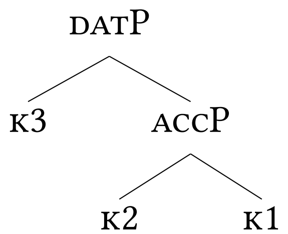
for now, as it is not relevant for the discussion here. The fact that only syntax can create complex feature structures also has a consequence for lexical entries in the lexicon. Syntactic structures are constrained by certain principles, such that only well-formed syntactic structures exist. Since lexical 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) [K1, K2, K3]

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

(3)



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 morpheme). Applying this to (3), not the terminals K1, K2 and K3 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.

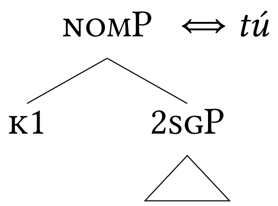
Let me illustrate all of the above with the Faroese pronouns from Table 3.2. I simplify the situation in two respects. First, I do not show the internal complexity of the pronouns, including person and number features. Instead, I give a triangle, indicating that this is a complex syntactic structure. I refer to is as the person-number phrase it refers to, e.g. 2SGP. Second, in this simpli-

representations are (phrasal or clausal) idioms. Lexical trees that only correspond to phonological representations but not to conceptual representations are for instance irregular plurals.

fied 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.

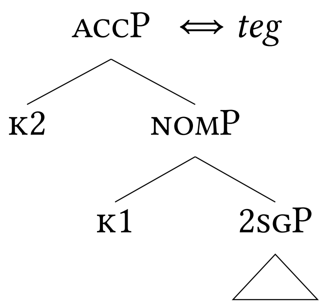
The lexical entry for *tú* is given in (4). The lexical tree consists of the second person singular pronoun (the 2sgP), and k1, making it a nomP. The phonological representation that is linked to the lexical tree is *tú*.[4]

(4)



The lexical entry for *teg* is given in (5). The lexical tree consists of all the features of the lexical tree in (4), plus k2, making it an accP. The linked phonological representation is *teg*.

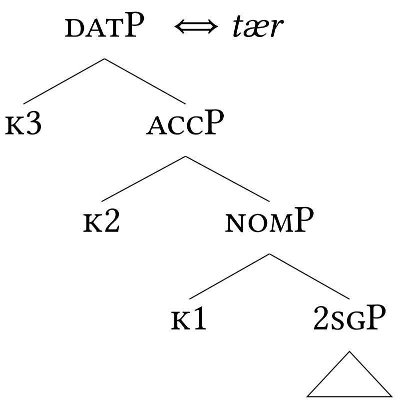
(5)



The lexical entry for *tær* is given in (6). The lexical tree consists of all the features of the lexical tree in (5), plus k3, making it an datP. The linked phonological representation is *tær*.

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

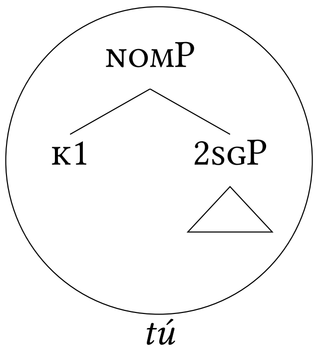
(6)



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*.[5]

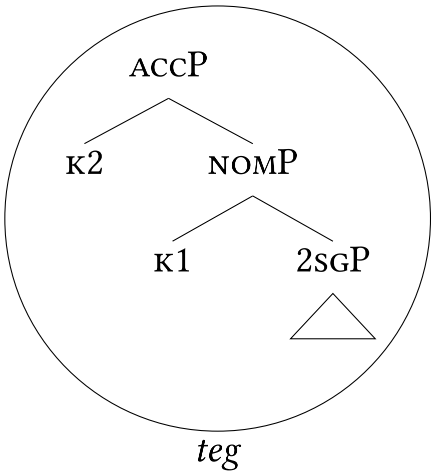
(7)



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

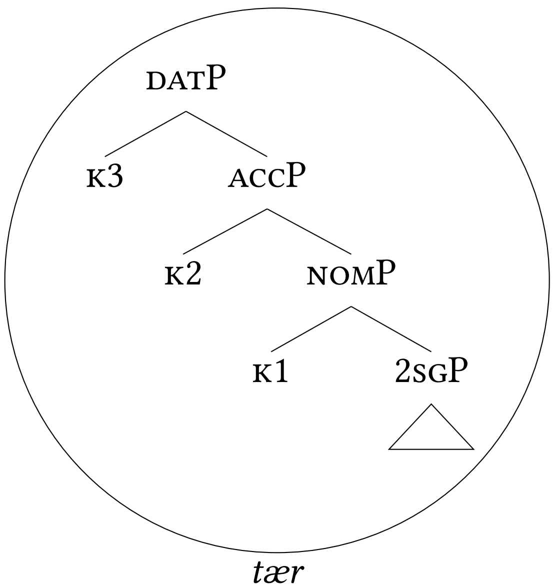
[5]Throughout this dissertation I circle the part of the syntactic structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it.

(8)



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

(9)



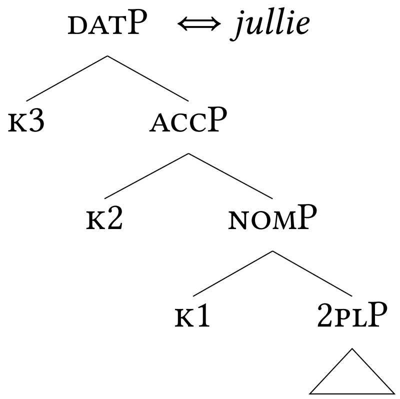
In the Faroese examples above, the syntactic structures are all identical to the lexical trees. However, Nanosyntax assumes that to be a successful match, identity is not a necessary requirement. Instead, matching relies on a containment relation. This is formalized as in (10).

(10) **The Superset Principle** Starke (2009):
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

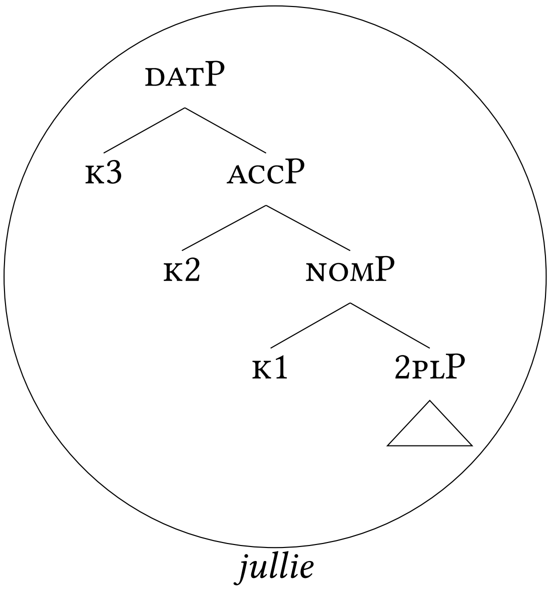
3.2. This pronoun is syncretic between between the nominative, accusative and dative. The lexicon only contains a single lexical entry, namely (11). The lexical tree consists of the complex lexical tree that corresponds to the second person plural pronoun (the 2plP), and k1, k2 and k3 making it a datP. 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)



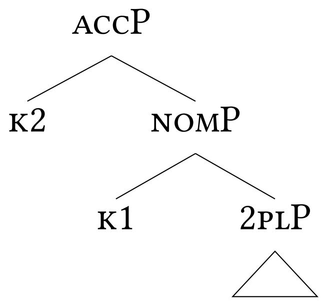
The syntactic structure of the dative, given in (12), is the least exciting of the three. It is identical to the lexical tree (11), and therefore, spelled out as *jullie*.

(12)



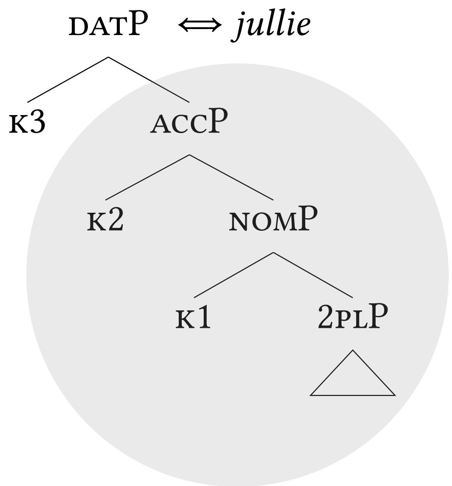
The syntactic structure of the accusative is given in (13).

(13)



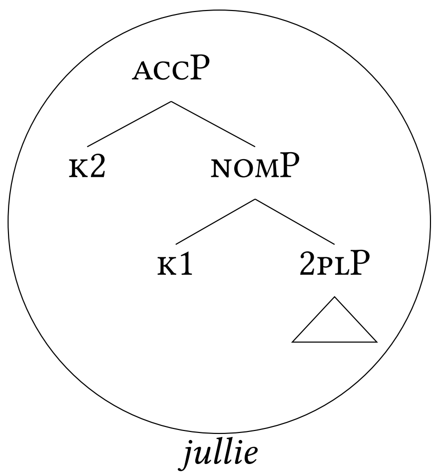
The lexical entry in (11) is not identical to this syntactic structure. However, the lexical tree contains the syntactic structure of the accusative. I repeat the lexical entry for *jullie* in (14), marking the subpart of the tree that matches the syntactic structure in gray.

(14)



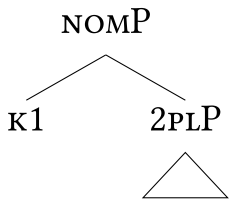
As a result, the accusative is spelled out as *jullie*, shown in (15).

(15)



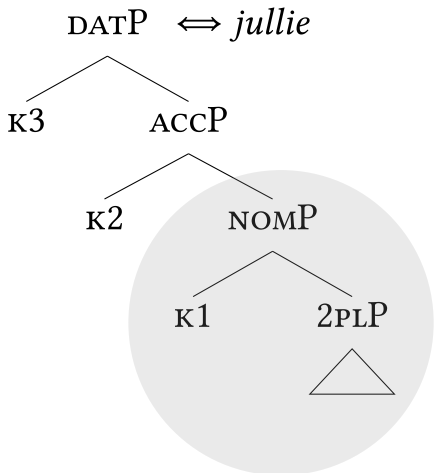
The same holds for the nominative. The syntactic structure is given in (16).

(16)



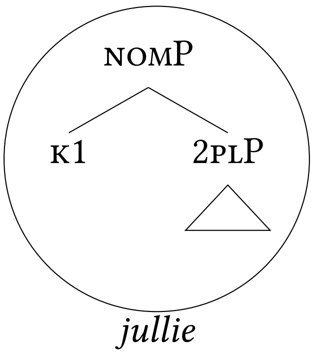
The lexical tree in (11) is not identical to this syntactic structure. However, again, the lexical tree contains the syntactic structure of the nominative. I repeat the lexical entry for *jullie* in (17), marking the subpart of the tree that matches the syntactic structure in gray.

(17)



As a result, the nominative is spelled out as *jullie*, as shown in (18).

(18)

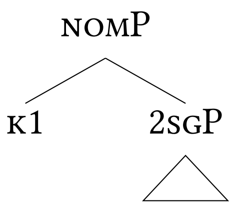


A question arises at this point. Why are the accusative and nominative in Faroese not spelled out by the lexical entry for the dative (and why is the nominative not spelled out by the lexical entry for the accusative)? These syntactic structures are namely contained in the lexical tree for the dative (and the accusative). The reason for this 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).

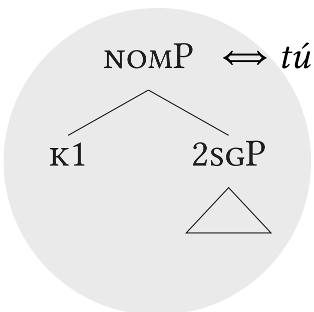
(19) **The Elsewhere Condition** (Kiparsky 1973, formulated as in Caha 2020):
When two entries can spell out a given node, the more specific entry wins. Under the Superset Principle governed insertion, the more specific entry is the one which has fewer unused features.

I show how the Superset Principle and the Elsewhere Condition interact in a competition with the Faroese lexical entries I discussed earlier in this section. 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*.

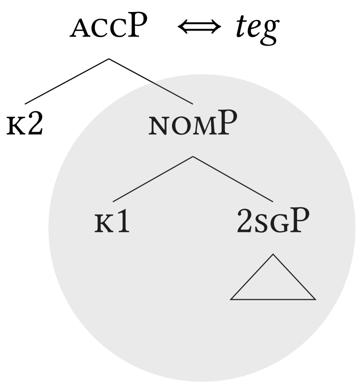
Consider first again the syntactic structure for the nominative in (20), repeated from (7).

(20)


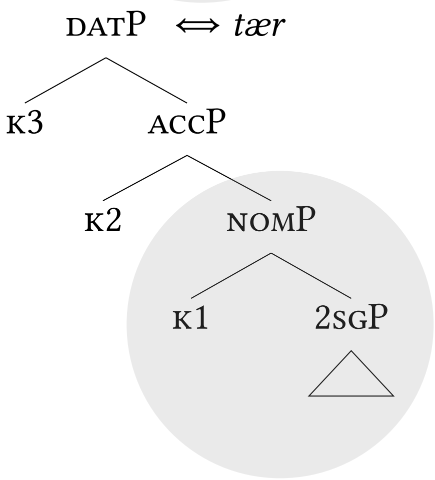
The three lexical entries for *tú*, *teg* and *tær* are candidates for this syntactic structure. I repeat them in (21), marking the subpart of the tree that matches the syntactic structure in gray.

(21) a.


b.

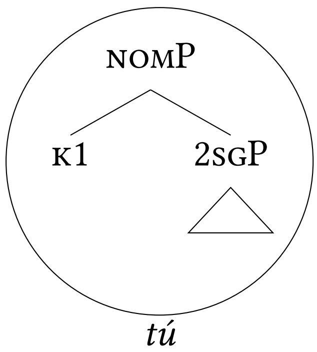


c.



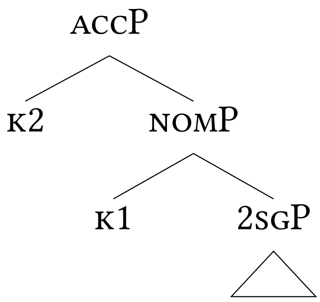
The first, (21a), has no unused features. The second, (21b), has one unused feature: κ2. The third, (21c), has two unused features: κ2 and κ3. Because (21a) has the least amount of unused features, it wins the competition, and the syntactic structure is spelled out as *tú*. This is shown in (22).

(22)



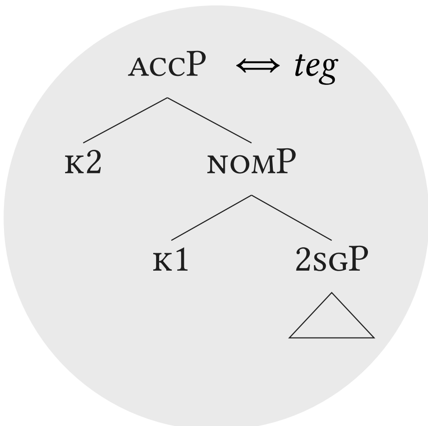
Consider the syntactic structure for the accusative in (23), repeated from (8).

(23)

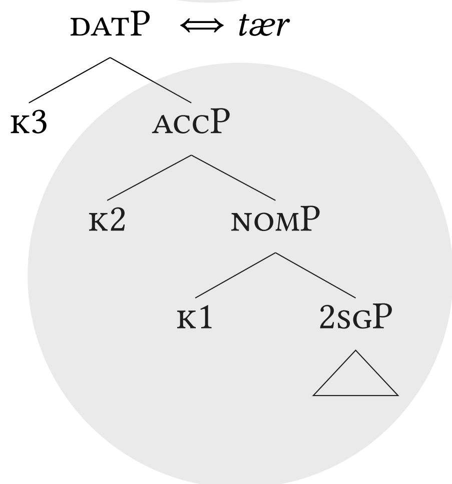


The two lexical entries for *teg* and *tær* are candidates for this syntactic structure. The lexical entry for *tú* is not a candidate here, because it does not contain the complete syntactic structure (i.e. it lacks K2). I repeat the lexical entries for *teg* and *tær* in (24), marking the subpart of the tree that matches the syntactic structure in gray.

(24) a.



b.



The former, (24a), has no unused features. The latter, (24b), has one unused feature: K2. 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)

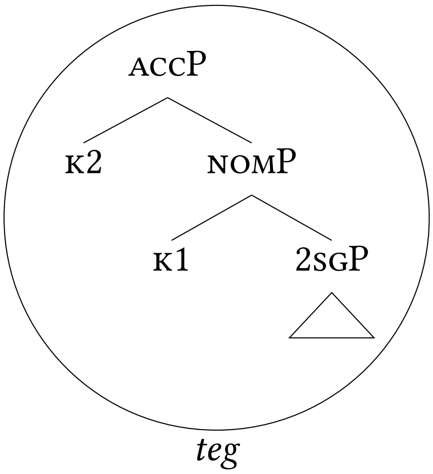
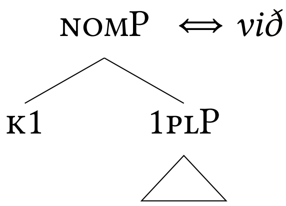
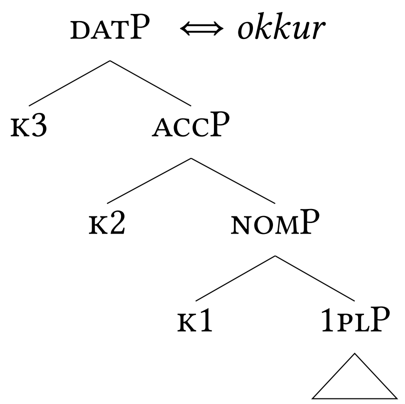


Table 3.2 contains two more attested patterns: the ABB pattern in Icelandic and the AAB pattern in German. In the remainder of this section I show how these two patterns are derived. I also show how the system is unable to derive an ABA pattern, which is crosslinguistically unattested (Baerman, Brown, and Corbett, 2005; Caha, 2009; Zompì, 2017).

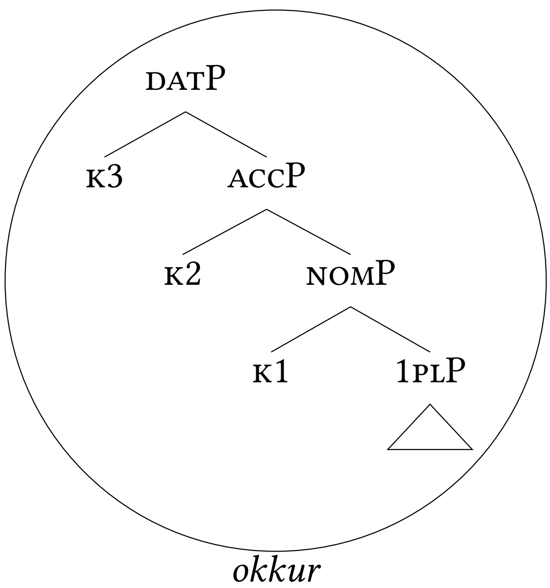
Consider the Icelandic pattern. For the first person plural, Icelandic uses *við* as nominative and *okkur* as accusative and dative. Two lexical entries are needed for this. The first one in (26a) contains pronominal features and K1, and corresponds to the phonology *við*. The second one is given in (26b). It contains in addition to (26a) also the feature K2 and K3. The phonological representation that is linked to it is *okkur*.

(26) a.



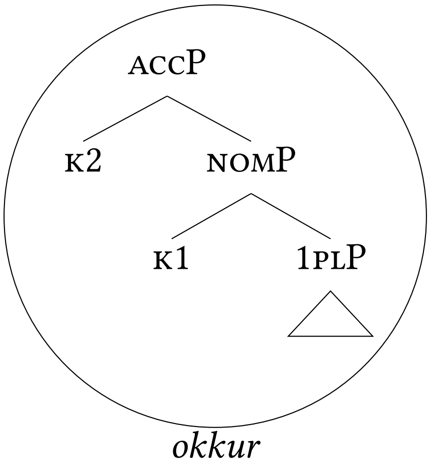
b. 

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 K2 and K3.

(27) 

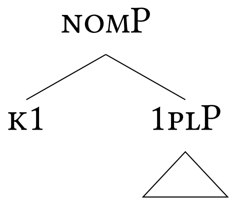
The syntactic structure for the accusative is given in (28). It is contained in the lexical tree in (26b), and therefore, spelled out as *okkur*. The lexical entry in (26a) is not considered, because it does not contain K2.

(28)



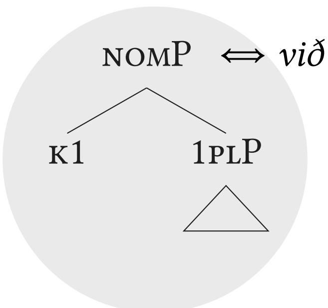
The syntactic structure for the nominative is given in (29).

(29)

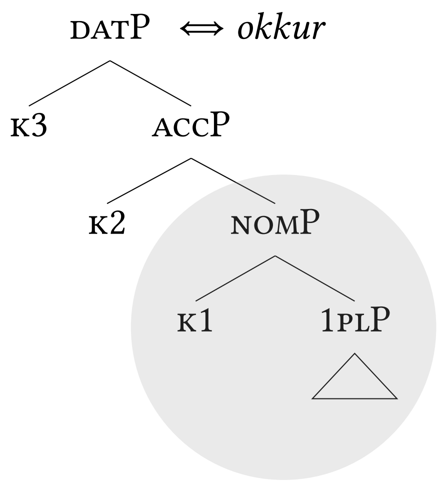


It is contained in the lexical tree for *við* and in the one for *okkur.* I repeat the lexical entries for *við* and *okkur* in (30), marking the subparts of the trees that match the syntactic structure in gray.

(30) a.

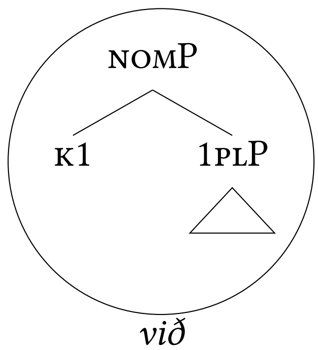


b.



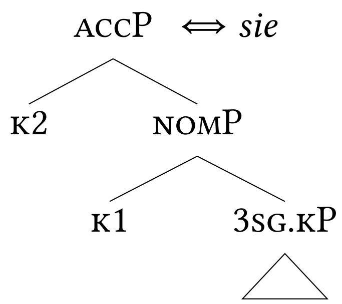
The former, (30a), has no unused features. The latter, (30b), has two unused features: K2 and K3. Because (30a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *við*. This is shown in (31).

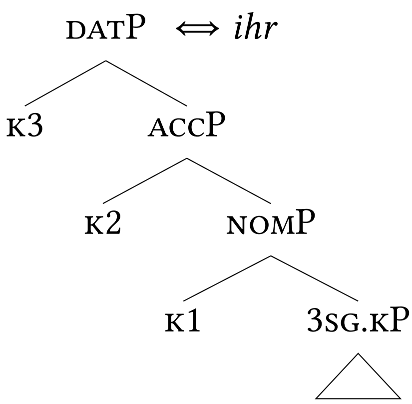
(31)



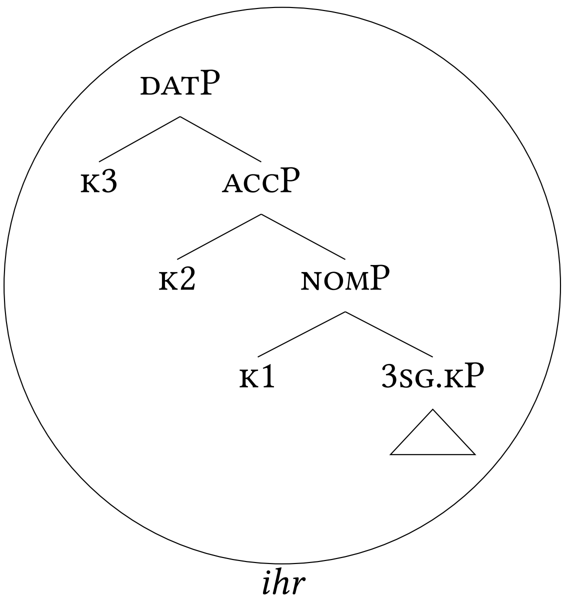
For the third person singular feminine, German uses *sie* as nominative and accusative, and *ihr* as dative. Two lexical entries are needed for this. The first one in (32a) contains pronominal features, K1 and K2. It corresponds to the phonology *sie*. The second one is given in (32b). It contains in addition to *sie* in (32a) also the feature K3. It corresponds to the phonology *ihr*.

(32) a.

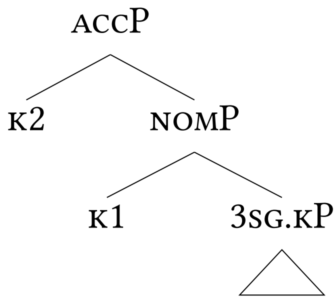


b. 

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 K3.

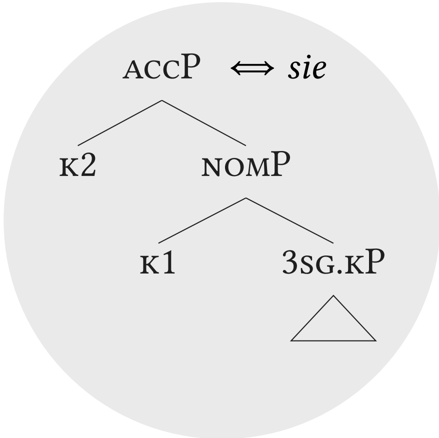
(33) 

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

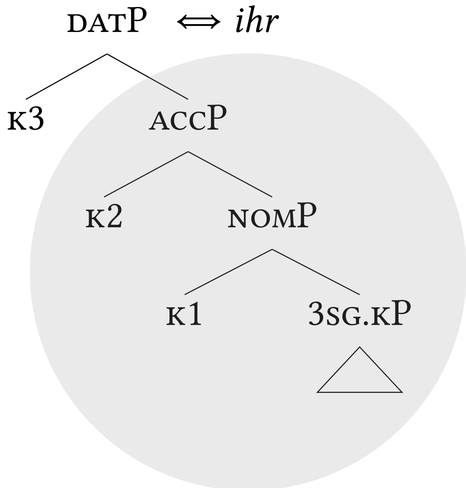
(34) 

It is contained in the lexical tree for *sie* and in the one for *ihr*. 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.

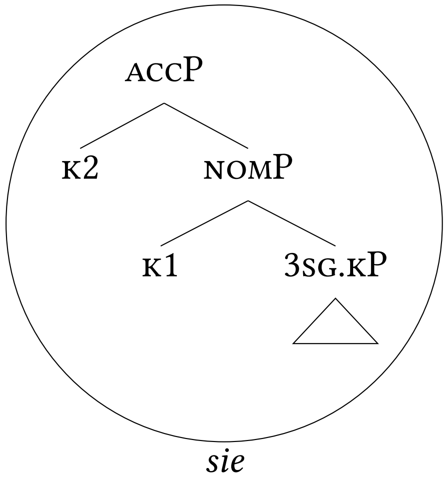


b.



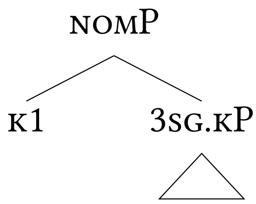
The former, (35a), has one no unused features. The latter, (35b), has one unused feature: K3. Because (35a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *sie*. This is shown in (36).

(36)



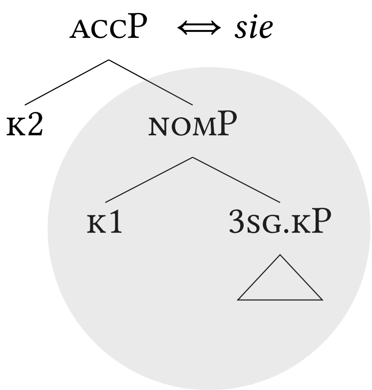
The syntactic structure for the nominative is given in (37).

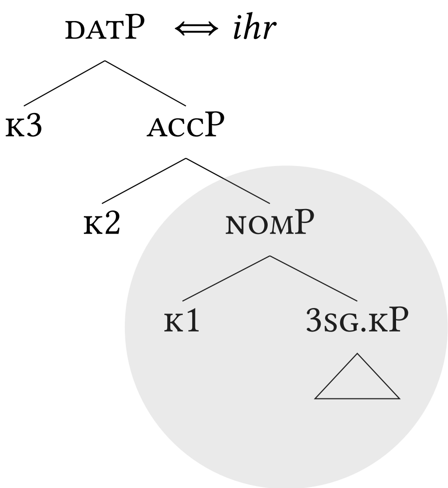
(37)



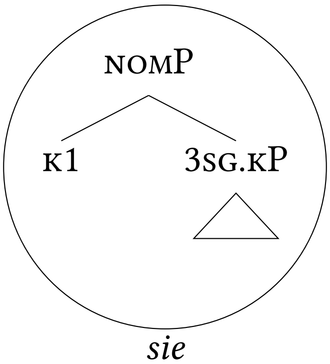
It is contained in the lexical tree for *sie* and in the one *ihr*. I repeat the lexical entries for *sie* and *ihr* in (38), marking the subparts of the trees that match the syntactic structure in gray.

(38) a.



b. 

The former, (38a), has one unused feature: K2. The latter, (38b), has two unused features: K2 and K3. 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) 

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 crosslinguistically. 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 for 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 (Nikolaeva 1999: 16).

Table 3.3: Morphological case containment of 3SG in Khanty

	3SG
NOM	luw
ACC	luw-e:l
DAT	luw-e:l-na

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 (K1) plus something extra (K2). The dative has the morphology that the accusative has (*luw-e:l*) plus something extra (*na*). Again, similarly, the dative has the features that the accusative has (K1, K2) plus something extra (K3).

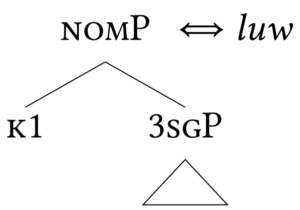
Before I show how languages with morphological case containment can be derived, I need to discuss how variation between languages is modeled in Nanosyntax. Crosslinguistic variation is namely explained in terms of differences in the lexicon. In other words, the syntactic structure is identical across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

Let me discuss the differences between fusional and agglutinative morphology to make this more concrete. Take the accusative, which contains

K1 and K2 in all languages. The languages discussed in the previous section, Section 3.2, are all fusional languages. K2 can only be spelled out in a single lexical entry together with K1. 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. K2 is not spelled out in the same lexical entry with K1. Instead, the K2 is spelled out by its own lexical entry. The result is that the accusative formally contains the nominative.

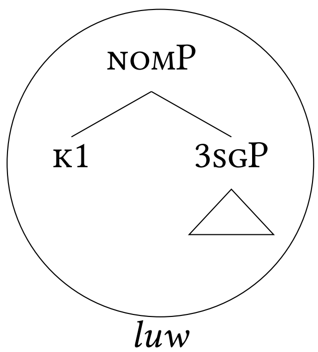
Let me illustrate this by deriving the 3SG paradigm in Khanty. First, I give the lexical entry for the nominative third person singular. It contains pronominal features and the feature K1. The phonological form associated with the structure is *luw*. The lexical entry is given in (40).

(40)



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)



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 K1 plus an extra feature K2. Accordingly, I give the lexical entry for the accusative marker *e:l* in (42).

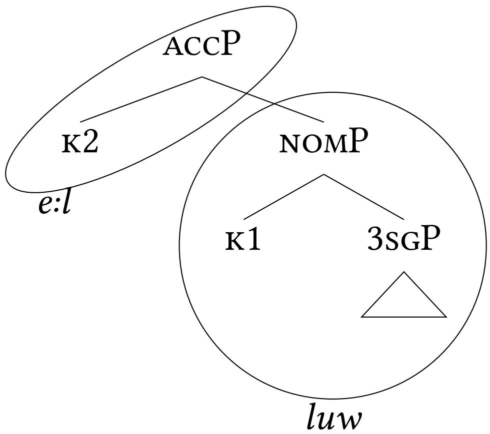
(42) accP $\Leftrightarrow$ *e:l*
|
K2

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.

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 (Starke, 2018; Caha, De Clercq, and Vanden Wyngaerd, 2019a; Vanden Wyngaerd et al., 2020).

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.[6]

(43)



The lexical entry in (42) can only match the syntactic structure if nomP moves away, leaving the accP containing K2 behind. In other words, the syntactic structure needs to be modified in such a way that the complement of K2 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.[7] I showed in the previous section that lexical entries are matched using the Superset Principle and the Elsewhere Condition. If there is no match in the lexicon for a particu-

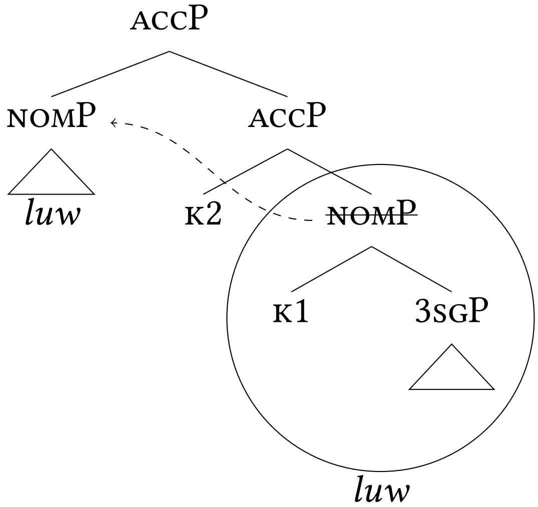
[6]Notice that this also gives the incorrect order of the morphemes: *e:l-luw* instead of *luw-e:l*.

[7]In Part III I introduce and illustrate the spellout procedure in more detail.

lar syntactic structure, two types of (evacuation) movement can take place, in a fixed order.[8] The movement types change the syntactic structure in such a way that they generate new constituents that are possible matches for spell-out.[9] 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 K2, the NOMP, moves to the specifier of ACCP.[10]

(44)



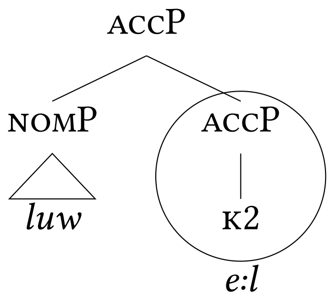
The result of the movement is given in (45). The lexical tree in (42) matches the syntactic structure, and ACCP is spelled out as *e:l*.[11]

[8]The two types of movement are cyclic movement and snowball movement, also used to derive the possible orders in DEM > NUM > ADJ > N (Cinque, 2005).

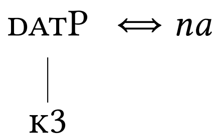
[9]This type of movement is different from syntactic movement. It is driven by spellout, it does not have any interpretational effects, and it does not leave any traces (Starke, 2018).

[10]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 K2 disappears.

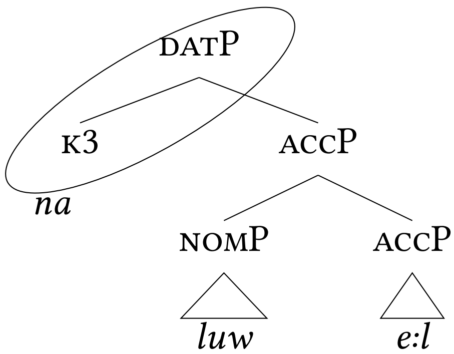
[11]Notice here that it is not a coincidence that the lexical tree for (42) has a unary bottom, meaning that it only has a single feature at the bottom of its structure. Lexical entries with unary bottoms can only be inserted after an instance of spell-out driven movement has taken place (Starke, 2018).

(45) 

Just as Khanty has an additional morpheme that appears in the accusative, it also has a morpheme that appears in the dative. Similarly, just as the accusative has one more feature than the nominative (K1, K2 vs. K1), the dative has one more feature than the accusative (K1, K2, K3 vs. K1, K2). This leads me to pose the lexical entry in (46).

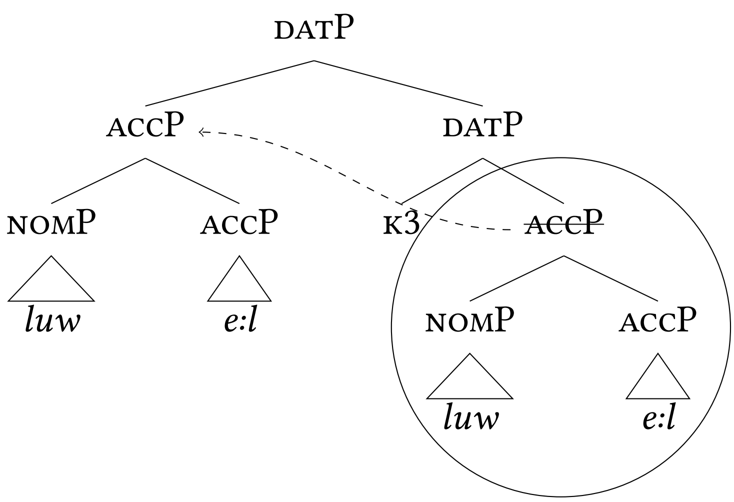
(46) 

Again, because spellout only targets constituents, K3 cannot be spelled out right after it has been merged, as shown in (47).

(47) 

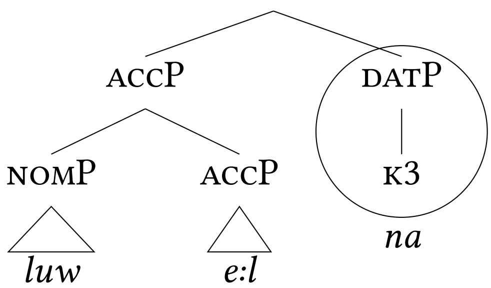
The same complement movement as before has to take place, which is shown in (48). The complement of K3, the accP, moves to the specifier of datP.

(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.

The intuition is the following. Case competition in headless relatives reflects the cumulative feature decomposition given in Table 3.1. A case wins the competition if it contains 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. Lastly, the accusative contains all features the nominative has, so the accusative surfaces. I illustrate this per case pair.

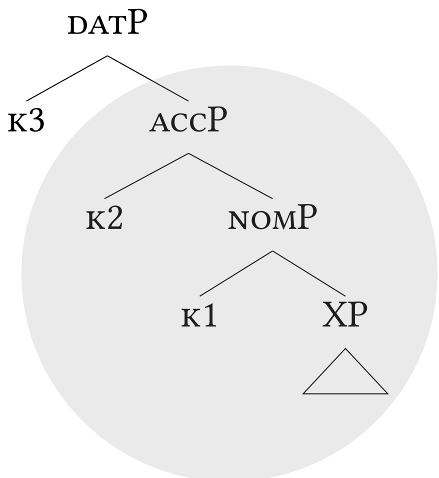
I start with the competition between dative and accusative, in which dative wins. Table 3.4 shows the summary of the data pattern with the cells in which the dative and the accusative compete marked in gray.

Table 3.4: Summary of Gothic headless relative (DAT VS. ACC)

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

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 Part III of the dissertation. Following that, a dative relative pronoun contains the XP, K1, K2 and K3. Contained in this structure is an accusative relative pronoun, marked in gray. This consists of the XP, K1 and K2. The larger structure wins over the smaller structure it contains: the dative wins over the accusative.

(50)



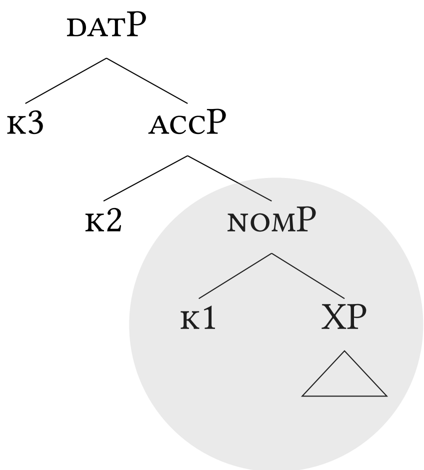
Next is the competition between dative and nominative, in which dative wins. Table 3.5 shows the summary of the data pattern with the cells in which the dative and the nominative compete marked in gray.

Table 3.5: Summary of Gothic headless relative (DAT vs. NOM)

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

In (51) I show the syntactic structure of a dative relative pronoun. It contains the XP, K1, K2 and K3. Contained in this structure is a nominative relative pronoun, marked in gray. This consists of the XP and K1. The larger structure wins over the smaller structure it contains: the dative wins over the nominative.

(51)



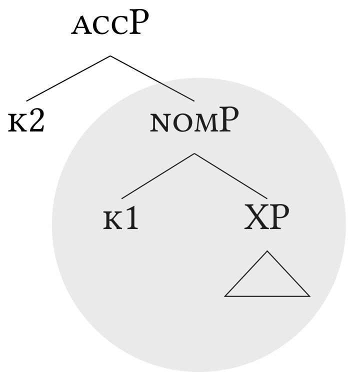
Finally there is the competition between accusative and nominative, in which accusative wins. Table 3.6 shows the summary of the data pattern with the cells in which the accusative and the nominative compete marked in gray.

Table 3.6: Summary of Gothic headless relative (ACC vs. NOM)

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

In (52) I show the syntactic structure of an accusative relative pronoun. It contains the XP, K1 and K2. Contained in this structure is a nominative relative pronoun, marked in gray. This consists of the XP and K1. The larger structure wins over the smaller structure it contains: the accusative wins over the nominative.

(52)



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 Chapter 2 I showed that the case scale appears in several subparts of language, among which in case competition in headless relatives. The goal of the current chapter is to provide a theory that anchors the case scale deeply in the linguistic system, such that the different appearances of the case scale are merely reflexes of a single trigger.

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

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 K1, K2 and K3), it wins over the accusative (which consists of K1 and K2) and the nominative (which contains only K1). 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[1]

In this dissertation I discuss two aspects of case competition in headless relatives. The first aspect was the topic of Part I of the dissertation. It concerns which case wins the case competition. This is determined by the same case scale for all languages, repeated in (1).

(1) NOM < ACC < DAT

Cases more to the right on the scale win the case competition to cases more to the left on the scale. In Chapter 3 I showed that cases more on the right of the scale can be considered more complex than cases more to the left on the scale. In other words, more complex cases win the case competition over less complex cases.

The second part of the dissertation, Part II, introduces the second aspect of case competition in headless relatives that I discuss in this dissertation. 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. Logically, there are four possible patterns: (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

[1]A shortened and modified version of this chapter has been published in Bergsma 2023.

external case is allowed to surface when either of them wins the competition.[2] I show in this chapter that one of these logically possible patterns is not attested in.

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 first possible external head, to be discussed in Part III. Therefore, I predict that my generalizations hold for all natural languages.

The next section introduces the patterns with case competition that are logically possible. In Section 4.2 to Section 4.5, I discuss each of the patterns one by one, and I give examples when the pattern is attested.

4.1 Four possible patterns

As I mentioned in the introduction of this chapter, this chapter introduces the second aspect of case competition in headless relatives that I discuss in this dissertation. This aspect 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

[2]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.

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 possible patterns. 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 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 (just as cf. Grosu, 1987; Cinque, 2020): 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.

Table 4.1: Pattern of the unrestricted type of language

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

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.

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.

Table 4.2: Pattern of the internal-only type of language

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

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 this is that the language does not allow the external case to surface when it wins the case competition.

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.

Table 4.3: Pattern of the external-only type of language

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

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 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 internal-only type, these instances are not grammatical for this type of language. The reasoning behind this 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 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.

Table 4.4: Pattern of the matching type of language

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

The top-left to bottom-right diagonal corresponds to the examples in which the internal and external 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 external-only type, but unlike the unrestricted type and the 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 internal-only type, but unlike the unrestricted type and the 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 Chapter 5 I discuss languages without case competition, in which the internal and external case are not compared to each other.

In this chapter I show that three of the 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 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 The unrestricted type of language

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: Pattern of the unrestricted type of language (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 Harbert (1978). I repeat the results from Section 2.1 in Table 4.6.

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

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 follows from my own research of the texts 'Der althochdeutsche Isidor', 'The Monsee fragments', 'Otfrid's Evangelienbuch' and 'Tatian' in ANNIS (Krause and Zeldes, 2016).[3] 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.

[3]Old High German is widely discussed in the literature because of its case attraction in headed relatives (cf. Pittner, 1995), a phenomenon that seems related to case competition in headless relatives. Interestingly, Gothic does not have case attraction. I conclude from this that the mechanism responsible for case attraction is not necessary the same as the mechanism responsible for case competition in headless relatives. I leave it for future research to investigate the connection between case competition and case attraction.

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.

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* 'send' takes nominative subjects. The external case is nominative as well, as the predicate *queman* '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$_{[\text{NOM}]}$ RP.SG.M.NOM send.PST.PTCP$_{[\text{NOM}]}$ 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* 'speak' takes accusative objects. The external case is accusative as well, as the predicate *gihoren* 'listen to' also takes accusative objects. The relative pronoun *thiu* 'RP.PL.N.ACC' appears in the internal and external case: the accusative.

(3) gihortut ir thiu ih íu
listen.PST.2PL$_{[\text{ACC}]}$ 2PL.NOM RP.PL.N.NOM 1SG.NOM 2PL.DAT
quad
speak.PST.1SG$_{[\text{ACC}]}$
'you listened to those things, that I said to you'
(Old High German, Tatian 165:6)

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

[4]I could not find an example 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.

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

These findings can be summarized as in Table 4.7.

Table 4.7: Old High German headless relatives (matching)

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

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.

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.

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* 'tell' takes accusative objects. The external case is nominative, as the predicate *sin* '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**
DEM.SG.N.NOM be.PRES.3SG$_{[\text{NOM}]}$ RP.SG.M.ACC 3PL.M.NOM
zéllent
tell.PRES.3PL$_{[\text{ACC}]}$
'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 *chisitzen* 'possess' takes nominative subjects. The external case is accusative, as the predicate *bibringan* '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. 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.

(6) ih bibringu fona iacobes samin endi fona
1SG.NOM create.PRES.1SG$_{[\text{ACC}]}$ of Jakob.GEN seed.SG.DAT and of
iuda dhen **mina** **berga**
Judah.DAT RP.SG.M.ACC my.ACC.M.PL mountain.ACC.PL
chisitzit
possess.PRES.3SG$_{[\text{NOM}]}$
'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.

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

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

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.

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* 'read' takes dative indirect objects. The external case is nominative, as the predicate *minnon* '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
RP.SG.M.DAT less become.PRES.3SG read.INF$_{[\text{DAT}]}$ less
minnot
love.PRES.3SG$_{[\text{NOM}]}$
'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* 'speak' takes nominative subjects. The external case is dative, as the predicate *antwurten* '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 Pittner 1995: 199)

The two examples in which the nominative and the dative compete are highlighted in Table 4.9.

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)

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.

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 should surface when it is the internal case and when it is the external case.

I have not found an example in which the internal dative case competes against the external accusative case. Interestingly, this is the same example that has not been attested with two verbal predicates in Gothic. Gothic had an example in which the dative is assigned by a preposition, but this was not attested in Old High German. Still, I believe that these missing occurrences are due to independent reasons rather than meaningful gaps in the paradigm. Just as in Gothic, headless relative constructions are infrequent in Old High German and Old High German also only has few verbal predicates that take dative complements.

Consider the example in (9). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *zellen* '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.

(9)

bis	-tú	nu	zi wáre	furira	Ábrahame?	ouh
be.PRES.2SG	-2SG.NOM	now	truly	great.CMPR$_{[\text{DAT}]}$	Abraham.DAT	and

thén	**man**	**hiar**	**nu**	**zálta**
RP.PL.M.DAT	one.NOM.M.SG	here	now	tell.PST.3SG$_{[\text{ACC}]}$

'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.

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)

The cell with the asterix that is marked light gray corresponds to the missing example, in which the internal dative would win over the external accusative, and the relative pronoun would surface in the dative case. The dark gray marking corresponds to (9), in which the external dative wins over the internal accusative, and the relative pronoun surfaces in the dative case.

In my research I encountered a single counterexample to the pattern I just described. Consider the example in (10). In this example, the internal nominative case competes against the external accusative case. The internal case is nominative, as the predicate *giheilen* 'save' takes nominative subjects. The external case is accusative, as the predicate *beran* '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 relative clause.

(10) Tház si uns béran scolti
that 3SG.F.NOM 1PL.DAT bear.INF$_{[\text{ACC}]}$ should.SUBJ.PST.3SG
thér unsih gihéilti
RP.SG.M.NOM 1PL.ACC save.SBJV.PST.3SG$_{[\text{NOM}]}$
'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 (10) 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 this 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.[5]

4.3 The internal-only type of language

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

Table 4.11: Pattern of the internal-only type of language (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 Vogel (2001). The examples and the judgements are Vogel's (2001). 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 (11), in which the internal nominative case competes against the external nominative case. The internal case is nominative,

[5]Note that the two languages of the unrestricted type that I discuss are both extinct languages. In Section 4.4 I argue that Ancient Greek (another extinct language) is also of this type. I am not aware of any non-extinct language that is of the unrestricted type. I have no explanation for this observation.

as the predicate *mögen* 'like' takes nominative subjects. The external case is nominative as well, as the predicate *besuchen* 'visit' also takes nominative subjects. The relative pronoun *wer* 'RP.AN.NOM' appears in the internal and external case: the nominative.

(11) Uns besucht, wer Maria mag.
2PL.ACC visit.PRES.3SG$_{[\text{NOM}]}$ RP.AN.NOM Maria.ACC like.PRES.3SG$_{[\text{NOM}]}$
'Who visits us likes Maria.'
(Modern German, adapted from Vogel 2001: 343)

Consider the example in (12), in which the internal accusative case competes against the external accusative case. The internal case is accusative, as the predicate *mögen* 'like' takes accusative objects. The external case is accusative as well, as the predicate *einladen* 'invite' also takes accusative objects. The relative pronoun *wen* 'RP.AN.ACC' appears in the internal and external case: the accusative.

(12) Ich lade ein, wen auch Maria
1SG.NOM invite.PRES.1SG$_{[\text{ACC}]}$ RP.AN.ACC also Maria.NOM
mag.
like.PRES.3SG$_{[\text{ACC}]}$
'I invite who Maria also likes.'
(Modern German, adapted from Vogel 2001: 344)

Consider the examples in (13), in which the internal dative case competes against the external dative case. The internal case is dative, as the predicate *vertrauen* 'please' takes dative objects. The external case is dative as well, as the predicate *folgen* 'follow' also takes dative objects. The relative pronoun *wem* 'RP.AN.DAT' appears in the internal and external case: the dative.

(13) Ich folge, wem immer ich
1SG.NOM folge.PRES.1SG$_{[\text{DAT}]}$ RP.AN.DAT ever 1SG.NOM
vertraue.
vertraue.PRES.3SG$_{[\text{DAT}]}$
'I follow whoever I trust.'
(Modern German, adapted from Vogel 2001: 342)

These findings can be summarized as in Table 4.12.

Table 4.12: Modern German headless relatives (matching)

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

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 (11), 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 (12), 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 (13), in which the internal dative case competes against the external dative case, and the relative pronoun surfaces in the dative case.

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 (14). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *mögen* 'like' takes accusative objects. The external case is nominative, as the predicate *besuchen* '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.

(14) Uns besucht, **wen** **Maria** **mag**.
2pl.acc visit.pres.3sg$_{[\text{nom}]}$ rp.an.acc Maria.nom like.pres.3sg$_{[\text{acc}]}$
'Who visits us, Maria likes.'
(Modern German, adapted from Vogel 2001: 343)

The example in (15) is identical to (14), except for that the relative pronoun appears in the external less complex nominative case. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. 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).

(15) *Uns besucht, wer **Maria** **mag**.
2pl.acc visit.pres.3sg$_{[\text{nom}]}$ rp.an.nom Maria.nom like.pres.3sg$_{[\text{acc}]}$
'Who visits us, Maria likes.'
(Modern German, adapted from Vogel 2001: 343)

Now I turn to the situation in which according to the case scale, the external case would win the competition. However, there is no grammatical outcome possible, whichever case the relative pronoun appears in. Consider the example in (16). In this example, the internal nominative case competes against the external accusative case. The internal case is nominative, as the predicate *sein* 'be' takes nominative subjects. The external case is accusative, as the predicate *einladen* '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.

(16) *Ich lade ein, wen **mir** **sympathisch**
1sg.nom invite.pres.1sg$_{[\text{acc}]}$ rp.an.acc 1sg.dat nice
ist.
be.pres.3sg$_{[\text{nom}]}$
'I invite who I like.'

(Modern German, adapted from Vogel 2001: 344)

The example in (17) is identical to (16), except for that the relative pronoun appears in the internal less complex nominative case. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. 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 accusative) but in the least complex case (the nominative).[6]

(17) *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 Vogel 2001: 344)

The two examples in which the nominative and the accusative compete are highlighted in Table 4.13.

[6]Not every speaker or Modern German agrees with the ungrammaticality of (17). A sentence for which also has been claimed that speakers accept it is given in (i). This example was originally marked as ungrammatical by Groos and van Riemsdijk (1981: 206).

(i) Ich liebe **wer** **gutes** **tut**, und hasse, **wer**
1SG.NOM love.1SG[ACC] RP.AN.NOM good.NMLZ do.3SG[NOM] and hate.1SG[ACC] RP.AN.NOM
mich **verletzt**.
ISG.ACC hurt.3SG[NOM]
'I love who does good and hate who hurts me.'
(Modern German, adapted from Groos and van Riemsdijk 1981: 206)

The relative acceptability of (17) 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 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 (10). 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.

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

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

The light gray marking corresponds to (14), in which the internal accusative wins over the external nominative, and the relative pronoun surfaces in the accusative case (and not in the losing nominative case as in (15)). The dark gray marking corresponds to (16), 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 (17)).

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. 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 (18). In this example, the internal dative case competes against the external nominative case. The internal case is dative, as the predicate *vertrauen* 'trust' takes dative objects. The external case is nominative, as the predicate *besuchen* '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. The example adheres to the case scale, and the most complex case (here the dative) is the internal case, so the example is grammatical.

(18) Uns besucht, **wem Maria vertraut**.
2PL.ACC visit.PRES.3SG$_{[\text{NOM}]}$ RP.AN.DAT Maria.NOM trust.PRES.3SG$_{[\text{DAT}]}$
'Who visits us, Maria trusts.'
(Modern German, adapted from Vogel 2001: 343)

The example in (19) is identical to (18), except for that the relative pronoun appears in the external less complex nominative case. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. 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).

(19) *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 Vogel 2001: 343)

Now I turn again to the situation in which according to the case scale, the external case would win the competition. However, there is no grammatical outcome possible, whichever case the relative pronoun appears in. Consider the example in (20). In this example, the internal nominative case competes against the external dative case. The internal case is nominative, as the predicate *mögen* 'like' takes nominative subjects. The external case is dative, as the predicate *vertrauen* '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.

(20) *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 Vogel 2001: 345)

The example in (21) is identical to (20), except for that the relative pronoun appears in the internal less complex nominative case. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. 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).

(21) *Ich vertraue, **wer** **Hitchcock**
1SG.NOM trust.PRES.1SG[DAT] RP.AN.NOM Hitchcock.ACC
mag.
like.PRES.3SG[NOM]
'I trust who likes Hitchcock.'
(Modern German, adapted from Vogel 2001: 345)

The two examples in which the nominative and the dative compete are highlighted in Table 4.14.

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

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

The light gray marking corresponds to (18), 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 (19)). The dark gray marking corresponds to (20), 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 (21)).

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 (22). In this example, the internal dative case competes against the external accusative case. The internal case is dative, as the predicate *vertrauen* 'trust' takes dative objects. The external case is accusative, as the predicate *einladen* '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.

(22) Ich lade ein, **wem** **auch Maria**
1SG.NOM invite.PRES.1SG$_{[\text{ACC}]}$ RP.AN.DAT also Maria.NOM
vertraut.
trust.PRES.3SG$_{[\text{DAT}]}$
'I invite whoever Maria also trusts.'
(Modern German, adapted from Vogel 2001: 344)

The example in (23) is identical to (22), except for that the relative pronoun appears in the external less complex accusative case. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. 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).

(23) *Ich lade ein, wen **auch Maria**
1SG.NOM invite.PRES.1SG$_{[\text{ACC}]}$ RP.AN.ACC also Maria.NOM
vertraut.
trust.PRES.3SG$_{[\text{DAT}]}$
'I invite whoever Maria also trusts.'
(Modern German, adapted from Vogel 2001: 344)

Now I turn again to the situation in which according to the case scale, the external case would win the competition. However, there is no grammatical outcome possible, whichever case the relative pronoun appears in. Consider the example in (24). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *mögen* 'like' takes accusative objects. The external case is dative, as the predicate *vertrauen* '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.

(24) *Ich vertraue, wem **auch Maria**
1SG.NOM trust.PRES.1SG[DAT] RP.AN.DAT also Maria.NOM
mag.
like.PRES.3SG[ACC]
'I trust whoever Maria also likes.'
(Modern German, adapted from Vogel 2001: 345)

The example in (25) is identical to (24), except for that the relative pronoun appears in the internal less complex accusative case. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. 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).

(25) *Ich vertraue, **wen auch Maria**
1SG.NOM trust.PRES.1SG[DAT] RP.AN.ACC also Maria.NOM
mag.
like.PRES.3SG[ACC]
'I trust whoever Maria also likes.'
(Modern German, adapted from Vogel 2001: 345)

The two examples in which the nominative and the dative compete are highlighted in Table 4.15.

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

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

The light gray marking corresponds to (22), 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 (23)). The dark gray marking corresponds to (24), 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 (25)).

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.[7]

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[7]Another language that seems to be of the internal-only type is Finnish. The data I discuss is taken from Bresnan and Grimshaw (1978) after Carlson (1977). The two cases that are compared are the partitive and the elative. I assume that the elative is a more complex case than the partitive. I believe so because the partitive can be syncretic with the accusative (and genitive), and the elative is a locative case (Karlsson, 2013). Locatives are more complex than 'structural' cases (cf. Caha, 2009).

Consider the example in (i). In this example, the internal elative case competes against the external partitive case. The internal case is elative, as the predicate *pitää* 'like' takes elative objects. The external case is partitive, as the predicate *valita* 'choose' takes partitive objects. The relative pronoun *mistä* 'RP.INAN.ELA' appears in the internal case: the elative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. The example lets the more complex case surface, and the most complex case (here the elative) is the internal case, so the example is grammatical.

(i) Valitsen **mistä** **sinä pidät**.
choose.1SG$_{[\text{PART}]}$ RP.INAN.ELA 2SG like.2SG$_{[\text{ELA}]}$
'I choose what you like.'
(Finnish, adapted from Bresnan and Grimshaw 1978: 373 after Carlson 1977)

Consider the example in (ii). In this example, the internal partitive case competes against the external elative case. The internal case is partitive, as the predicate *valita* 'choose' takes partitive objects. The external case is elative, as the predicate *pitää* 'like' takes elative objects. The relative pronoun *mistä* 'RP.INAN.ELA' appears in the external case: the elative. 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 elative) is not the internal case. The example is ungrammatical, because only the internal can win the case competition in Finnish.

(ii) *Pidän mistä **sinä valitset**.
like.1SG$_{[\text{ELA}]}$ RP.INAN.ELA 2SG choose.2SG$_{[\text{PART}]}$
'I like what you choose.'
(Finnish, adapted from Bresnan and Grimshaw 1978: 373 after Carlson 1977)

The example in (iii) is identical to (ii), except for that the relative pronoun appears in the internal less complex partitive case. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. 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 elative) but in the least complex case (the partitive).

4.4 The external-only type of language

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: Pattern of the external-only type of language (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. Cinque forthcoming, p. 120, who actually also classifies Gothic as such) and as a language of the first type (cf. Grosu, 1987, p. 41). I show that the correct description of Classical Greek is the latter, and that it patterns with Gothic and Old High German.[8] I start with an example in which a more complex 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 (26). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as

(iii) *Pidän **mitä** **sinä valitset**.
like.1SG$_{[\text{ELA}]}$ RP.INAN.PTV 2SG choose.2SG$_{[\text{PART}]}$
'I like what you choose.'
(Finnish, adapted from Bresnan and Grimshaw 1978: 373 after Carlson 1977)

I leave it for future research to find out whether other case combinations in Finnish show the same pattern.

[8]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 (see Kakarikos 2014 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.

the predicate *tíktō* 'give birth to' takes accusative objects. The external case is dative, as the predicate *ékhō* 'provide' takes dative indirect objects. The relative pronoun *hō̧̃* 'RP.SG.M.DAT' appears in the external 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.

(26) pãn tò tekòn trophḕn ékhei hō̧̃
any parent.SG.NOM food.SG.ACC provide.PRES.3SG$_{[\text{DAT}]}$ RP.SG.M.DAT
án tékȩ̄
MOD gives birth.AOR.3SG$_{[\text{ACC}]}$
'any parent provides food to what he would have given birth to'
(Classical Greek, Pl. Men. 237e, adapted from Kakarikos 2014: 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 (26) 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 (26) 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 (26) in gray.

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

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 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 (27). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *philéō* 'love' takes accusative objects. The external case is nominative, as the predicate *apothnḗiskō* '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.[9]

(27) **hòn** **hoi theoì philoũsin** apothnḗ̥skei néos
RP.SG.M.ACC the god.PL love.3PL$_{[\mathrm{ACC}]}$ die.3SG$_{[\mathrm{NOM}]}$ 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.

[9]The sentence in (27) can also be analyzed as a headed relative, in which the relative clause modifies the phonologically empty subject of *apothnḗiskō* '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

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 Kakarikos (2014: 292-294). An example in which the external dative wins over the internal nominative can be found in Noussia-Fantuzzi (2015). 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 The matching type of language

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 Citko (2013) after Himmelreich (2017). I made the glosses more detailed, and I added translations where they were absent. 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 neither the internal case nor in the external case is allowed to surface, when either of them wins the case competition.

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 accusative and the dative.

Consider the example in (28), in which the internal accusative case competes against the external accusative case. The internal case and external case are accusative, as the predicate *lubić* 'like' in both clauses takes accusative objects. The relative pronoun *kogo* 'RP.AN.ACC' appears in the internal and external case: the accusative.

(28) Jan lubi kogo -kolkwiek Maria lubi.
Jan like.3SG$_{[\text{ACC}]}$ RP.AN.ACC ever Maria like.3SG$_{[\text{ACC}]}$
'Jan likes whoever Maria likes.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

Consider the example in (29), in which the internal dative case competes against the external dative case. The internal case is dative, as the predicate *ufać* 'trust' takes dative objects. The external case is dative as well, as the predicate *pomagać* 'help' also takes dative objects. The relative pronoun *komu* 'RP.AN.DAT' appears in the internal and external case: the dative.

(29) Jan pomaga komu -kolkwiek ufa.
Jan help.3SG$_{[\text{DAT}]}$ RP.AN.DAT ever trust.3SG$_{[\text{DAT}]}$
'Jan helps whomever he trusts.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

These findings can be summarized as in Table 4.21.

Table 4.21: Polish headless relatives (matching)

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

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 (28), 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 (29), 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 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 (22). In this example, the internal dative case competes against the external accusative case. The internal case is dative, as the predicate *dokuczać* 'tease' takes dative objects. The external case is accusative, as the predicate *lubić* '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.

(30) *Jan lubi **komu** **-kolkwiek** **dokucza**.
Jan like.3SG$_{[ACC]}$ RP.AN.DAT ever tease.3SG$_{[DAT]}$
'Jan likes whoever he teases.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

The example in (31) is identical to (30), except for that the relative pronoun appears in the external less complex accusative case. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. 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.

(31) *Jan lubi kogo **-kolkwiek** **dokucza**.
Jan like.3SG$_{[ACC]}$ RP.AN.ACC ever tease.3SG$_{[DAT]}$
'Jan likes whoever he teases.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 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 (32). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *wpuścić* 'let' takes accusative objects. The external case is dative, as the predicate *ufać* '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.

(32) *Jan ufa komu **-kolkwiek** **wpuścil** **do domu**.
Jan trust.3SG$_{[DAT]}$ RP.AN.DAT ever let.3SG$_{[ACC]}$ to home
'Jan trusts whoever he let into the house.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

The example in (33) is identical to (32), except for that the relative pronoun appears in the internal less complex accusative case. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. 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.

(33) *Jan ufa **kogo -kolkwiek wpuścil do domu**.
Jan trust.3SG$_{[\text{DAT}]}$ RP.AN.ACC ever let.3SG$_{[\text{ACC}]}$ to home
'Jan trusts whoever he let into the house.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

The two examples in which the accusative and the dative compete are highlighted in Table 4.22. The light gray marking corresponds to (30), 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 (31)). The dark gray marking corresponds to (32), 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 (33)).

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 (34), repeated from Chapter 2. A case more to the right on the scale wins over a case more to the left on the scale.

(34) NOM < ACC < DAT

This generates the pattern shown in Table 4.23.

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 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 dative case. When the accusative wins over the nominative, the relative pronoun appears in the accusative case.

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 (35).

(35) 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 languages. I discuss the types one by one, and I give example when they are attested. In my description, I refer to the different gray-marking in Table 4.24.

Table 4.24: Relative pronoun follows case competition (with gray-marking)

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

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 (35i). In these languages, relative pronouns in the unmarked, light gray and dark gray cells are attested. Modern German is an example of the internal-only type in (35ii). In this language, relative pronouns in the unmarked and light gray cells are grammatical. To my knowledge, the external-only type in (35iii) 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 (35iv). In this language, relative pronoun in only in the unmarked cells are grammatical.

Figure 4.1 shows a diagram that models 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.

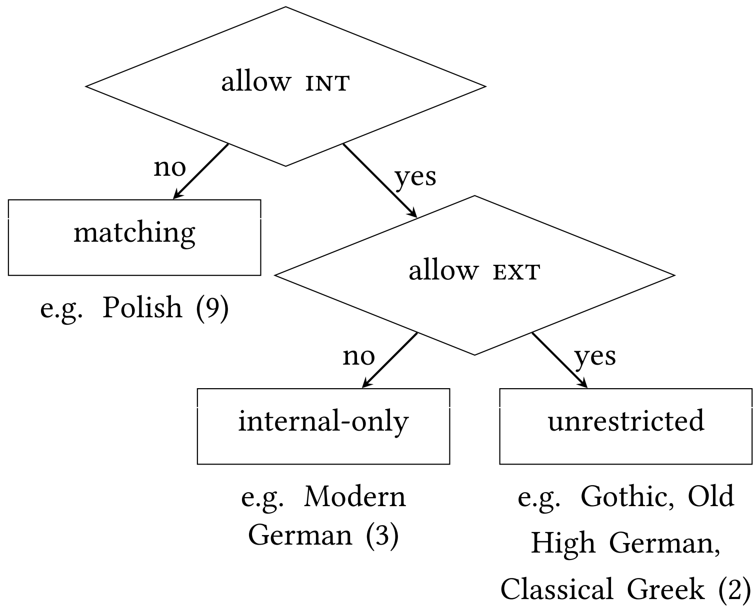


Figure 4.1: Two descriptive parameters generate three language types

The first parameter, *allow* INT, 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. If the internal case is not allowed to surface, the matching type of language in (35iv) in generated. If the internal case is allowed to surface when it wins the case competition, the second parameter comes into play. The second parameter, *allow* EXT, 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. If the external case is not allowed to surface, the internal-only type of language in (35ii) is generated. If the external case is allowed to surface, the unrestricted type of language in (35i) is generated.

This schema does not have a place for an external-only type of language. 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 Part III, I show how it follows from general properties of relative clauses that this type of language is excluded. In that part of the dissertation I also introduce linguistic counterparts to the parameters I here introduced as *allow* INT and *allow* EXT.

Chapter 5

Aside: languages without case competition

In the previous chapter, I discussed languages that show case competition in their headless relatives. These languages form the center of this dissertation, since the topic of the dissertation is case competition in headless relatives. However, there are also languages that do not show any case competition. In this chapter I take a small sidestep to discuss these languages, and gives a typology of headless relatives. Readers who are not interested in this detour can proceed directly to Part III.

In languages without case competition, the internal and external case do not compete to surface 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 in 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.

Table 5.1: Pattern of the always-internal type of language

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

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 no case competition is 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. I call this pattern the always-internal type. 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.

Table 5.2: Pattern of the always-external type of language

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

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 no case competition is 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 the dative. I call this pattern the always-external type.

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.

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 always-external type shown in Table 5.2 and not of the external-only type I discussed in Section 4.4 or of the unrestricted type of Section 4.2.

Two languages that shows this pattern are Old English and Modern Greek. In this section I discuss the Old English data with examples from Harbert (1983). The Modern Greek data I discuss is taken from Daskalaki (2011). 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 external case.

Consider the example in (1). The internal case is nominative, as the predicate *gegyltan* 'sin' takes nominative subjects. The external case is dative, as the predicate *for-gifan* 'forgive' takes dative objects. The relative pronoun *ðam* 'RP.PL.DAT' 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**
that	is	that	one	forgive.SUBJ.SG$_{[\text{DAT}]}$	RP.PL.DAT	COMP	against

hine	**gegylte**
3SG.M.ACC	sin.3SG$_{[\text{NOM}]}$

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

(Old English, adapted from Harbert 1983: 549)

This example is compatible with three patterns. First, Old English could be a case competition language of the external-only type that only allows the external case to surface. I repeat Table 4.16 from Section 4.4 as Table 5.3, and I mark the cell that corresponds to example (1) in gray.

Table 5.3: 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 of the unrestricted type that allows the internal case and the external case to surface. I repeat Table 4.5 from Section 4.2 as Table 5.4, and I mark the cell that corresponds to example (1) in gray.

Table 5.4: 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 of the always-external type that lets the relative pronoun appear in the external case. I repeat Table 5.2 from the introduction of the chapter as Table 5.5, and I mark the cell that corresponds to example (1) in gray.

Table 5.5: 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 5.3, Table 5.4 and Table 5.5 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 5.3 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 of the external-only type, which I claimed in Section 4.4 did not exist. In Table 5.4 and in Table 5.5 there is a relative pronoun that can surface, but the case of the relative pronouns differs. In Table 5.4, the relative pronoun surfaces in the most complex case that wins the case competition: the internal case. In Table 5.5, 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 5.5. I give an example in which the internal case is more complex than the external one. The relative pronoun surfaces in the less complex external case. Old English is namely a language without case competition that always 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 predicate *tōbrȳsan* 'pulverize' takes accusative objects. The relative pronoun *ðone* 'RP.SG.M.ACC' appears in the external case: the accusative. The relative pronoun appears in the external case, which 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.M.ACC COMP it upon$_{[DAT]}$ falls
'It pulverizes him whom it falls upon.'
(Old English, adapted from Harbert 1983: 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 5.6, 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 5.6: 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* 'help' takes nominative subjects. The external case is accusative, as the predicate *efχarístisó* '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$_{[\text{ACC}]}$ RP.PL.M.ACC CL.1SG.ACC help.PST.3PL$_{[\text{NOM}]}$
'I thanked whoever helped me.'
(Modern Greek, adapted from Daskalaki 2011: 80)

This example is compatible with three patterns. First, Modern Greek could be a case competition language of the external-only type that only allows the external case to surface. I repeat Table 4.16 from Section 4.4 as Table 5.7, and I mark the cell that corresponds to example (3) in gray.

Table 5.7: 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 of the unrestricted type that allows the internal case and external case to surface. I repeat Table 4.5 from Section 4.2 as Table 5.8, and I mark the cell that corresponds to example (3) in gray.

Table 5.8: 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 of the always-external type that lets the relative pronoun appear in the external case. I repeat Table 5.2 from the introduction of the chapter as Table 5.9, and I mark the cell that corresponds to example (3) in gray.

Table 5.9: Modern Greek headless relatives possibility 3

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

What sets Table 5.7, Table 5.8 and Table 5.9 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 5.7 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, then it would be a language of the external-only type, which I claimed in Section 4.4 did not exist. In Table 5.8 and in Table 5.9 there is a relative pronoun that can surface, but the case of the relative pronouns differs. In Table 5.8, the relative pronoun surfaces in the most complex case that wins the case competition: the internal case. In Table 5.9, 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 5.9. I give an example in which the internal case is more complex than the external one. The relative pronoun surfaces in the less complex external case. Modern Greek is namely a language without case competition that always lets the relative pronoun surface in the external case.

Consider the example in (4). The internal case is accusative, as the predicate *irθó* 'invite' takes accusative objects. The external case is nominative, as the predicate *kálesó* '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, which 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 Daskalaki 2011: 80)

The example in (5) is identical to (4), except for that the relative pronoun appears in the internal more complex case. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. 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$_{[\text{NOM}]}$ RP.PL.M.ACC invite.PST.2SG$_{[\text{ACC}]}$
'Whoever you invited came.'
(Modern Greek, adapted from Daskalaki 2011: 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 5.10, 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 5.10: 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* 'give' takes genitive objects. The external case is accusative, as the predicate *efχarístisó* '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, which 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]

[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

(6) Me efχarístisan ópji **tus** **íχa**
CL.1SG.ACC thank.PST.3PL[NOM] RP.PL.M.NOM CL.3PL.GEN have.PST.1SG
ðósi **leftá**.
give.PTCP[GEN] money
'Whoever I had given money to, thanked me.'
(Modern Greek, adapted from Daskalaki 2011: 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 Daskalaki (2011: 79-80) and Spyropoulos (2011: 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.

a D-pronoun). I assume this is a different construction, and the Modern Greek one with the clitic inserted is not.

[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.

(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.'

Spyropoulos (2011) argues that in these left-dislocated structures, 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.

[3]Some accusatives in Modern Greek always require a clitic (see Spyropoulos, 2011). I assume this is because these are different types of accusatives (see Starke, 2017).

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 add a parameter to the diagram I showed in Section 4.6 to include languages without case competition. 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.

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 5.11 (repeated from Section 4.2).

Table 5.11: Relative pronoun follows case competition (repeated)

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

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 Table 5.11.

In this chapter 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 5.12, repeated from Table 5.1.

Table 5.12: 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 5.13 (repeated from Table 5.2).

Table 5.13: Relative pronoun in external case

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

I showed in section 5.1 that only the always-external pattern is attested. I incorporate the parameter that models this pattern into the diagram from Section 4.6 in Figure 5.1.

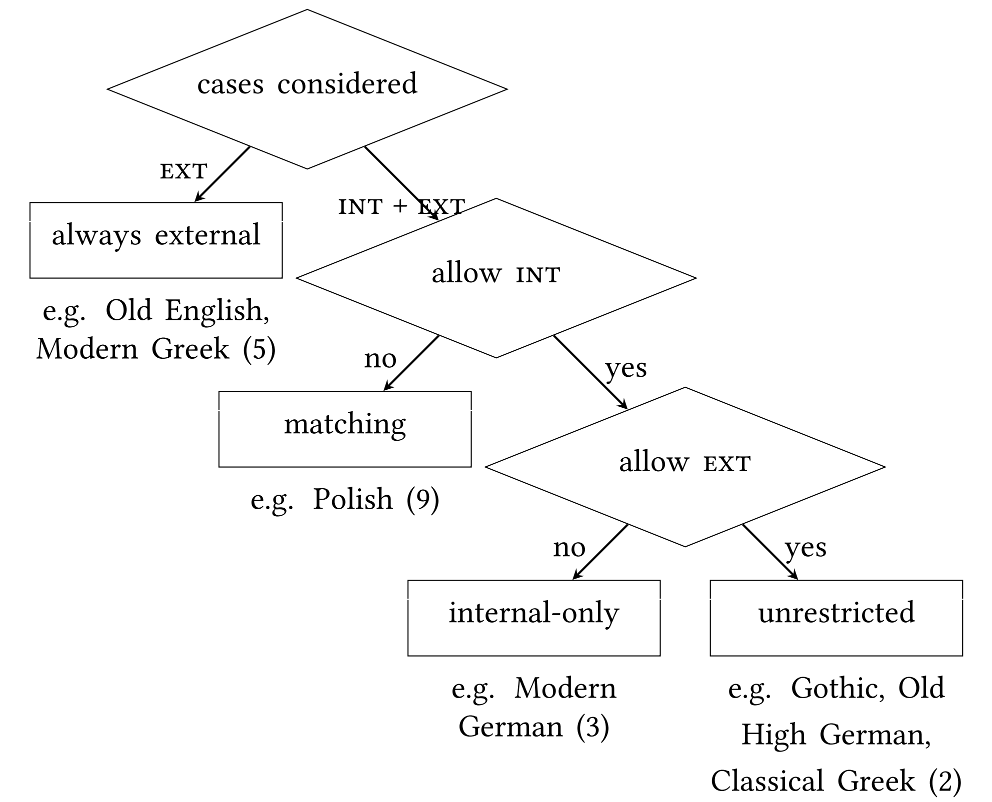


Figure 5.1: Three descriptive parameters generate four language types

I added one parameter. This parameter, *cases considered*, concerns which cases are considered to surface on the relative pronoun. This parameter distinguishes the always-external type of language from the matching, the internal-only and the unrestricted type of languages. If the internal and the external case are considered, the language has case competition, and the pattern shown in Table 5.11 is generated. The two parameters that follow (*allow* INT and *allow* EXT) come into play, as described in Section 4.6.

If only the external case is considered, the always-external type of language is generated, illustrated by the pattern in Table 5.13. I left out the option for languages to only consider the internal case, because there does not seem to be a language that uses that strategy. 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.

In Table 5.14, I give all logically possible patterns for headless relatives.

Table 5.14: Logically 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

The top row sketches two different situations: *[INT]>[EXT]* is the one in which the internal case is the most complex, and *[EXT]>[INT]* is the one in which the external case is the most complex. The second row refers to the case the relative pronoun appears in, which can be either the internal case (INT) or the external case (EXT). The checkmark indicates that a relative pronoun surfaces in that particular situation in that particular case. The asterix indicates that the relative pronoun does not surface in that particular situation in that particular case.

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 5.14. In what follows I show how Figure 5.1 generates of all logically possible patterns only the attested patterns.

I start with the left-most pattern in Figure 5.1, which is number 5 in Table 5.14. 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 second pattern in Figure 5.1 is number 9 in Table 5.14. 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 third pattern in Figure 5.1 is number 3 in Table 5.14. 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 fourth and last pattern in Figure 5.1 is number 2 in Table 5.14. 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 five patterns that are logically possible but not attested in languages: pattern numbers 1, 4, 6, 7 and 8 in Table 5.14. 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. I start with discussing patterns 4, 5 and 6, and then I turn to the patterns with number 1 and 8.

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 1, 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. 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 *allow* INT and *allow* EXT in the diagram in Figure 5.1. The next part of this dissertation discusses the linguistic counterpart of this ordering.

5.3 Summary and discussion

In Chapter 4 I discussed different types of languages with case competition. In this chapter I showed languages without case competition. Logically, there are two languages possible without case competition: (1) languages of the always-internal type, in which the relative pronoun always appears in the internal case, and (2) languages of the always-external type, in which the relative pronoun always appears in the external case. To my knowledge, languages of the always-external type are attested, but languages of the always-internal type are not. I do not have an explananation for why this is the case.

I also do not offer an analysis of the always-external type of language. It seems surprising that a language always takes the case of the main clause, even though a relative pronoun is often claimed to be part of the relative clause. I can see two options for how relative pronouns can take the external case. First, the relative pronoun was actually never in the relative clause, but it was always part of the main clause. Second, the relative pronoun was first part of the relative clause but it has moved to the main clause.

The first option might be what is going on in Old English. It is possible to analyze the relative pronoun as the (light) head of the relative clause. The complementizer *ðe* should then license the internal case. Note that it is not the case that all languages with an overt complementizer behave like this. Gothic also has a complementizer (*ei*), and it is an unrestricted type of language. The difference between the two languages should then be that the Old English complementizer is able to spell out case features, while the Gothic complementizer is not. At first sight, there does not seem to be any support for this type of analysis for Modern Greek. Possibly, the second option I suggested can be considered for this language. Future research should shed more light on the analysis for these languages.

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.

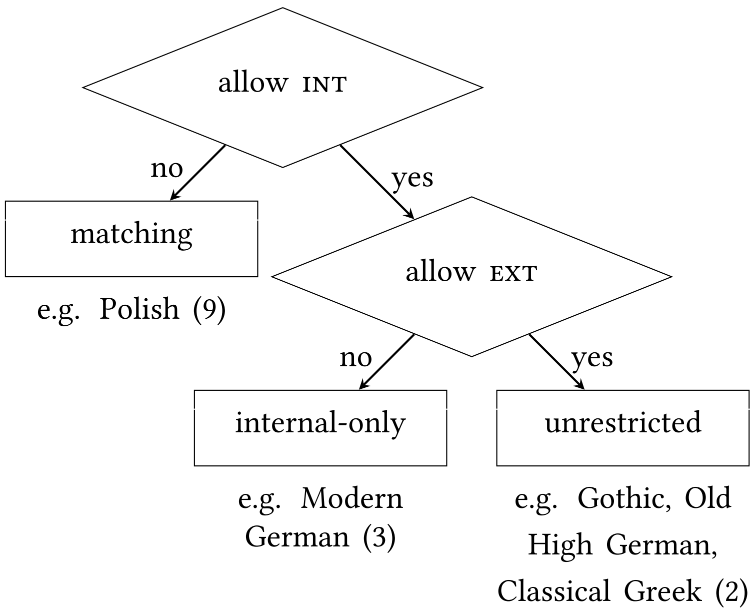


Figure 6.1: Two descriptive parameters generate three language types (repeated)

The first parameter, *allow* INT, 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* EXT, 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 language types, but they are specific to the headless relative construction. Ideally, differences between languages can be derived from independent properties of the language.[1] I argue that the independent property is 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. I call the lexical entries independent properties, because I motivate them by investigating the morphology of the language.

The goals of Part III of this dissertation are 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. The goal of the current chapter is to give the basic idea behind my proposal. In the following three chapters, I work out the proposal for the three different language types in detail, and I motivate the lexical entries I propose.

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

This section lays out the underlying assumptions that I make in my proposal. First, it introduces three assumptions that hold for each of the language types. Then, I discuss how lexical entries lead to differences in languages.

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

[1]Exactly this point was raised by in Grosu (2003b, p. 147): "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 morphological richness 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 Fuß and Grewendorf (2014) and Hanink (2018) and for Polish by Citko (2004). Several others claim that headless relatives have a head, but that it is phonologically empty (cf. Bresnan and Grimshaw, 1978; Groos and van Riemsdijk, 1981; Himmelreich, 2017).

(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.

(2) eno nist thiz thér **then**
now not be.3SG$_{\text{[NOM]}}$ DEM.SG.N.NOM LH.SG.M.NOM RP.SG.M.ACC
ir suochet zi arslahanne?
2PL.NOM seek.2PL$_{\text{[ACC]}}$ 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 element.

This brings me to my second assumption, which concerns the circumstances under which the light head or the relative pronoun can be deleted.[3] 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 be contained as a whole within the antecedent.[4] Throughout this chapter I

[3]The circumstances I discuss here only involve properties of the light head and the relative pronoun themselves. Their positions in a larger syntactic structure do not play a role here. For that, I refer the reader to the end of this chapter and the end of Chapter 9.

[4]In Section 6.2.2 I show that 'containment as a whole' is also a necessary requirement in other types of deletion operations.

elaborate further on the exact requirements for containment. There are two types of containment possible. The first type is structural containment: an element can be absent if it is structurally contained in the other element. I elaborate on this in Section 6.2.2. The second type is formal containment: an element can be absent if it is formally contained in the other element. I elaborate on this in Section 6.2.3. For light heads and relative pronouns this means that one of them can be absent when it is contained in the other element. That is, the light head can be absent when it is contained in the relative pronoun, or the relative pronoun can be absent when it is contained in the light head. In other words, it depends on the comparison between the light head and the relative pronoun themselves which one of them is absent. Note that it is also possible that neither of the elements is contained in 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. I assume that all languages have two possible light heads. Figure 6.2 gives a simplified representation of the first possible light head and the relative pronoun.

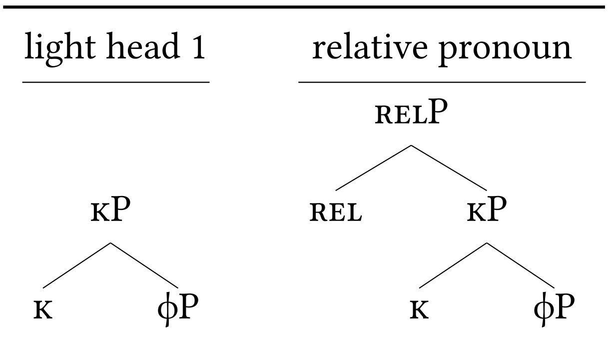


Figure 6.2: LH-1 and RP

I assume that the first possible light head and the relative pronoun partly contain the same syntactic features. The features they have in common are case features (K) 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.

Figure 6.3 gives a simplified representation of the second possible light head and the relative pronoun.

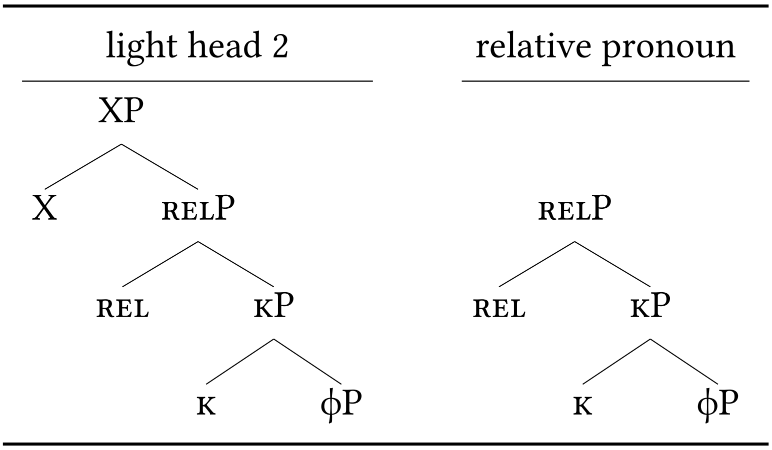


Figure 6.3: LH-2 and RP

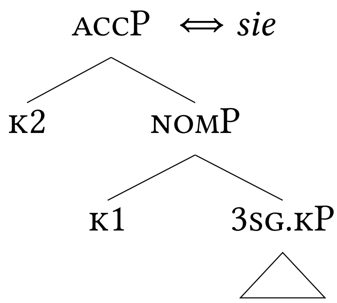
I assume that the second possible light head and the relative pronoun also partly contain the same syntactic features. The features they have in common are case features (K), phi features (ϕ) and the feature REL. The light head and the relative pronoun differ from each other in that the light head has at least one feature more, which I call here X. In Chapter 9 I discuss in detail what X refers to.

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 containment. And in all language types, there are two possible light heads: the first possible light head contains at least one feature less than the relative pronoun, and the second possible light head contains at least one feature more than the relative pronoun. The difference between languages does not come from modifying these assumptions in any way, but from how different languages package their features into constituents.[5] Before I explain how differences in internal syntax lead to different language types, I show how different lexical entries lead to differences in internal syntax.

[5]There is a difference with respect to the light heads between the different language types. In two of the language types, the light-headed relative headed by the second possible light head cannot be the source of a grammatical headless relative. This is not because the second possible light head does not exist in the language, but they just cannot lead to a grammatical headless relative. I briefly mention this in Sections 6.2.1 and 6.2.2, and I come back to it in more detail in Section 6.2.3.

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

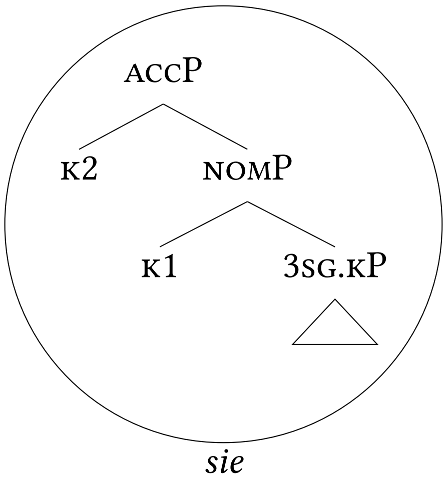
(3)



The lexical entry corresponds to the pronominal features, K1 and K2 and the phonological form *sie*.

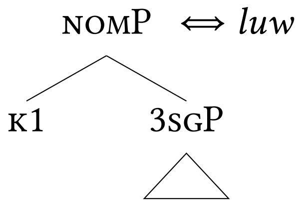
Consider the syntactic structure of the accusative pronoun in German in (4).

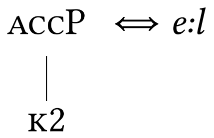
(4)



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.

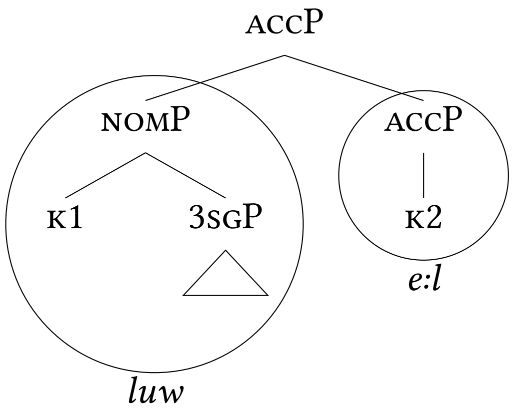
The situation is different for the third person singular pronoun in Khanty, which I also showed in Chapter 3. In Khanty, there is not a single lexical entry that spells out all features that the German lexical entry in (3) spells out. Instead, the same features are realized by two separate lexical entries,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

(5) a. 

b. 

The lexical entry in (5a) corresponds to the pronominal features and the feature k1 and the phonological form *luw*. The lexical entry in (5b) corresponds to the feature k2 and the phonological form *e:l*.

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

(6) 

The only available lexical entry in Khanty that contains the accP is (5b). 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.[6] 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, i.e. the syntactic structure inside the pronoun, looks different. This change in internal syntax is a direct consequence of the lexical entries that I gave for the different languages.

Exactly this type of difference is what leads to the different language types

[6]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.

in headless relatives. Languages contain different lexical entries that spell out the features of the light heads and the relative pronouns. The different lexical entries lead to differences in the internal syntax of the light heads and the relative pronouns. Differences in the internal syntax of the light heads and the relative pronouns 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 element and, with that, a grammatical headless relative. I summarize this chain in (7).

(7) lexical entries ⟶ internal syntax ⟶ containment ⟶ deletion ⟶ surface element

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 what (if any) is the surface element is shown in Table 6.1.

Table 6.1: Different language types in different situations

language type	situation	surface element
unrestricted	$\text{K}_{\text{INT}} = \text{K}_{\text{EXT}}$	$\text{RP}_{\text{INT}}/\text{LH}_{\text{EXT}}$
	$\text{K}_{\text{INT}} > \text{K}_{\text{EXT}}$	RP_{INT}
	$\text{K}_{\text{INT}} < \text{K}_{\text{EXT}}$	LH_{EXT}
internal-only	$\text{K}_{\text{INT}} = \text{K}_{\text{EXT}}$	$\text{RP}_{\text{INT/EXT}}$
	$\text{K}_{\text{INT}} > \text{K}_{\text{EXT}}$	RP_{INT}
	$\text{K}_{\text{INT}} < \text{K}_{\text{EXT}}$	*
matching	$\text{K}_{\text{INT}} = \text{K}_{\text{EXT}}$	$\text{RP}_{\text{INT/EXT}}$
	$\text{K}_{\text{INT}} > \text{K}_{\text{EXT}}$	*
	$\text{K}_{\text{INT}} < \text{K}_{\text{EXT}}$	*

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. When the cases match, the surface element can be either the relative pronoun that bears the internal case or the light head that bears the external case.[7] When the internal case is more complex, the surface element is the relative pronoun that bears the internal case. When the external case is more complex, the surface element is the light head that bears the external case.

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. When the cases match, the surface element is the relative pronoun that bears the internal (and external) case.[8] When the internal case is more complex, the surface element is the relative pronoun that bears the internal case.

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. When the cases match, the surface element is the relative pronoun that bears the internal (and external) case.[9]

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 necessary requirement for deletion is that the deleted element (either the light head or relative pronoun) is structurally or formally contained in the other element. All languages have two possible light heads, which partly overlap in feature content with the relative pronoun. The difference between language types arises from languages having different lexical entries that spell out the features of the light heads and the relative pronouns.

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

[7] In Section 6.2.3 I show why the surface element can be both the relative pronoun or the light head.

[8] In Section 6.2.1 I show why the surface pronoun can only be the relative pronoun.

[9] In Section 6.2.2 I show why the surface pronoun can only be the relative pronoun.

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.[10] For each language type, I compare the internal syntax of the light head and the relative pronoun in the three different situations: (i) when the cases of 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 heads and the relative pronouns leads to the different patterns observed in the given language types.

6.2.1 The internal-only type

I start with the internal-only type of language. In Chapter 4 I showed that Modern German is a language of the internal-only type. Chapter 7 motivates the analysis I propose in this section for Modern German.

In this type of language, grammatical headless relatives can only be derived from light-headed relatives headed by the first possible light head. Light-headed relatives headed by the second possible light head cannot be the source of headless relatives. For Modern German, I provide evidence for this claim based on interpretation in Chapter 7. In Chapter 9 I give an argument that comes from phonology. I already briefly introduce to the phonology argument in Section 6.2.3. In this section, I only discuss the first possible light head, and I leave the second possible light head aside.

I suggest that the light head and the relative pronoun in this type of language have the internal syntax as shown in Figure 6.4.

[10] 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.

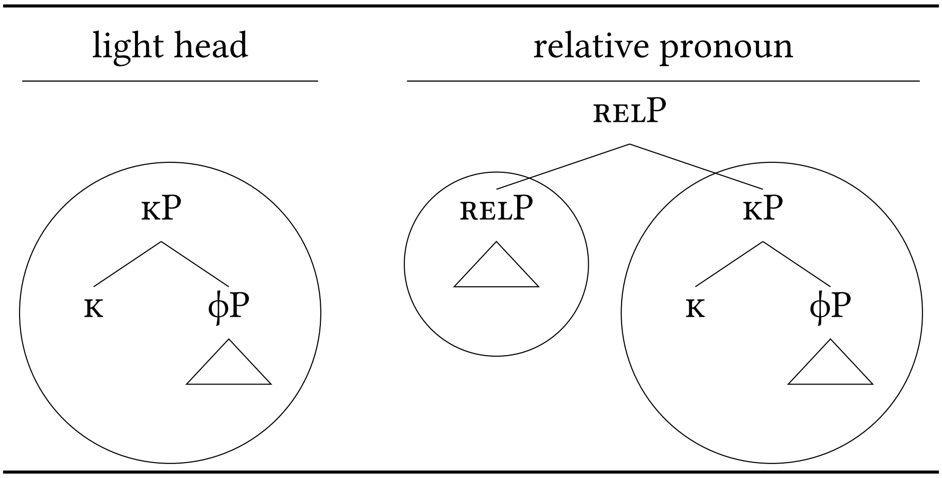


Figure 6.4: LH and RP in the internal-only type

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 KP. 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 KP 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. In Chapter 7 I work out this proposal for Modern German, and I give evidence for the lexical entries I suggest here.

In Figure 6.5, I give an example in which the relative pronoun and the light head bear the same case.

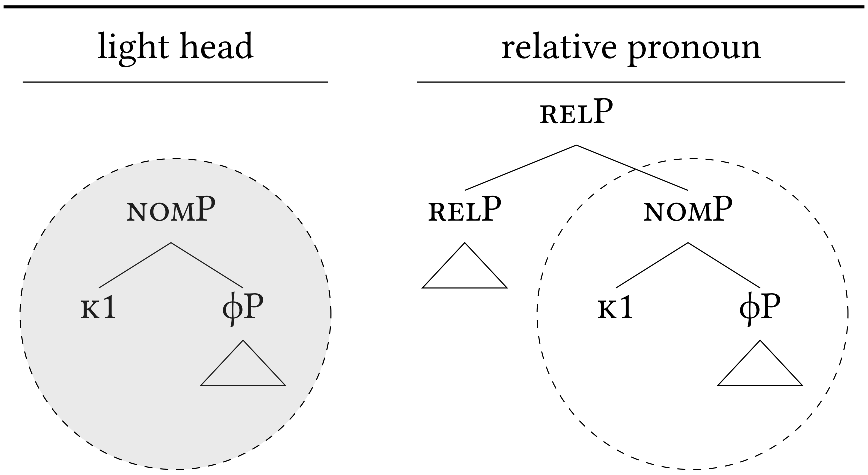


Figure 6.5: EXT_{NOM} vs. INT_{NOM} in the internal-only type

I draw a dashed circle around the NOMP, as it is the biggest possible element that is contained in both the light head and the relative pronoun. The light head (the NOMP) is contained in 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 relative pronoun bears a more complex case than the light head.

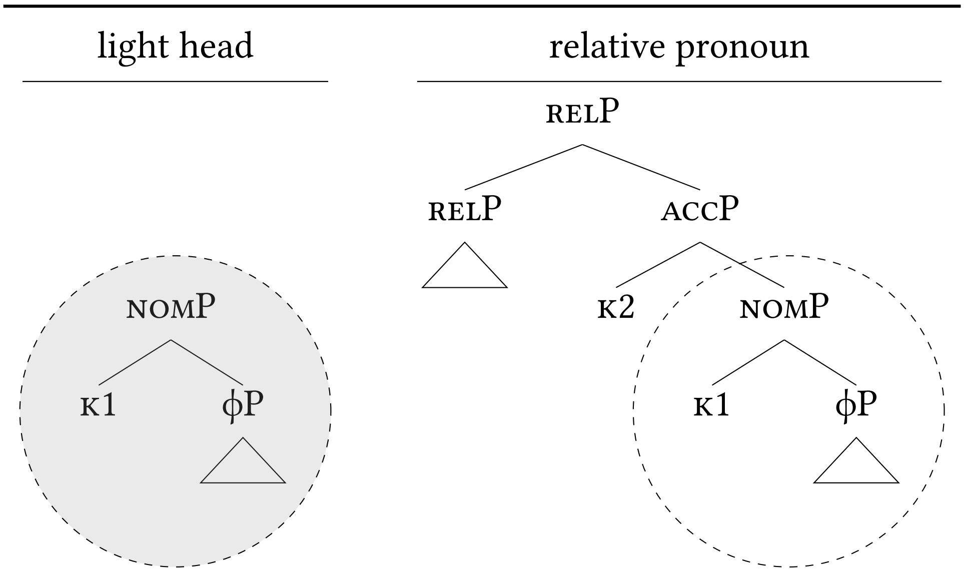


Figure 6.6: EXT_{NOM} VS. INT_{ACC} in the internal-only type

I draw a dashed circle around the NOMP, as it is the biggest possible element that is contained in both the light head and the relative pronoun. The light head (the NOMP) still is contained in 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 6.7, I give an example in which the light head bears a more complex case than the relative pronoun.

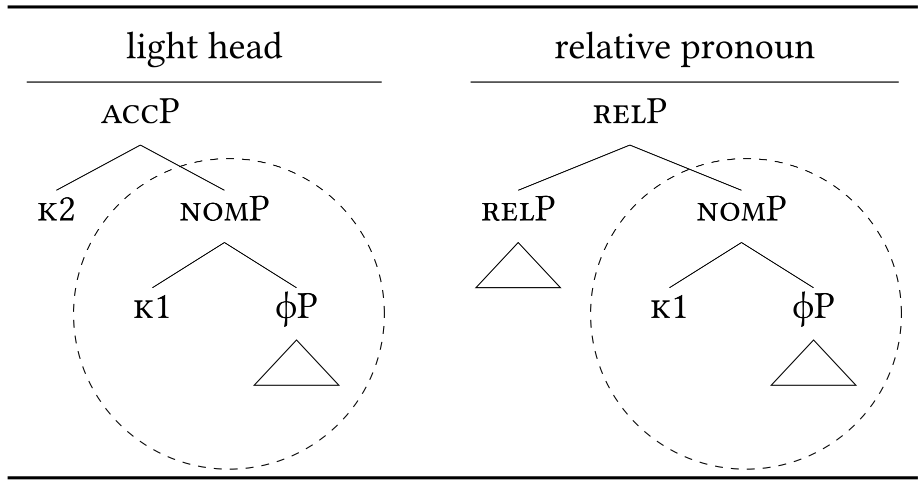


Figure 6.7: EXT_{ACC} vs. INT_{NOM} in the internal-only type

I draw a dashed circle around the NOMP, as it is the biggest possible element that is contained in both the light head and the relative pronoun. Different from the examples in Figures 6.5 and 6.7, the light head is not contained in the relative pronoun. The NOMP of the light head is contained in the relative pronoun, but the relative pronoun does not contain the feature K2 that forms an ACCP. The NOMP of the relative pronoun is contained in 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.

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			
$K_{\text{INT}} = K_{\text{EXT}}$	$[K_1[\phi]]$	$[\text{REL}], [K_1[\phi]]$	structure	LH	RP_{INT}
$K_{\text{INT}} > K_{\text{EXT}}$	$[K_1[\phi]]$	$[\text{REL}], [K_2[K_1[\phi]]]$	structure	LH	RP_{INT}
$K_{\text{INT}} < K_{\text{EXT}}$	$[K_2[K_1[\phi]]]$	$[\text{REL}], [K_1[\phi]]$	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 contained in the relative pronoun, the light head is deleted, and the relative pronoun is the surface element. Headless relatives are ungrammatical when the external case is more complex than the internal case, because then the light head no longer is contained in the relative pronoun, and none of the elements is deleted.

6.2.2 The matching type

I continue with the matching type of language. In Chapter 4 I showed that Polish is a language of the matching type. Chapter 8 motivates the analysis I propose in this section for Polish.

Just as for the internal-only type of language, grammatical headless relatives in this language type can only be derived from light-headed relatives headed by the first possible light head. Light-headed relatives headed by the second possible light head cannot be the source of headless relatives. For Polish, I provide evidence for this claim based on interpretation in Chapter 8. In Chapter 9 I give an argument that comes from phonology. I already briefly introduce to the phonology argument in Section 6.2.3. In this section, I only discuss the first possible light head, and I leave the second possible light head aside.

I suggest that the light head and the relative pronoun in this type of language have the internal syntax as shown in Figure 6.8.

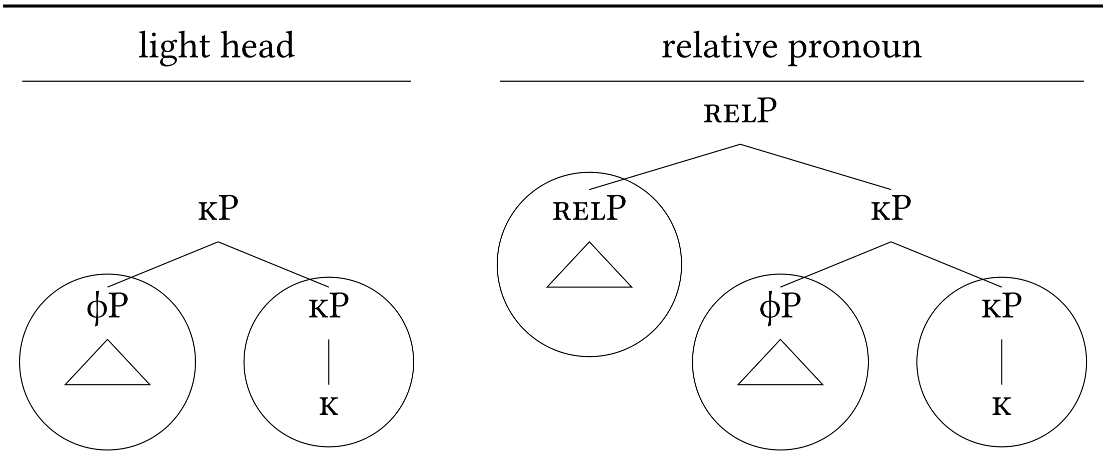


Figure 6.8: lh and rp in the matching type

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 language 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. In Chapter 8 I work out this proposal for Polish, and I give evidence for the lexical entries I suggest here.

In Figure 6.9, I give an example in which the light head and the relative pronoun bear the same case.

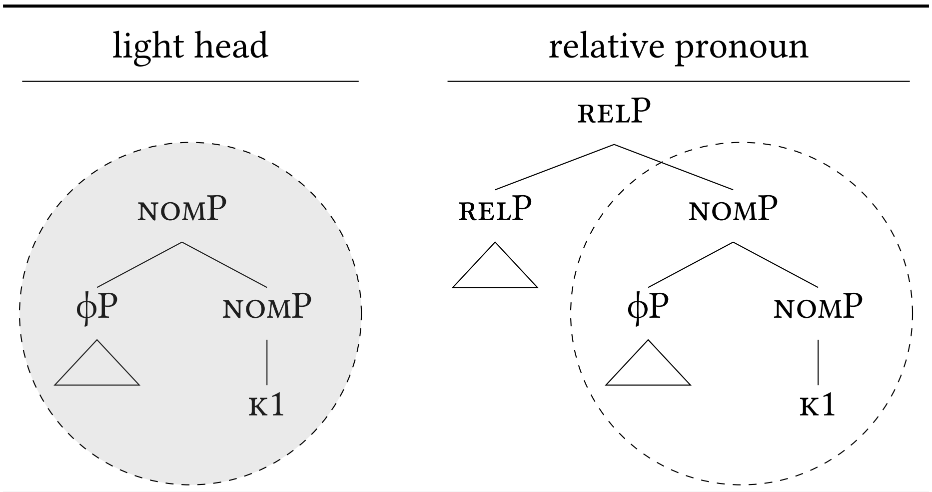


Figure 6.9: EXT_{NOM} vs. INT_{NOM} in the matching type

I draw a dashed circle around the NOMP, as it is the biggest possible element that is contained 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 contained in 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 6.10, I give an example in which the relative pronoun bears a more complex case than the light head.

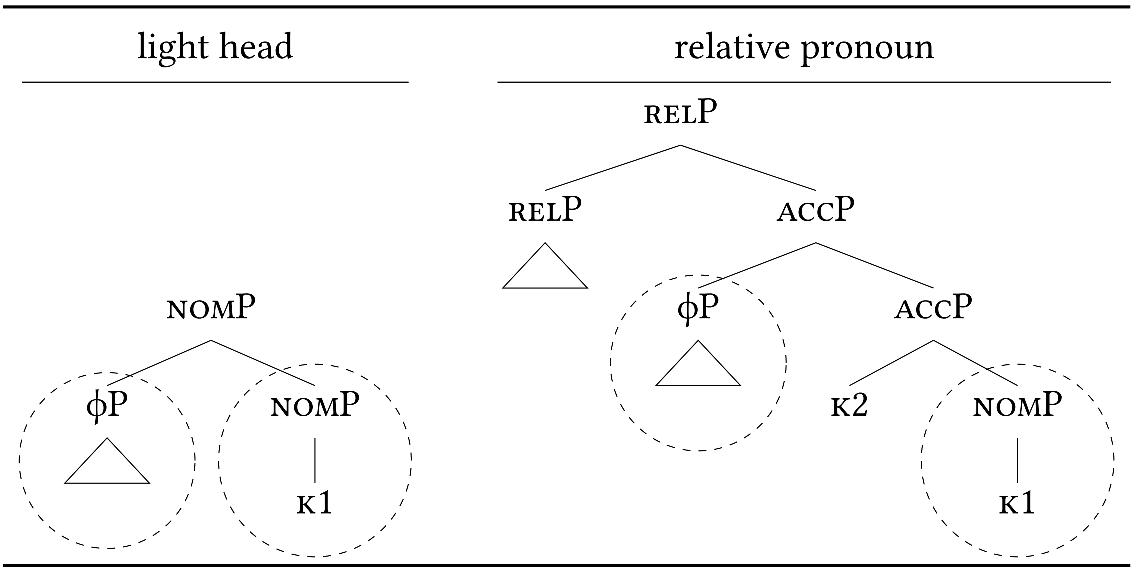


Figure 6.10: ext$_{\text{nom}}$ vs. int$_{\text{acc}}$ in the matching type

I draw a dashed circle around the ϕP and the nomP, as they are the biggest possible elements that are contained in both the light head and the relative pronoun. The light head (the nomP) no longer is contained in 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 6.10 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 structural 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 6.11.

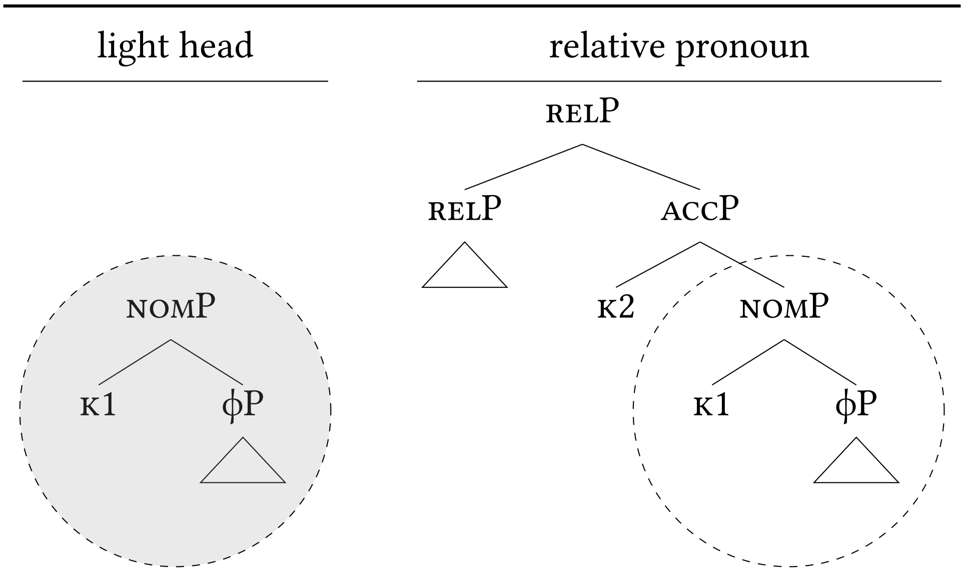


Figure 6.11: EXT$_{\text{NOM}}$ vs. INT$_{\text{ACC}}$ in the internal-only type (repeated)

In Figure 6.11, two different types of containment hold: feature containment and structural containment. With feature containment, each feature of the light head (i.e. features contained in ϕP and K1) is also a feature within the relative pronoun. Therefore, the relative pronoun contains the light head. With structural containment, the NOMP is structurally contained in the RELP. Therefore, the relative pronoun contains contains the light head.

Consider Figure 6.10 again. Here feature containment holds, but structural 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 6.11, so also here each feature of the light head (i.e. features contained in ϕP and K1) 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 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 containment being the containment requirement that needs to be fulfilled.

Structural 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. Cinque (forthcoming) argues that nominal modifiers can only be absent if they form a constituent with the NP. If they do not, they cannot 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 6.12, I schematically show the first and second conjunct of (8).

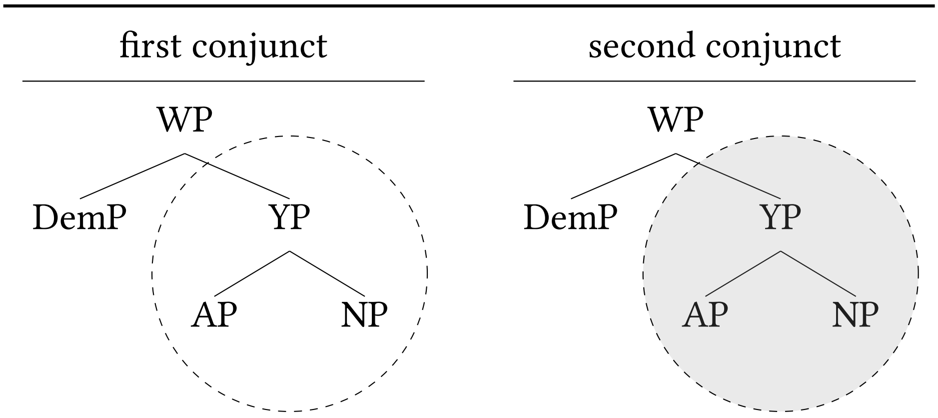


Figure 6.12: Nominal ellipsis in Dutch

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.

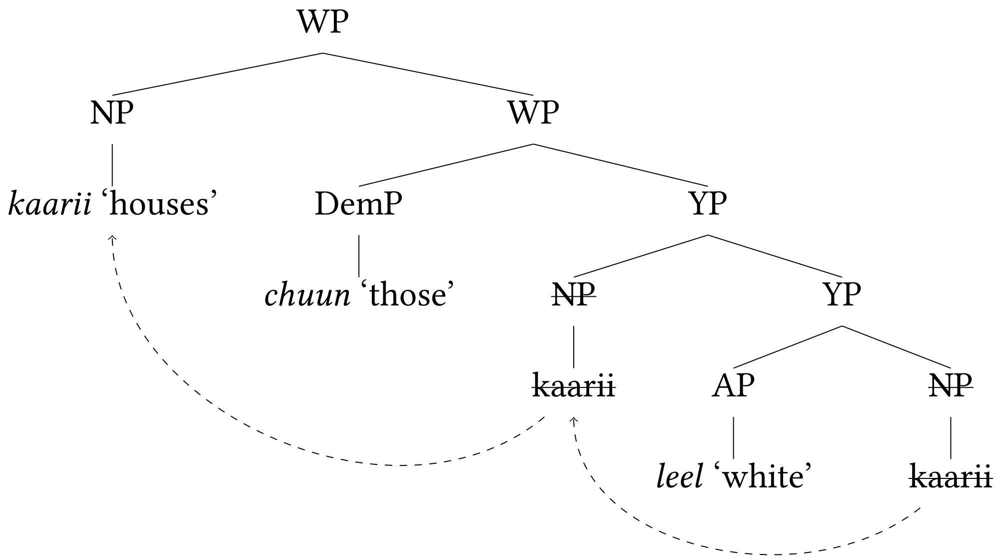
The situation is different in Kipsigis, a Nilotic Kalenjin language spoken in Kenya. In (9), I give an example of a conjunction of two noun phrases in Kipsigis. The first conjunct consists of a noun, a demonstrative and an adjective, and the second one only of a demonstrative.

(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, Cinque forthcoming: 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)



In Figure 6.13, I schematically show the first and second conjunct of (9).

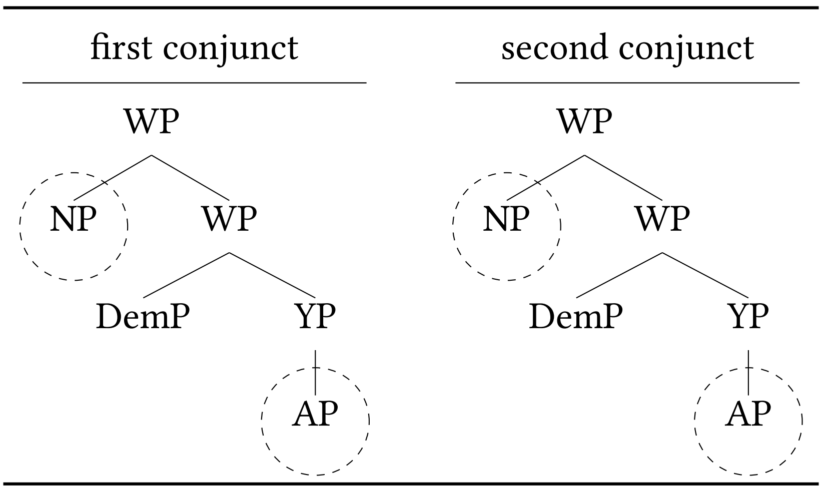


Figure 6.13: Nominal ellipsis in Kipsigis

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 6.13. Since the adjective and the noun in Figure 6.13 do not form a single constituent together, they cannot be interpreted in the second conjunct of (9). Instead, only the noun can be recovered.

These data show that structural containment is not only the crucial requirement for deletion of the light head and the relative pronoun in headless relatives. It is also the crucial requirement in NP ellipsis.

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 (K2 or REL). Since the weaker requirement of feature containment is not met, the stronger requirement of structural 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			
$K_{INT} = K_{EXT}$	$[K_1]$, $[\phi]$	[REL], $[K_1]$, $[\phi]$	structure	LH	RP_{INT}
$K_{INT} > K_{EXT}$	$[K_1]$, $[\phi]$	[REL], $[K_2[K_1]]$, $[\phi]$	no	none	*
$K_{INT} < K_{EXT}$	$[K_2[K_1]]$, $[\phi]$	[REL], $[K_1]$, $[\phi]$	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 structurally contained in the relative pronoun, the light head is deleted, and the relative pronoun is the surface element. 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 KP 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 structurally contained in the relative pronoun, and none of the elements is deleted.

6.2.3 The unrestricted type

I end with the unrestricted type of language. In Chapter 4 I showed that Old High German is a language of the unrestricted type. Chapter 9 motivates the analysis I propose in this section for Old High German.

In this type of language, grammatical headless relatives can be derived from light-headed relatives headed by the first possible light head and from light-headed relatives headed by the second possible light head.

I suggest that the first possible light head and the relative pronoun in this type of language have the internal syntax as shown in Figure 6.14.

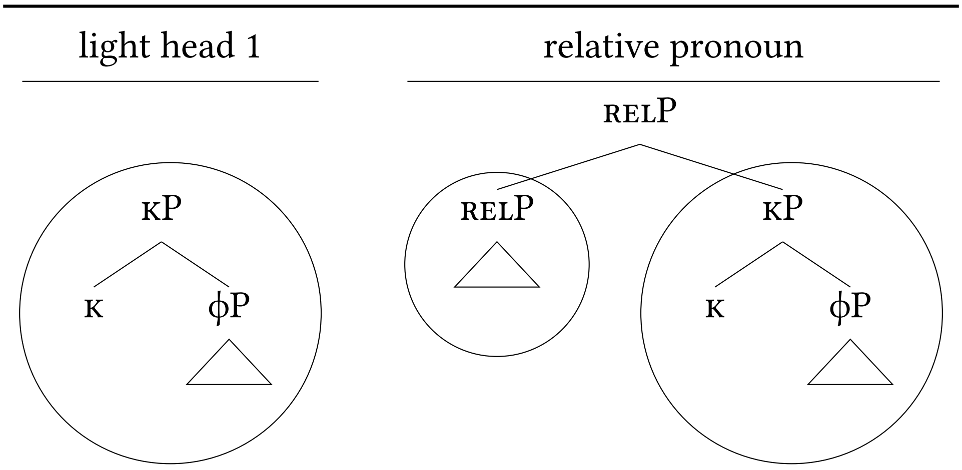


Figure 6.14: lh-1 and rp in the unrestricted type

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 head is. The relP is spelled out by a separate lexical entry. In Chapter 9 I work out this proposal for Old High German, and I give evidence for the lexical entries I suggest here.

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 structurally contained in the relative pronoun, and the light head is deleted, as shown in Figure 6.5 and Figure 6.6. 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 6.14 cannot lead to a grammatical headless relative, which I have shown in Figure 6.7. Before I introduce the second possible light head, I investigate whether it is possible to let a more complex external case surface while still keeping the light head but changing something else: a different kind of containment.

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 the 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 are structurally contained in the relative pronoun. This is impossible the other way around: all features of the relative pronoun can never be structurally contained 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 (crosslinguistically) defies this rule: syncretism (Groos and van Riemsdijk, 1981; Dyta, 1984; Zaenen and Karttunen, 1984; Pullum and Zwicky, 1986; Ingria, 1990; Dalrymple and Kaplan, 2000; Sag, 2003, cf.). In what follows I show a situation similar to the missing REL feature: a syncretism between nominative and accusative case in Modern German. The phenomenon can be understood if we assume that there is a third type of containment: formal containment.

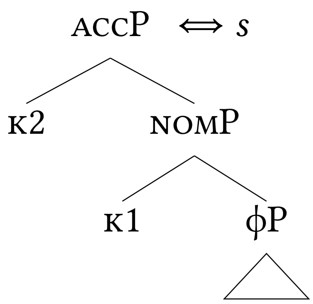
Consider the example in (11), in which the internal nominative case competes against the external accusative case. The relative clause is marked in bold. The internal case is nominative, as the experiencer predicate *gefallen* 'to please' takes nominative subjects. The external case is accusative, as the predicate *erzählen* 'to tell' takes accusative objects. The relative pronoun *was* 'RP.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$_{[\text{NOM}]}$
'I tell whatever pleases me.'
(Modern German, adapted from Vogel 2001: 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 cannot surface because it is not allowed to. 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 third type of containment: formal containment. This type of containment holds when an element is formally (i.e. with its phonological form) contained in the other 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 K2 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)


In Figure 6.15, 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.

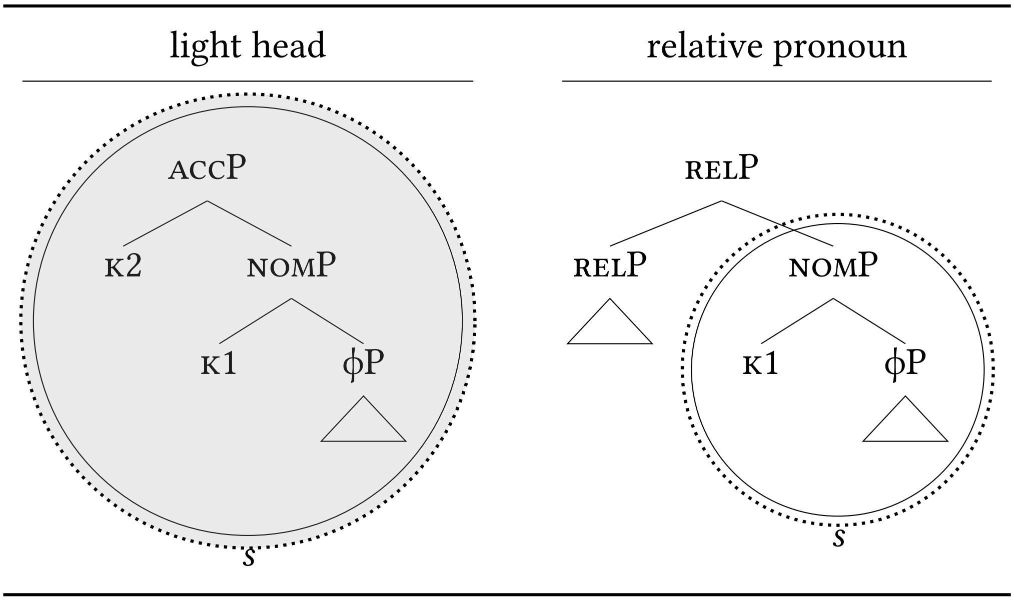


Figure 6.15: $\textsc{ext}_{\textsc{acc}}$ vs. $\textsc{int}_{\textsc{nom}}$ with case syncretism in the internal-only type

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 the biggest possible element that is formally contained in both the light head and the relative pronoun. The light head (the accP realized by *s*) is formally contained in 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.

Note here that a deletion based on formal containment happens at the same point in the derivation as a deletion based on structural containment. Remember that spellout in Nanosyntax takes place after each instance of merge. That means that both the structural and the formal information is available at the same point. If there is structural containment, deletion can take place based on structure, and if there is formal containment, deletion can take place based on form.

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 Figure 6.16.[11,12]

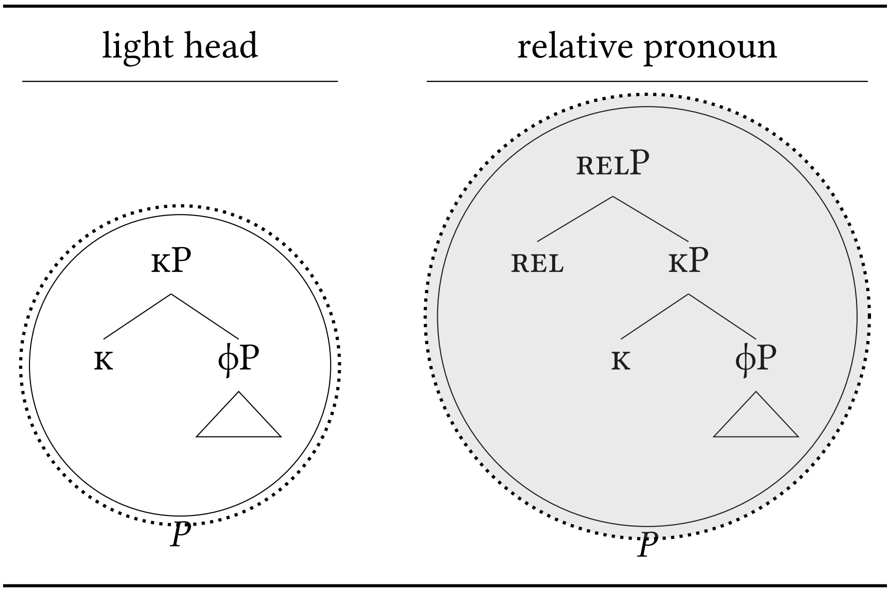


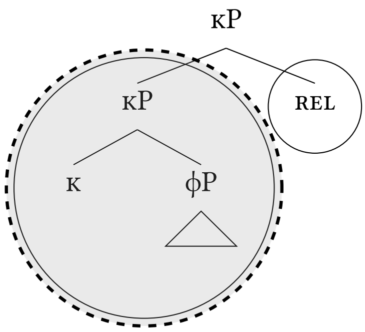
Figure 6.16: Syncretism between lh and rp

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*. I draw a dotted circle around the biggest possible element that is formally contained in both the light head and the relative pronoun.

[11]Note here that the two cases need to match in this situation as well. This can be achieved by making reference to an intermediate step in the derivation, which I explain later on in this section.

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

(i)



This is in a nutshell what I assume the analysis for Gothic to be. In this chapter and in Chapter 9 (in which I work out the proposal for Old High German) I only discuss the situation in which the relative pronoun as a whole is formally contained in the light head, and the relative pronoun is deleted.

The relative pronoun (the REL P realized by *P*) is formally contained in the light head (the KP realized by *P*), so the relative pronoun can be deleted.[13] 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. I leave it open for future research to find out whether a language like the one described in Figure 6.16 exists or not.

In Old High German, the second possible light head that I introduced in Section 6.1 generates a grammatical headless relative. Now consider the second possible light head and the relative pronoun in Figure 6.17.

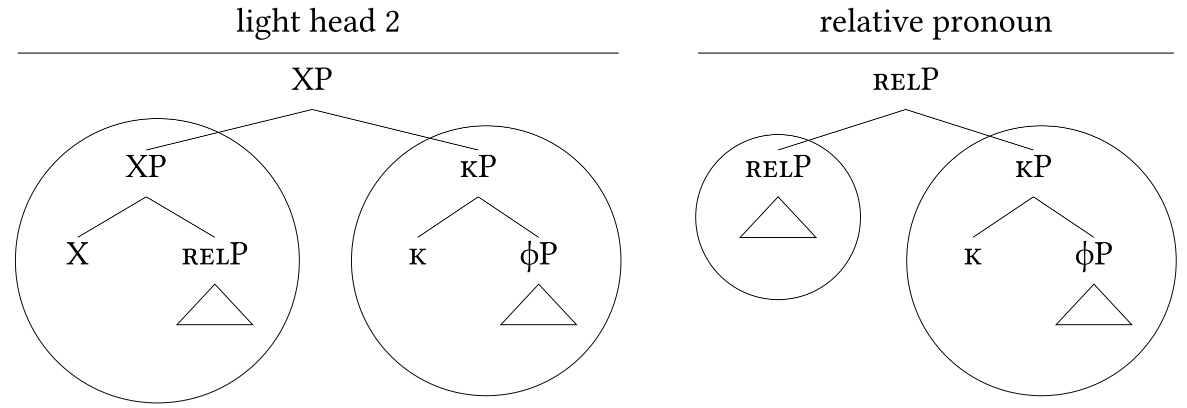


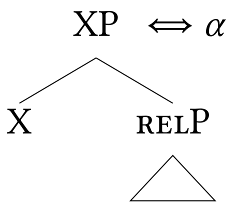
Figure 6.17: LH-2 and RP in the unrestricted type

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

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 and REL are spelled out by their 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 is the same as the one I introduced in Figure 6.14. It is spelled out by two lexical entries, indicated by the circles around the KP 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.

[13] The same holds the other way around: the KP realized by *P* is formally contained in the RELP that is realized by *P*. Therefore, the light head can be deleted too. Moreover, there is also structural containment: the KP is structurally contained in the RELP, so the light head can be deleted. Since I am discussing how it is possible for the relative pronoun to be deleted, I leave this point aside for now.

It is crucial for the analysis that the XP in the light head and the relP (that contains the XP) in the relative pronoun have the same spellout. This means that they need to be spelled out by the same lexical entry. I give it in (13).

(13)


In Chapter 9 I work out this proposal for Old High German, and I give evidence for the lexical entries I suggest here.[14]

I now return to the problem at hand, being that in the unrestricted type of language a relative pronoun can be deleted. In Figure 6.18, I give an example in which this can happen. It contains the second possible light head and the relative pronoun, which both bear the same case.

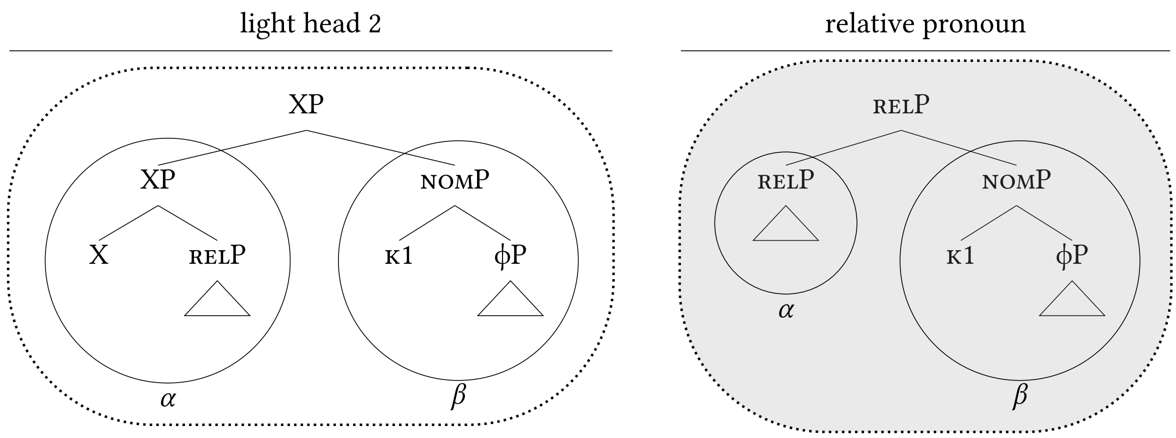


Figure 6.18: EXT$_{\text{NOM}}$ vs. INT$_{\text{NOM}}$ in the unrestricted type

The light head corresponds to *αβ*, illustrated by the circle around the XP and the *α* below it and the circle around the nomP and the *β* below it. The relative pronoun corresponds to *αβ* too, illustrated by the circle around the relP and the *α* below it and the circle around the nomP and the *β* below it.

[14]In Chapter 7 and in Chapter 8, I show that Modern German and Polish also have this second possible light head in their language. For reasons of interpretation (see Chapter 7 and Chapter 8) and for reasons of phonology (see Chapter 7), headless relatives in these two languages cannot be derived from a light-headed relative headed by the second possible head.

I draw a dotted circle around the biggest possible element that is formally contained in both the light head and the relative pronoun. The relative pronoun (the relP realized by *αβ*) is formally contained in the light head (the XP realized by *αβ*), so the relative pronoun is deleted. I illustrate this by marking the content of the dotted circle for the relative pronoun gray.

The same holds the other way around: the light head (the XP realized by *αβ*) is formally contained in the relative pronoun (the relP realized by *αβ*). Therefore, either the light head or the relative pronoun can be deleted. I delete the relative pronoun here, since I am discussing how it is possible for the relative pronoun to be deleted even though it contains one feature less than the light head.[15]

Finally arriving at the situation in which the external case is more complex than the internal case, I show that the analysis of Figure 6.18 cannot simply be extended to this situation. In Figure 6.19 I give an example of the second possible light head and the relative pronoun, in which the light head bears the more complex case.

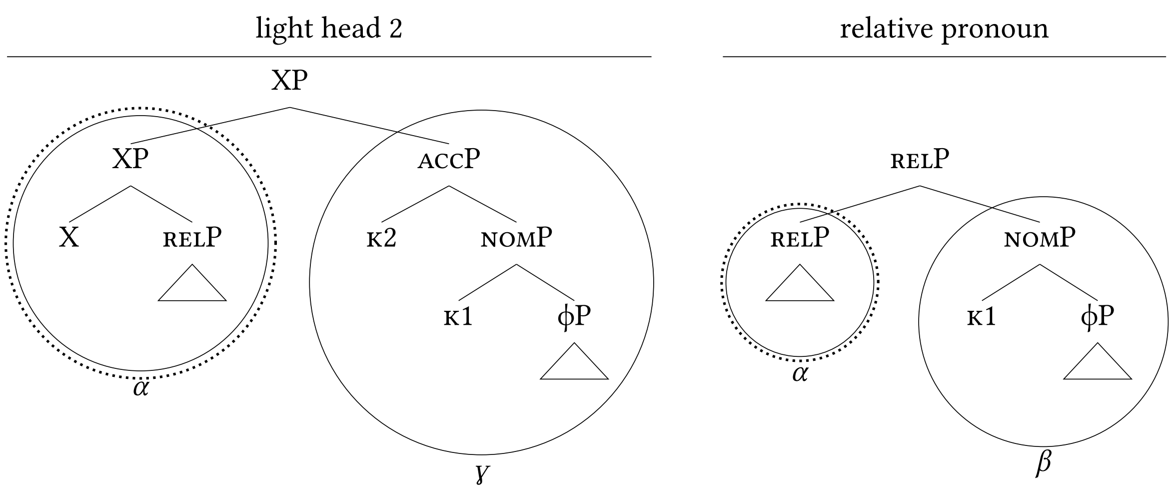


Figure 6.19: ext$_{\text{ACC}}$ vs. int$_{\text{NOM}}$ in the unrestricted type

The light head corresponds to *αγ*, illustrated by the circle around the XP and the *α* below it and the circle around the accP and the *γ* below it. The relative pronoun corresponds to *αβ*, illustrated by the circle around the relP

[15] A possible way to distinguish which of the two elements is deleted is by investigating extraposition possibilities. If the language under investigation can only extrapose CPs not not DPs (just as Modern German, cf. Van Riemsdijk 2006), it is expected that it is grammatical to extrapose the relative clause that contains the relative pronoun but not the relative clause that contains the light head.

and the α below it and the circle around the NOMP and the β below it. I draw a dotted circle around the biggest possible element that is formally contained in both the light head and the relative pronoun. The relative pronoun is no longer formally contained in the light head: $\alpha\gamma$ does not contain $\alpha\beta$. 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.[16]

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. Remember that in Nanosyntax, features are merged step by step, and spellout takes place after each instance of merge. This means that there is a stage in the derivation in which the light head bears the nominative case (as in Figure 6.18). At that point, the relative pronoun is deleted. The light head remains as the surface element.[17] Subsequently the feature K2 is merged to the light head to make it an 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 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 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. In Chapter 9 I show why this deletion option only works in the unrestricted type of language and not in the other two types, by giving an argument that concerns phonology.

The comparisons between the first possible light head and the relative pronoun correctly derive the observed patterns for the situation in which

[16] I do not consider the option to combine structural and formal containment (i.e. the ACCP structurally contains the NOMP and α formally contains α) because I assume that the antecedent needs to contain the deleted element as a whole.

[17] Thanks to Pavel Caha for suggesting this possibility.

cases match and for the situation in which internal case is more complex than the external case. An overview of the patterns is shown in Table 6.4.

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

situation	lexical entries		containment	deleted	surfacing
	LH-1	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 structurally contained in the relative pronoun, the light head is deleted, and the relative pronoun is the surface element. In the last situation, the light head no longer is structurally contained in the relative pronoun, and none of the elements is deleted.

The comparisons between the second possible light head and the relative pronoun correctly derive the observed patterns for the situation in which cases match and for the situation in which external case is more complex than the internal case. An overview of the patterns is shown in Table 6.5.

Table 6.5: Grammaticality in the unrestricted type with LH-2

situation	lexical entries		containment	deleted	surfacing
	LH-2	RP			
K_{INT} = K_{EXT}	α, β	α, β	form	RP	LH_{EXT}
K_{INT} > K_{EXT}	α, β	α, γ	no	none	*
K_{INT} < K_{EXT}	α, β	α, β	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 provides a different spellout for only 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 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) formally contained in the light head, the relative pronoun is deleted, and the light head is the surface element.[18] In the second situation, the relative pronoun is at no point in the derivation formally contained in 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 containment. A more complex case contains 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 containment. If the light head is (structurally) contained in the relative pronoun, the light head can be deleted. Then the light head with its external case is deleted, and the relative pronoun with its internal case surfaces. This is what corresponds to the internal case 'being allowed to surface'. If the relative pronoun is (formally)

[18] This means that in the first situation the headless relative can be derived from a light-headed relative with the first possible light head or with the second possible light head. In Chapter 9 I return to this matter.

contained in the light head, the relative pronoun can be deleted. Then the relative pronoun with its internal case is deleted, and the light head with its external case surfaces. This is what corresponds to the external case 'being allowed to surface'.

In other words, the grammaticality of a headless relative depends on containment. What is being compared is the internal syntax 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 introduction of the chapter can be reformulated as in Figure 6.20.

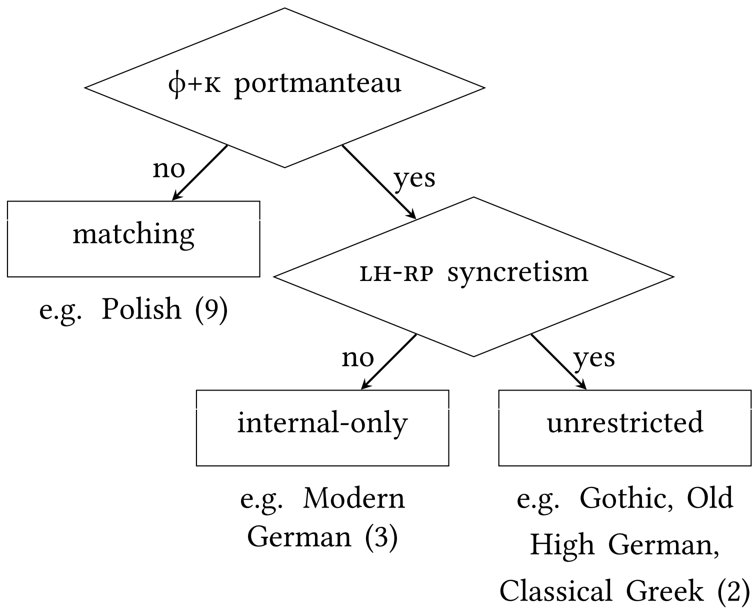


Figure 6.20: Different lexical entries generate three language types

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 structurally or formally contained in the other element. First consider only structural containment, leaving formal containment aside for now. Every language has two possible light heads. The first possible light head contains one feature less than the relative pronoun, and the second possible light head contains one feature more than the relative pronoun. Since the first possible light head contains one feature less than the relative pronoun, it can never structurally contain the relative pronoun, and the relative pronoun can never be deleted. However, the second possible light head contains one more feature than the relative pronoun, so it can structurally contain the relative pronoun, and the relative pronoun can be deleted. Nevertheless, this does not make a language of the external-only type. There is still the relative pronoun that contains all features of the first possible light head, so it can structurally contain the first possible light head, and the light head can be deleted. As such, the language is of the unrestricted type.[19]

Now consider also formal 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 6.16, I showed a situation in which the light head is syncretic with the relative pronoun, which I repeat here in Figure 6.21.

[19]This reasoning holds for languages in which light heads and relative pronouns are monomorphemic.

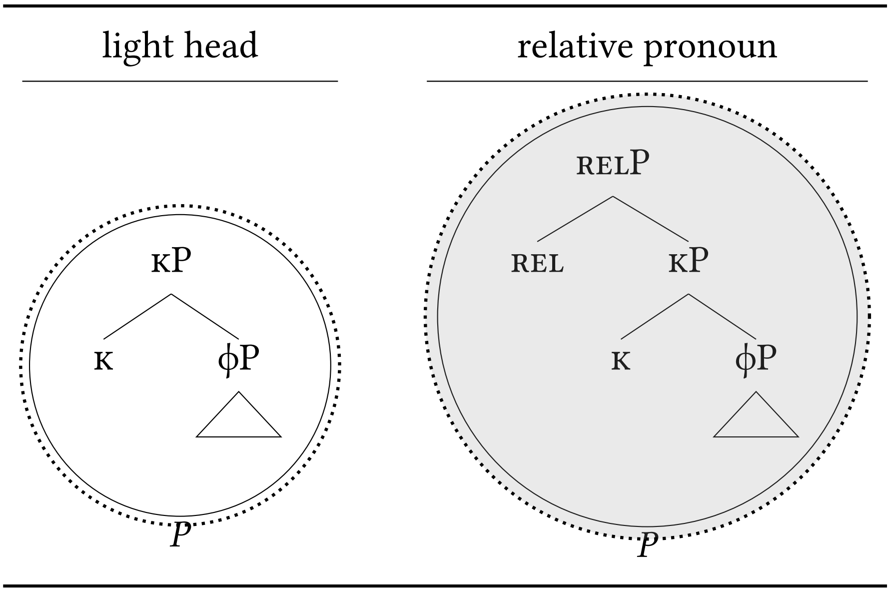


Figure 6.21: Syncretism between LH and RP (repeated)

In Figure 6.21, the relative pronoun is formally contained in 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 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 containment. There is 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 6.21 again. Although the light head cannot be deleted by formal containment, it can be deleted by structural containment. The light head is still formally contained in the relative pronoun.[20]

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

[20] Again, this reasoning is restricted to light heads and relative pronouns that are monomorphemic.

pronoun is the same for all language types. Therefore, the larger syntactic structure and the deletion operation do not play a central role in the account.

At the end of Chapter 9, the larger syntactic structure of headless relatives enters the discussion when I account for how an external case can win the case competition. There I show where in the larger syntax the (different) light heads are situated and that deletion takes place under c-command. Deletion is optional and takes place either based on structural containment or based on formal containment (or both). Both types of containment are available at the same stage of the derivation, since spellout in Nanosyntax takes place after each instance of merge.

To conclude, in this chapter I introduced the assumptions that headless relatives are derived from light-headed relatives and that relative pronouns partly overlap in feature content with the light heads. A headless relative is grammatical when either the light head or the relative pronoun is structurally or formally contained in 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.

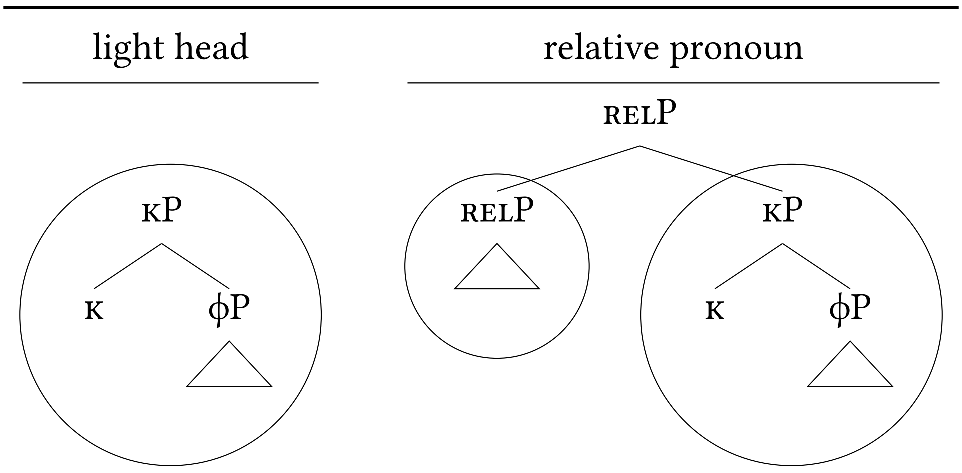


Figure 7.1: LH and RP in the internal-only type

These lexical entries lead to the grammaticality pattern shown in Table 7.1.

Table 7.1: Grammaticality in the internal-only type (repeated)

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

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 structurally contained in the relative pronoun. Therefore, the light head can be deleted, and the relative pronoun surfaces, bearing the internal case.

Consider now the situation in which the internal case wins the case competition. 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 (K_2 in Table 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 structurally contained in 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 would win 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 (K_2 in Figure 7.1). The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is structurally contained in 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.

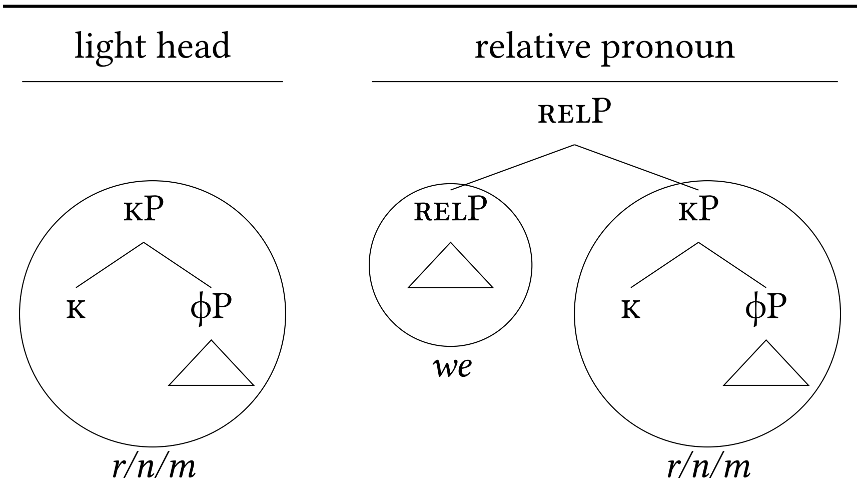


Figure 7.2: LH and RP in Modern German

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 *r*, *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*.[1,2] 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 shown in Figure 7.2.

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

[1] *Wer* 'who' is the relative pronoun that Modern German uses in headless relatives. The language also has other relative pronouns, such as *der* 'who' *welcher* 'which'. In this dissertation, I focus on *wer*, since it is the relative pronoun used in the headless relatives, and I do not discuss how this relative pronoun relates to the other relative pronouns.

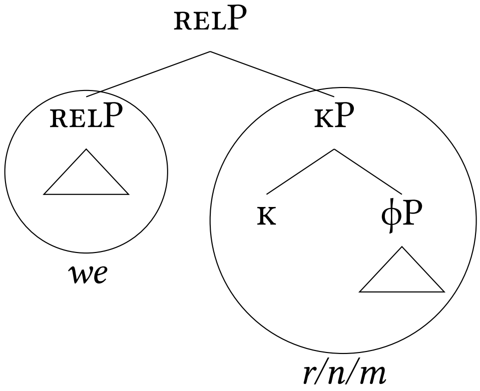
[2] The inanimate relative pronoun is *was*. Later on in this section I discuss how the vowel in *we* alternates in different genders.

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 internal syntax 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).

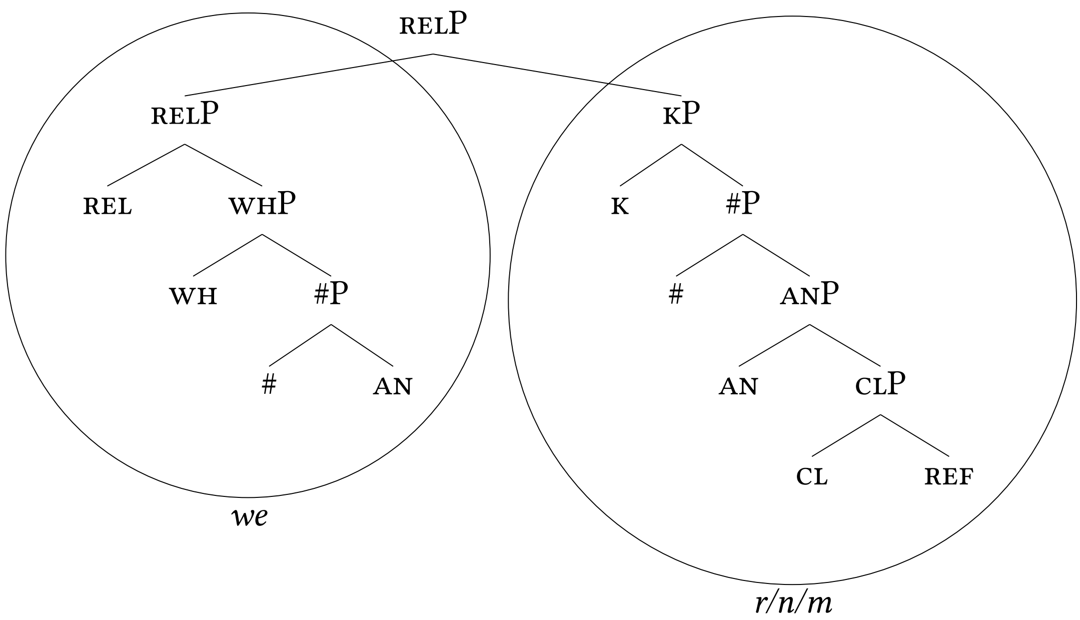
(1)



In Chapter 6, I suggested that relative pronouns consist of at least three features: REL, ϕ and κ. In this section, I show that the 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).[3]

[3]The κP in this functional sequence is a placeholder for multiple case projections. When the relative pronoun is the nominative, the κP consists of the feature κ1, and it forms the NOMP. When the relative pronoun is the accusative, the κP consists of the features κ1 and κ2, and they form the ACCP. When the relative pronoun is the dative, the κP consists of the features κ1, κ2 and κ3, and they form the DATP.

(2)



I discuss two relative pronouns: the animate accusative and the animate dative. These are the two forms that I compare the internal syntax of in Section 7.5.[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 (or animateness) 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 7.2.

[4]For reasons of space, I do not discuss the animate nominative *wer* 'RP.AN.NOM'. I assume its analysis is identical to the one I propose for *wen* and *wem*, except that *wer* spells out fewer case features. I work out the proposal for *wen* and *wem* to be able to do a comparison between Modern German and Polish in which the relative pronouns spell out exactly the same feature content.

Table 7.2: Modern German WH-pronouns (Durrell 2016: 5.3.3)

	AN	INAN
NOM	we-r	wa-s
ACC	we-n	wa-s
DAT	we-m	-

The final consonants change depending on animacy and case.[5] 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.[6]

Table 7.3: Modern German *dieser* demonstratives (Durrell 2016: 5.1.2)

	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 for pronouns in a crosslinguistic study with over 100 languages by Harley and Ritter (2002). 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.[7] The feature #

[5] The vowel also differs between animacy. I return to this point when I discuss the feature content of the *we*.

[6] 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.

[7] If the features CL and AN are combined with the feature FEM, it becomes the feminine gender.

corresponds to number, which is singular if it is not combined with any other features.

For case, I adopt the features of Caha (2009), already introduced in Chapter 3. The feature K1 and K2 corresponds to the accusative, and the features K1, K2 and K3 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 in relative pronouns and demonstrative pronouns) is as pronouns in colloquial speech.[8] In (4), I give examples of the masculine accusative singular and masculine dative singular.[9]

(4) a. Ich wollt'n gestern schon anrufen.
I wanted 3SG.M.ACC yesterday already call
'I already wanted to call him yesterday.'

b. Ich helf'm sein Fahrrad zu reparieren.
I help 3SG.M.DAT his bike to repare
'I help him reparing his bike.'

This means that the forms also correspond to pronominal features. I follow Harley and Ritter (2002) who claim that all pronouns contain the feature REF, because they are referential expressions.[10]

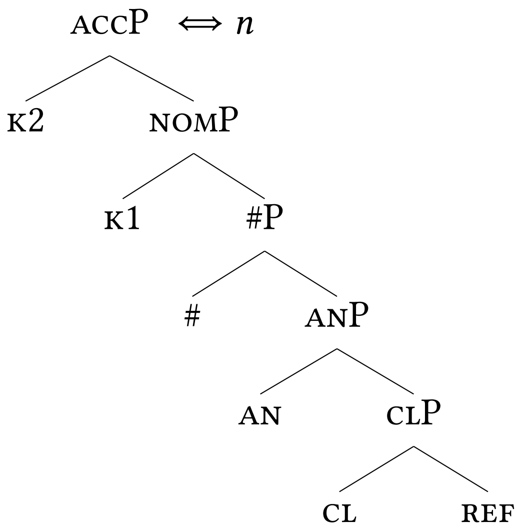
I give the lexical entries for *n* and *m* in (5). The *n* is the accusative animate singular, so it spells out the features REF, CL, AN, #, K1 and K2. The *m* is the dative animate singular, so it spells out the features that the *n* spells out plus K3.

[8]The singular feminine dative *r* and the plural dative *n* cannot be easily used as pronouns. This can be seen as an indication that it is not purely phonological reduction of the pronouns. Interestingly, the singular feminine dative *r* and the plural dative *n* do not appear in WH-pronouns, as Modern German does not have feminine and plural WH-elements. I do not have an explanation for this observation.

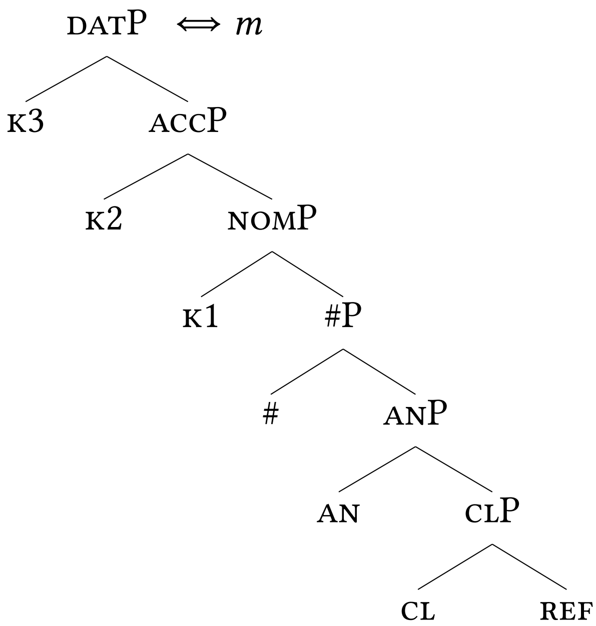
[9]I constructed the German sentences in this chapter myself. I checked their grammaticality with several native speakers.

[10]To be more precise, the final consonants correspond to the weak pronoun in Modern German. I elaborate on this in Section 7.2.

(5) a.



b.



Note that the ordering of the features here is not random. I motivate the ordering in Section 7.3.

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 this morpheme actually spells out the operator features WH and REL and number and gender features.

Note here that number and gender features are also spelled out by the final consonants. I assume that they are spelled out twice within the relative pronoun. This does not mean that they are semantically present twice. Their double presence is purely due to spellout reasons. I return to this point in Section 7.3.

Consider Table 7.4 and Table 7.5, repeated from Table 7.2.

Table 7.4: Modern German *der* demonstratives (Durrell 2016: 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 WH-pronouns (Durrell 2016: 5.3.3) (repeated)

	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).[11] This identifies the *de* and, more importantly for the discussion here, the *we* as a separate morpheme.[12,13]

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 Rooth (1985, 1992). The feature REL is present to establish a relation. I assume that a relation is established with the light head. The semantics of the headless

[11]Note that the WH-pronouns in Table 7.5, unlike the demonstratives, do not have feminine and plural forms. 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. It is not clear to me how the observation about the morphology is connected to the two language types.

[12]It is also possible to analyze *we* as two separate morphemes: *w* and *e*. Under that analysis, the vowel expresses the difference between animacy and the *w* the operator part. 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.

[13]I actually think that *we* also spells out deixis features. I elaborate on this in Section 7.2.2.

relative as a whole is then an individual that has been picked from a set of alternatives (cf. Caponigro, 2003).

I continue with the last two features that are spelled out by *we*, namely the number feature # 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.[14]

I end with discussing the number feature #. 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).

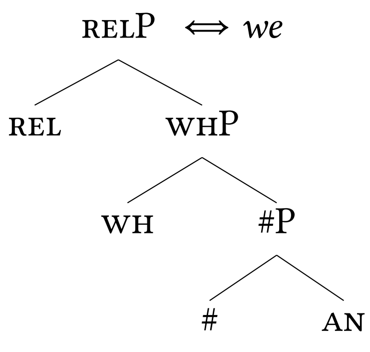
(6) a. Wer mach-t das?
who do-3SG that
'Who is/are doing that?'

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, # and AN as shown in (7).

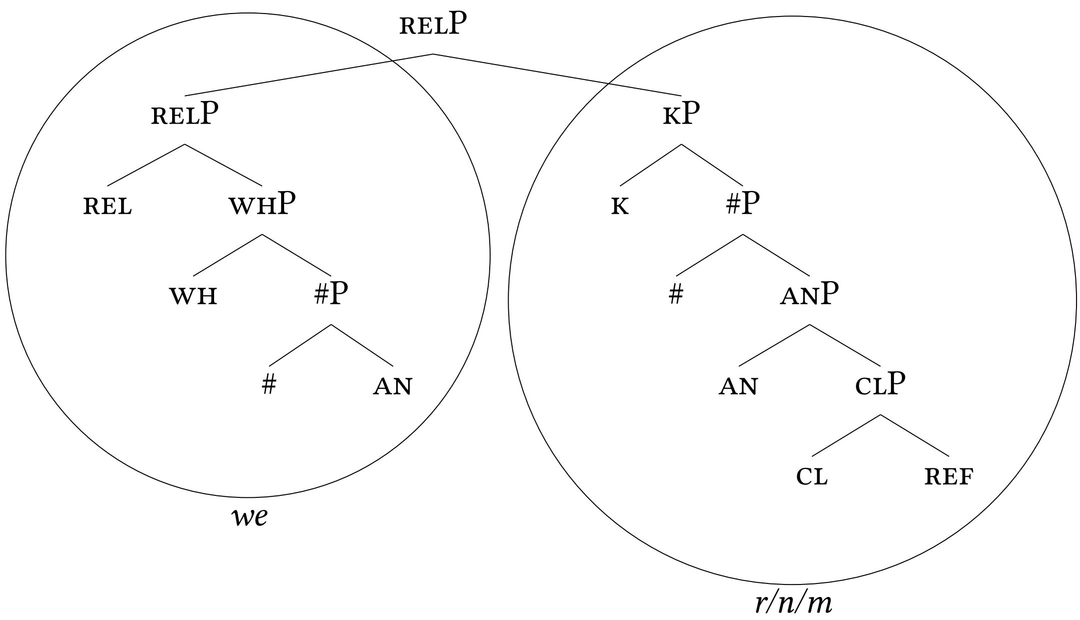
(7)



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 pronoun as a whole looks like. I repeat it from (2) in (8).

[14] In Section 7.2.3 I discuss an alternative segmentation of *wer*.

(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, theory that derives this is not language-specific, but the same for all languages. In Section 7.3 I show how this is accomplished in Nanosyntax. Readers who are not interested in the precise mechanics can proceed directly to Section 7.4. The next section is Section 7.2, which takes up a few matters I raised in this section regarding Modern German relative pronouns.

7.2 Aside: Notes on Modern German relative pronouns

This section takes a small detour to discuss three aspects of Modern German relative pronouns. It does not belong to the core of the story, and it can be skipped over without losing track of the reasoning. Moreover, I do not incorporate what I discuss here in the lexical entries in this dissertation. I start by discussing that the final consonant is a weak pronoun, then I elaborate on the deixis features that the relative pronoun spells out, and I end with an alternative segmentation of the relative pronoun.

7.2.1 Modern German weak pronouns

In Section 7.1 I noted that I assume that the final consonant of the relative pronoun spells out pronominal features. In this section I show that it should be classified as a weak pronoun.

Cardinaletti and Starke (1994) split pronouns in three classes: strong pronouns, weak pronouns and clitics. Following the tests in Cardinaletti and Starke (1994) 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.[15]

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 (9).

(9) a. *Ich wollte Jan und n gestern schon anrufen.
I wanted Jan and 3SG.M.ACC 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 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 (10).[16]

(10) a. Jan hat morgen Geburtstag. Ich habe schon ein Geschenk
Jan has tomorrow birthday I have already a gift
für'n gekauft.
for 3SG.M.ACC bought
'It's Jan's birthday tomorrow. I already bought him a gift.'

b. Ich habe mich gestern mit Jan getroffen. Ich war
I have me yesterday with Jan met I was

[15] For a different classification on the basis of different German dialects, see Weiß 2015.

[16] It seems that these examples are not grammatical for all speakers of Modern German. For these speakers, the pronouns are possibly clitics. I come back to this at the end of Chapter 8 and in the discussion in Chapter 11.

mit'm	im	Wald	wandern.
with 3SG.M.DAT	in	forest	hiking

'I met with Jan yesterday. I was hiking with him in the woods.'

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 (Cardinaletti and Starke, 1994). I assume that clitics lack the features REF (which corresponds to the LP in Cardinaletti and Starke 1994: 61) and the feature Σ. Strong pronouns have, in addition to REF and Σ, another feature (C in terms of Cardinaletti and Starke 1994: 61).

I leave the distinction between different classes of pronouns of the main discussion and the lexical entries because they are not relevant for the analysis.

7.2.2 Deixis in relative pronouns

In Section 7.1 I mentioned that I assume that relative pronouns also spell out deixis features. In this section I elaborate on this.

Relative pronouns do 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 (11).

(11) a. this
DEM.PROX

b. that
DEM.MED/DIST

WH-pronouns combine with the medial/distal and are ungrammatical when combined with the proximal, shown in (12).

(12) 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 (cf. Colasanti and Wiltschko, 2019). 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 Lander and Haegeman (2018). 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 (Lander and Haegeman 2018: 387), see Table 7.4.

I leave the deixis features out of the main discussion and the lexical entries because they are not relevant for the analysis.

7.2.3 Alternative segmentation of *wer*

In Section 7.1 I analyzed the relative pronoun *wer* (and *wen* and *wem*) as consisting of two morphemes: *we* and *r*. In this section I present an alternative to this. This alternative is to let *wer* correspond two lexical entries of which the phonological part look as in (13).

(13) a. /*w*/ + CV
b. /*er*/ + C

Under this analysis, the final consonant has the vowel *e* in its lexical entry (as shown in (13b)), 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 (13a), 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 (13)), 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.

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.

The strong masculine singular pronoun in nominative in Modern German is *er*. It seems it can be spelled out by the lexical entry in (13b) and another lexical entry that just introduces a slot for a vowel. This is not the case for the same pronoun in accusative and dative case: then the additional lexical entry seems to be a slot for a vowel that has already been filled with in /i/ (for *ihn* and *ihm*). For the nominative and accusative neuter singular pronoun, the slot is filled with an /ɛ/ (for *es*). I leave it for future research to investigate how this difference should be modeled. An observation that might be relevant in doing that is that in the paradigm of the possessives (*mein*) there are three cells that do not take an ending: the masculine singular nominative and the neuter singular nominative and accusative.

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.

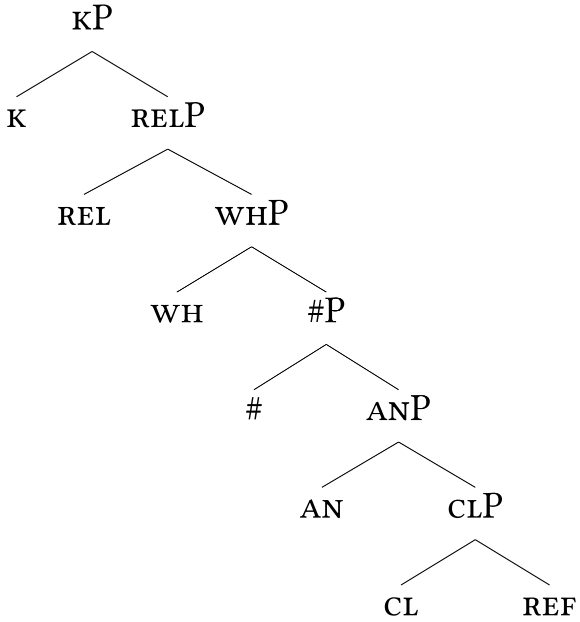
As this matter is not relevant for the core of my analysis, I put it aside for now. For ease of exposition I simply assign a phonological exponent to each lexical entry and I do not make further distinctions in C and V slots.

7.3 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 be 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.

(14) shows the functional sequence for relative pronouns. It gives all features it contains and their hierarchical ordering.

(14)



Starting from the bottom, these are pronominal feature ref, gender features cl and an, a number feature #, 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 Picallo (2008) and Kramer (2016) argue that number (#) is hierarchically higher than gender (cl and an). Case (k) is agreed to be higher than number (#) (cf. Pittner, 1996).

For the position of the operator features (wh and rel) consider (15).

(15) a. of the children
b. of which children

The linear order in (15a) reflects the hierarchical ordering of K > D > N. *Of* is an instance of K, *the* is an instance of D, and *child* is an instance of N. (15b) 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 (Baunaz and Lander, 2018b, cf.).

Before I 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 (16).

(16) **Cyclic phrasal spellout** (Caha, 2021)
Spellout must successfully apply to the output of every Merge F operation. After successful spellout, the derivation may terminate, or proceed to another 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 successfully (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 successully 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 (17).

(17) **Spellout Algorithm** (as in Caha 2021, based on Starke 2018)
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.

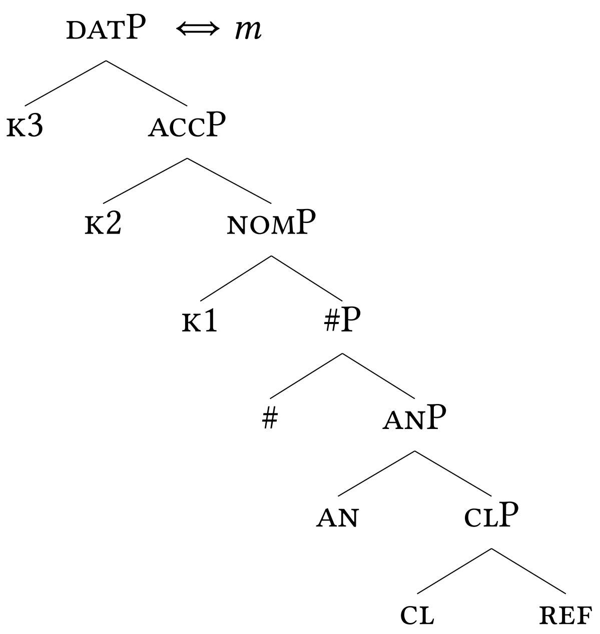
I informally reformulate what is in (17), starting with the first line in (17a). This says that a feature F is merged, and we try to spell out the newly created phrase FP. When the spellout in (17a) fails (i.e. when there is no match in the lexicon), we continue to the next two lines, (17b) and (17c), which describe the two types of rescue movements that can take place then. 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.

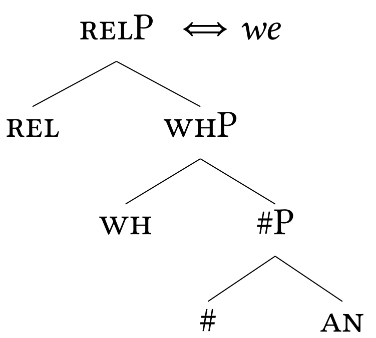
With this background in place, I start constructing the accusative relative pronoun. I repeat the available lexical entries in (18).

(18) a. [accP K2 [nomP K1 [#P # [anP an [clP cl ref]]]]] ⇔ *n*

b.

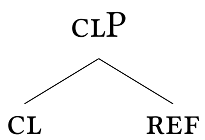


c.



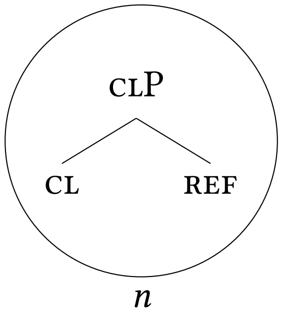
Starting from the bottom of the functional sequence, the first two features that are merged are REF and CL, creating a CLP.

(19)



The syntactic structure forms a constituent in the lexical tree in (18a). Therefore, the CLP is spelled out as *n*, as shown in (20).

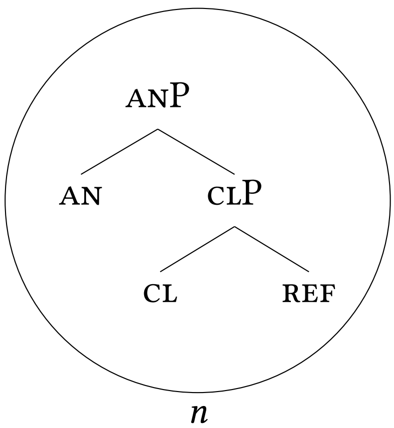
(20)



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 (17a) in the Spellout Algorithm.

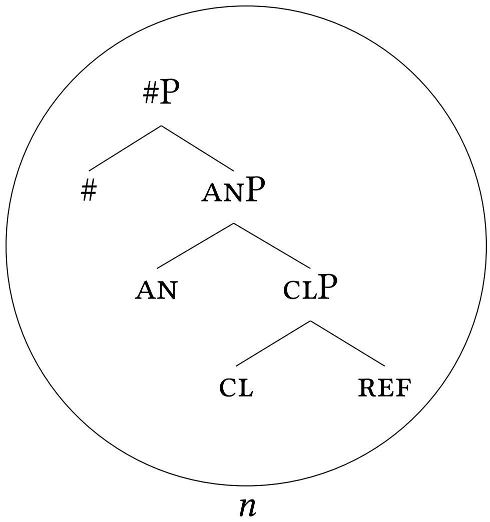
There are more features in the functional sequence, so the next feature is merged. This next feature is the feature AN, and am ANP is created. The syntactic structure forms a constituent in the lexical tree in (18a). Therefore, the ANP is spelled out as *n*, shown in (21).

(21)



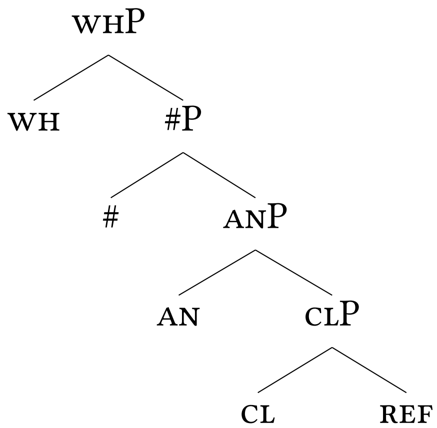
The next feature is the feature #, and a #P is created. The syntactic structure forms a constituent in the lexical tree in (18a). Therefore, the #P is spelled out as *n*, shown in (22).

(22)



The next feature in the functional sequence in (14) 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 (23).

(23)



This syntactic structure does not form a constituent in the lexical tree in (18a). It contains the feature WH, which (5a) does not contain. There is also no other lexical tree that contains the structure in (23) 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 ((17a) in the Spellout Algorithm).

The first movement option in the Spellout Algorithm is moving the specifier, as described in (17b). 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 (17c). In this case, the complement of WH, the #P, is moved to the specifier of WHP. 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 (24).

(24) **Spec Formation** (Starke, 2018):
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.

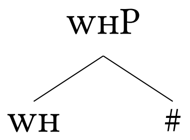
I reformulate this informally: if none of the preceding spellout options lead to a successful spellout, a last resort operation applies. The feature that has not been spelled out yet, is merged with some other features (to which I shortly come back) in a separate workspace. Crucially, the phrase that 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.[17] 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 #. Then, the lexicon is checked for a lexical tree that contains the phrase WHP that contains WH and #, as shown in (25).

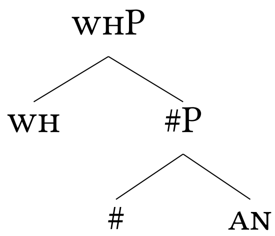
[17] There are three different proposals on Spec Formation. Caha, De Clercq, and Vanden Wyngaerd (2019b) argue that there can only be a single feature overlap between the two phrases. De Clercq and Vanden Wyngaerd (2018) argue that there cannot be any overlap at all. The features that used in the second workspace are removed from the structure in the main workspace. In this dissertation, I work with the proposal in Starke (2018), in which 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.

(25)



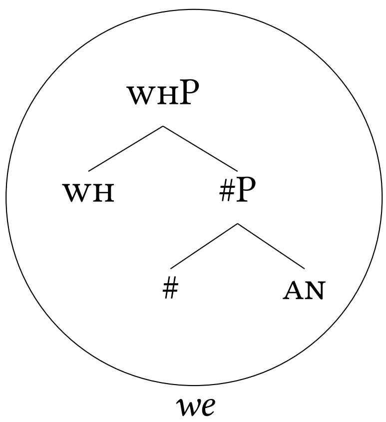
This syntactic structure does not form a constituent in any of the lexical trees in the language's lexicon. Therefore, the feature WH combines not only with the feature merged before it, but with a phrase that consists of the two features merged before it: # and AN. I give the phrase this gives in (26).

(26)



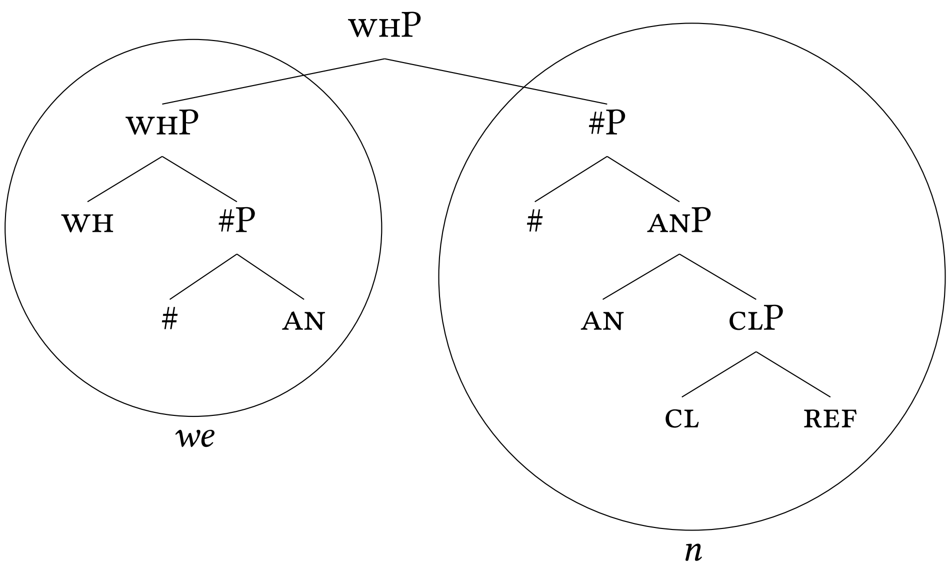
This syntactic structure forms a constituent in the lexical tree in (18c). Therefore, the WHP is spelled out as *we*, as shown in (27).

(27)



The newly created phrase is merged as a whole with the already existing structure. As specified in (24), the feature WH projects to the top node. I show the results in (28).

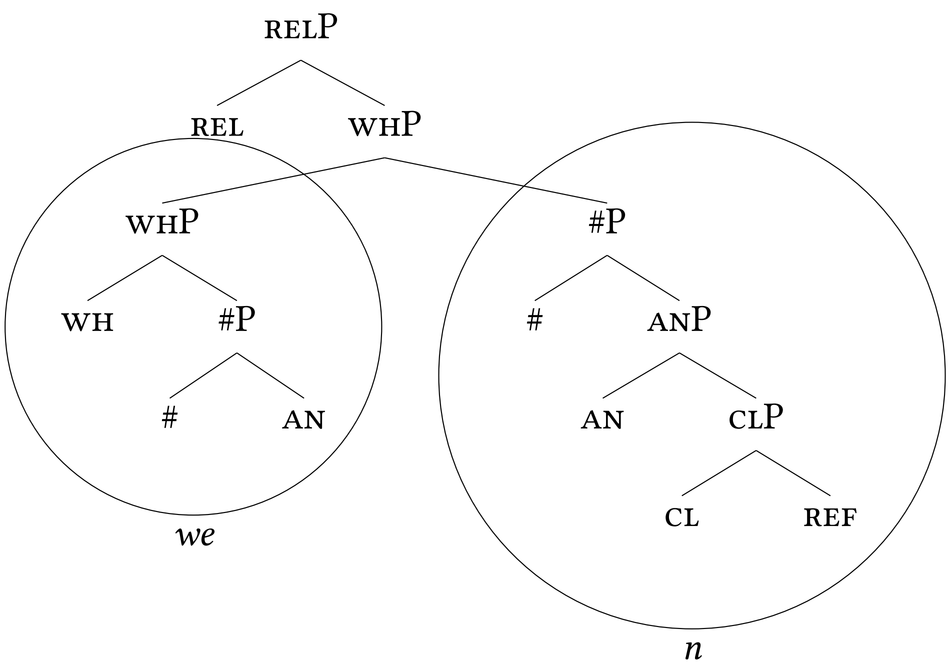
(28)



Notice here that there is an overlap of multiple features between the phrase on the right and the phrase on the left.

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 (29).

(29)



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 (29) again. The feature REL is merged with the highest WHP. In this position it cannot be spelled out. Consider now the lexical entry in (18c). 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 Caha (2019) 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 (30).[18]

(30) **The logic of backtracking** (Caha 2019: 198)
When spellout of F fails, go back to the previous cycle, and provide a different configuration for Merge F.

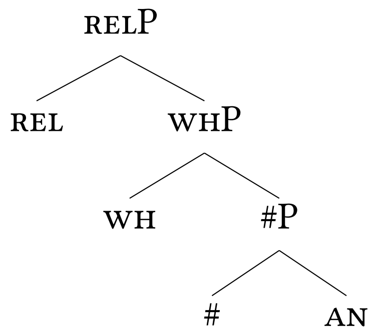
Imagine a situation in which the previous feature was spelled out with a complex specifier and the next feature reaches the derivational option Backtracking. This is exactly the situation that arises after REL is merged. Providing a different configuration means splitting up the two phrases, and then merging the feature again. Specifically, I adopt the proposal in which the feature is merged in both workspaces, as stated in (31).

(31) **Multiple Merge** (Caha 2019: 227)
When backtracking reopens multiple workspaces, merge F in each such workspace.

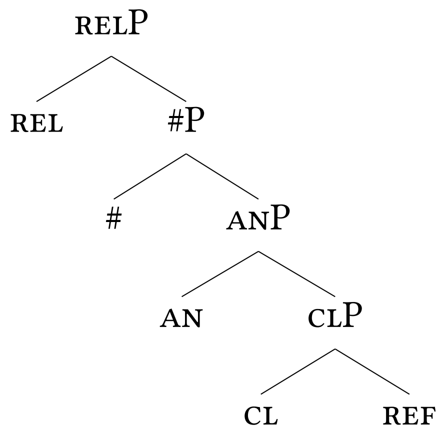
For the example under discussion, the situation looks as in (32).

[18] 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.

(32) a.



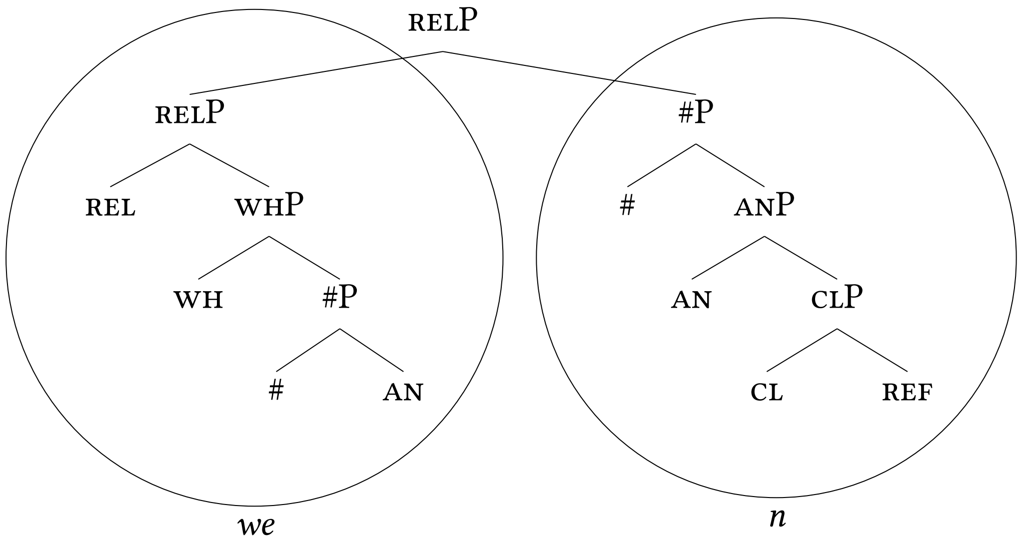
b.



The feature REL is merged in both workspaces, so it combines with the WHP in (32a) and with the #P in (32b). 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 (32), the spellout of REL is successful in the syntactic structure in (32a). This syntactic structure forms a constituent in the lexical tree in (18c), which corresponds to the *we*. There is no successful spellout for (32b), so the REL is removed from this structure. As spellout has succeeded at least once, the workspaces can be merged back together. The result is shown in (33).

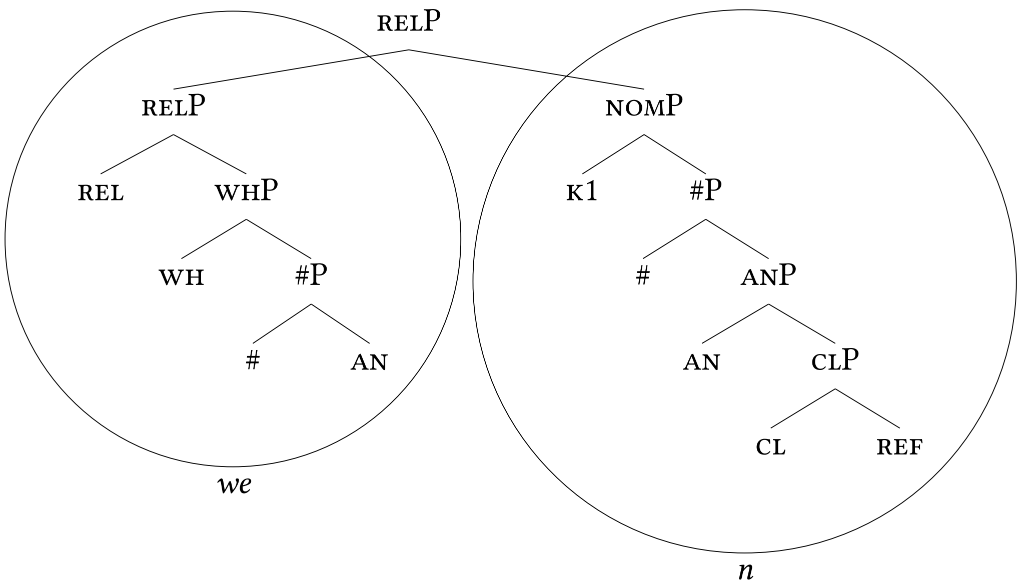
(33)



The next feature in the functional sequence is k1. This feature should somehow end up merging with #P, because it forms a constituent in the lexical tree in (18a), 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.

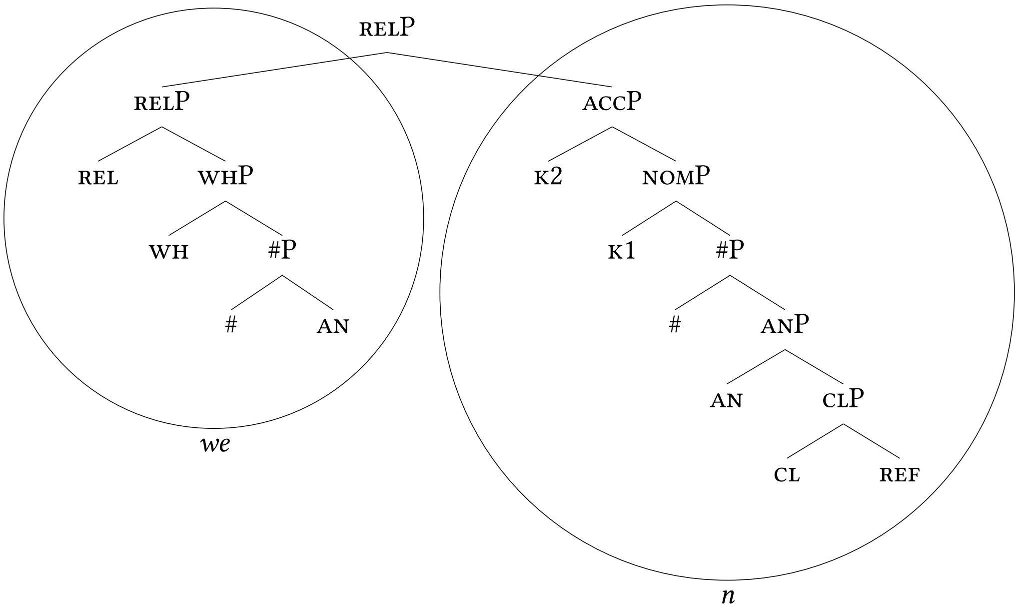
The feature k1 is merged with the existing syntactic structure, creating a nomP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the relP from the #P. The feature k1 is merged in both workspaces, so with the relP and with the #P. The spellout of k1 is successful when it is combined with the #P. It forms a constituent in the lexical tree in (18a), 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 (34).

(34)



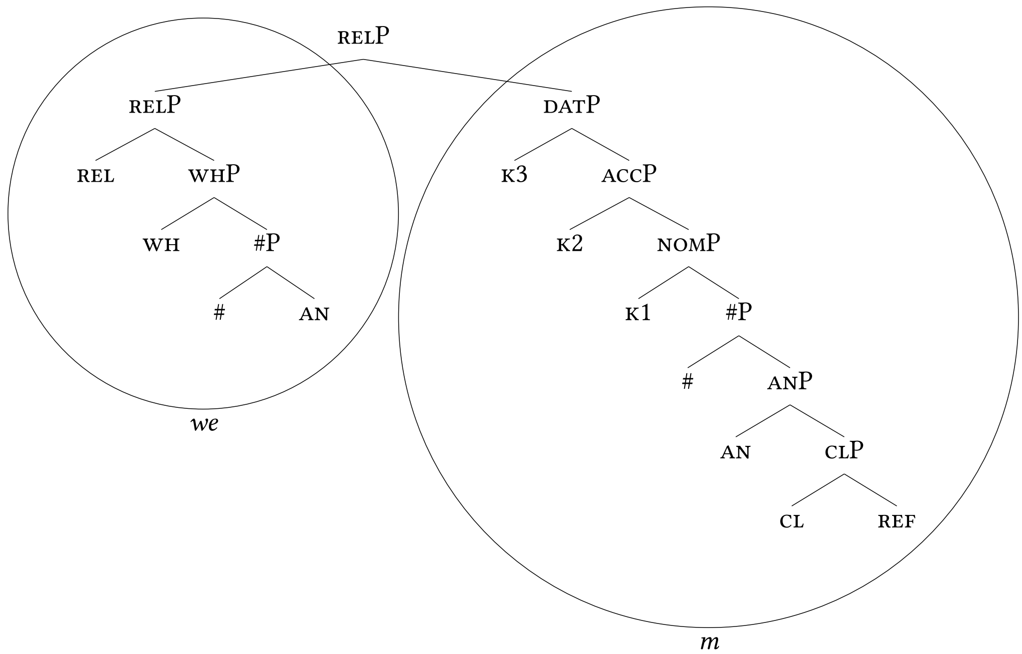
For the accusative relative pronoun, the last feature is merged: the k2. The derivation for k2 resembles the derivation of k1. The feature is merged with the existing syntactic structure, creating an accP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the relP from the nomP. The feature k2 is merged in both workspaces, so with the relP and with the nomP. The spellout of k2 is successful when it is combined with the nomP. It forms a constituent in the lexical tree in (18a), 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 (35).

(35)



For the dative relative pronoun, one more feature is merged: the k3. The derivation for k3 resembles the derivation of k1 and k2. 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 k3 is merged in both workspaces, so with the relP and with the accP. The spellout of k3 is successful when it is combined with the accP. It forms a constituent in the lexical tree in (18b). The datP is spelled out as *m*, and all constituents are merged back into the existing syntactic structure, as shown in (36).

(36)



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.

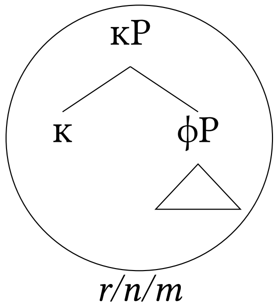
7.4 The Modern German (extra) light head

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 contained in the other one. In Chapter 6, I mentioned that languages have two possible light heads. I also noted that headless relatives in Modern German can only be derived from light-headed relatives that are headed by one of these heads. In what follows, I give arguments that exclude the second light head as a possible light head.

In this section discuss both possible light heads. I start by discussing a light-headed relative that is attested in Modern German. I consider this scenario, and I give two arguments against it. Then 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 in Modern German. I argue that this light head is the head of the light-headed relative that Modern German headless relative are derived from.

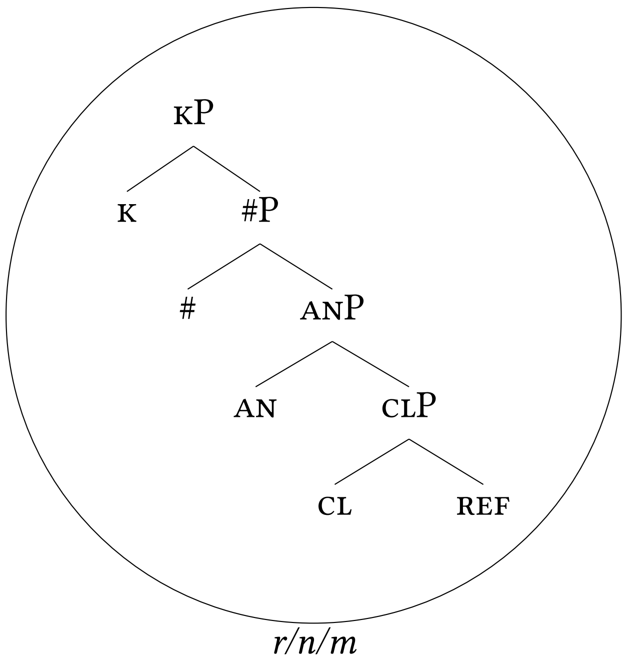
In the introduction of this chapter, I claimed that the internal syntax of light heads in Modern German looks as shown in (37).

(37)



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 (38).

(38)



I give an example of an existing Modern German light-headed relative in

(39).[19,20]

(39) Ich umarme den, wen ich mag.
I hug DEM.M.SG.ACC RP.AN.ACC I like
'I hug the man that I like.'

In (39), the relative pronoun is the WH-pronoun *wen* 'RP.AN.ACC', and the light head is the demonstrative *den* 'DEM.M.SG.ACC'.

One hypothesis is that the demonstrative *den* 'DEM.M.SG.ACC' is deleted from the light-headed relative in (39) and that the headless relative in (40) remains.[21]

[19]It seems that light-headed relatives with inanimates, as in (ia), are judged better than examples with animates (cf. Hanink, 2018, ftn. 29). In turn, examples with different cases, as in (ib), are judged worse than examples with matching cases, although they are still attested (Fuß and Grewendorf, 2014, ftn. 6).

(i) a. Ich esse das, was ich mag.
I hug DEM.N.SG.ACC RP.N.SG.ACC I like
'I eat that what I like.'
b. Wer das sagt, dem sind die mitleidigen Blicke gewiss.
RP.M.SG.NOM that says DEM.M.SG.DAT are the pitying looks certainly
'He, who says that, certainly gets pitying looks.'

I do not have an explanation for why this should be the case.

[20]At least three speakers I consulted accept the example in (39), but not every speaker of Modern German does. Most speakers prefer another light-headed relative, in which the relative pronoun is the D-pronoun, shown in (ia). This relative pronoun generally appears in relative clauses headed by a full NP, shown in (ib). A combination between a full NP and a WH-pronoun is ungrammatical, as shown in (ic).

(i) a. Ich umarme den, den ich mag.
I hug D.M.SG.ACC RP.M.SG.ACC I like
'I hug him that I like.'
b. Ich umarme den Mann, den ich mag.
I hug D.M.SG.ACC man RP.M.SG.ACC I like
'I hug the man that I like.'
c. *Ich umarme den Mann, wen ich mag.
I hug D.M.SG.ACC man RP.M.SG.ACC I like
'I hug the man that I like.'

Even though not every speaker of Modern German fully accepts the combination of *den* and *wen* in (39), almost all speakers I consulted judged it as more acceptable than the combination of a full NP and a WH-pronoun as in (ic).

[21]This is exactly what Hanink (2018) argues for. She claims that the feature content of the demon-

(40) Ich umarme, wen ich mag.
I hug RP.AN.ACC I like
'I hugs who I like.'

The demonstrative in (39) is the second possible light head that I introduced in Chapter 6. In this section I give two arguments against the hypothesis that the light-headed relative headed by the demonstrative is the source of the headless relative in Modern German. Both arguments have to do with interpretation. In Chapter 9 I discuss another argument, possibly even stronger, which concerns phonology.

The first argument I discuss in this section is that in headless relatives the phrase *auch immer* 'ever' can appear, as shown in (41).

(41) Ich umarme, wen auch immer ich mag.
I hug RP.AN.ACC ever I like
'I hug whoever I like.'

Light-headed relatives do not allow for this phrase to be inserted, illustrated in (42).

(42) *Ich umarme den, wen auch immer ich mag.
I hug DEM.M.SG.ACC RP.AN.ACC ever I like
'I hug him whoever I like.'

The second argument against the light-headed relative headed by the demonstrative being the source of the headless relative comes from the differences between the interpretation of the two constructions. Broadly speaking, the headless relative has two interpretations (see Šimík 2020 for a recent elaborate overview on the semantics of free relatives). The light-headed relative headed by the demonstrative has only one of them. I show this schematically in Table 7.6.

strative *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. Later in this section I argue that the feature content of the demonstrative is not identical to the content of the relative pronoun.

Table 7.6: Interpretations of headless and light-headed (DEM) relatives

	headless	light-headed (DEM)
definite-like	✓	✓
universal-like	✓	*

The first interpretation of the headless relative is a definite-like one. This interpretation corresponds to a definite description. Consider the context which facilitates a definite-interpretation and the repeated light-headed relative headed by the demonstrative and headless relative in (43).

(43)
a. Context: Yesterday I met with two friends. I like one of them. The other one I do not like so much.

b. Ich umarme den, wen ich mag.
I hug DEM.M.SG.ACC RP.AN.ACC I like
'I hug who I like.'

c. Ich umarme, wen ich mag.
I hug RP.AN.ACC I like
'I hugs who I like.'

A definite-like interpretation is one in which I hug the person that I like. The interpretation is available for the headless relative and for the light-headed relative headed by the demonstrative.

The second interpretation of the headless relative is a universal-like one. This interpretation corresponds to a universal quantifier. Consider the context which facilitates a universal-interpretation and the repeated light-headed relative headed by the demonstrative and headless relative in (44a).

(44)
a. I have a general habit of hugging everybody that I like.

b. #Ich umarme den, wen ich mag.
I hug DEM.M.SG.ACC RP.AN.ACC I like
'I hug who I like.'

c. Ich umarme, wen ich mag.
I hug RP.AN.ACC I like
'I hug who I like.'

A universal-like interpretation is one in which I hug everybody that I like.

This interpretation is available for the headless relative, but not for the light-headed relative headed by the demonstrative.

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, Šimík (2020: 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 light-headed relative headed by the demonstrative being the source of the headless relative. In what follows, I show how the presence of the demonstrative leads to having only the definite-like interpretation. I suggest that the problem lies in the feature content of the demonstrative. I point out how the feature content should be modified such that it is a suitable light head for a headless relative.

As I have said, the light head is a demonstrative. A demonstrative refers back to a linguistic or extra-linguistic antecedent. Consider the context in (43) again. The demonstrative *den* in the light-headed relative headed by the demonstrative refers back to the friend of Jan that he likes, and the construction is grammatical. Now consider the context in (44a) again. In this case, there is no antecedent for the demonstrative *den* to refer back to, and the structure is infelicitous.

I decompose the demonstrative *den* into different morphemes 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 is 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.[22]

So far, I established that the light-headed relative headed by the demonstrative cannot be the source from which the headless relative is derived. With that I conclude that, even though Modern German has the second possible light head in its language, due to its meaning it cannot be part of the light-

[22]In Chapter 9 I describe in more detail what features (the Old High German counterpart of) *de* corresponds to.

headed relative that Modern German headless relatives are derived from. Still, since I assume that headless relatives are derived from light-headed relatives, 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 demonstrative: it is an extra light head.

I suggest that the extra light head is the element that is left once the morpheme *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 headless relative is derived from in (45). The brackets around the light head indicate that it is deleted.

(45) Ich umarme [n], wen ich mag.
I hug ELH.AN.ACC RP.AN.ACC I like
'I hug who I like.'

In the remainder of this section, I discuss the two extra light heads that I compare the internal syntax of in Section 7.5. These are the accusative animate and the dative animate, shown in (46).[23]

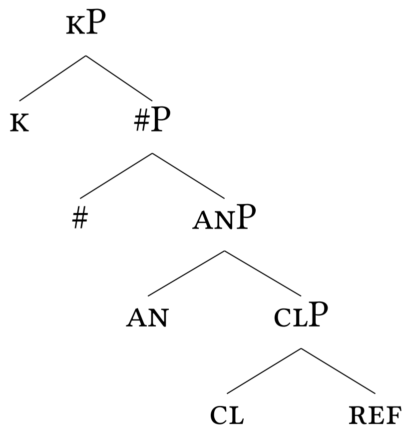
(46) a. n 'ELH.AN.ACC'
b. m 'ELH.AN.DAT'

These forms surface in the language as pronouns in colloquial speech. However, they do not surface as light heads in a light-headed relative. In Section 7.6 I return to this point.

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 (47).

[23] Again, for reasons of space, I do not discuss the nominative form. I assume its analysis is identical to the one I propose for the accusative and the dative.

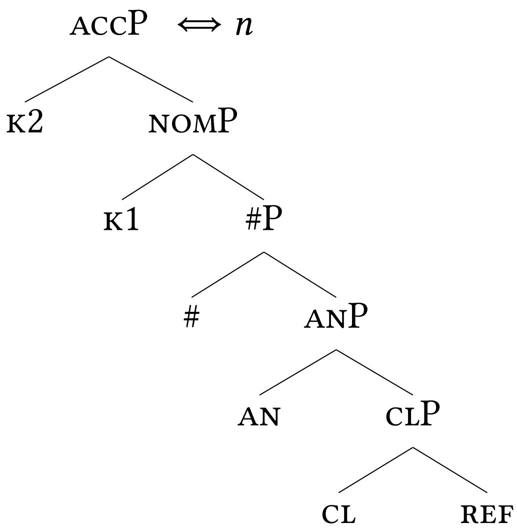
(47)



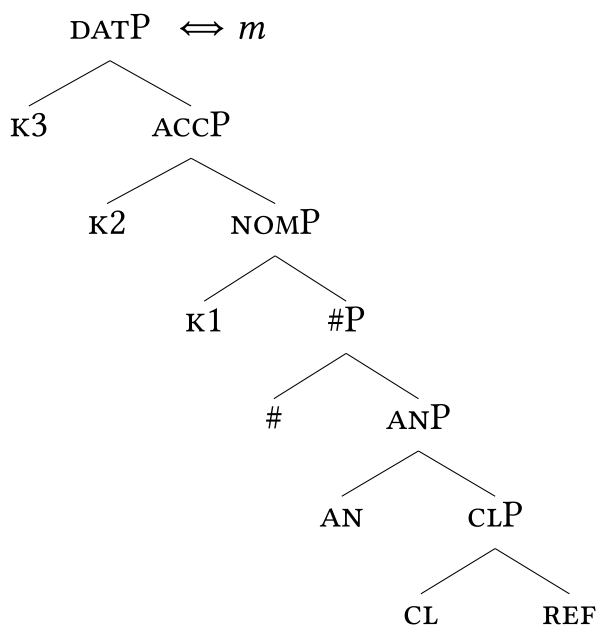
It contains the pronominal feature REF, the gender features CL and AN, the number feature # and case features K.

I introduced the lexical entries that are required to spell out these features in Section 7.1. I repeat them in (48).

(48) a.



b.

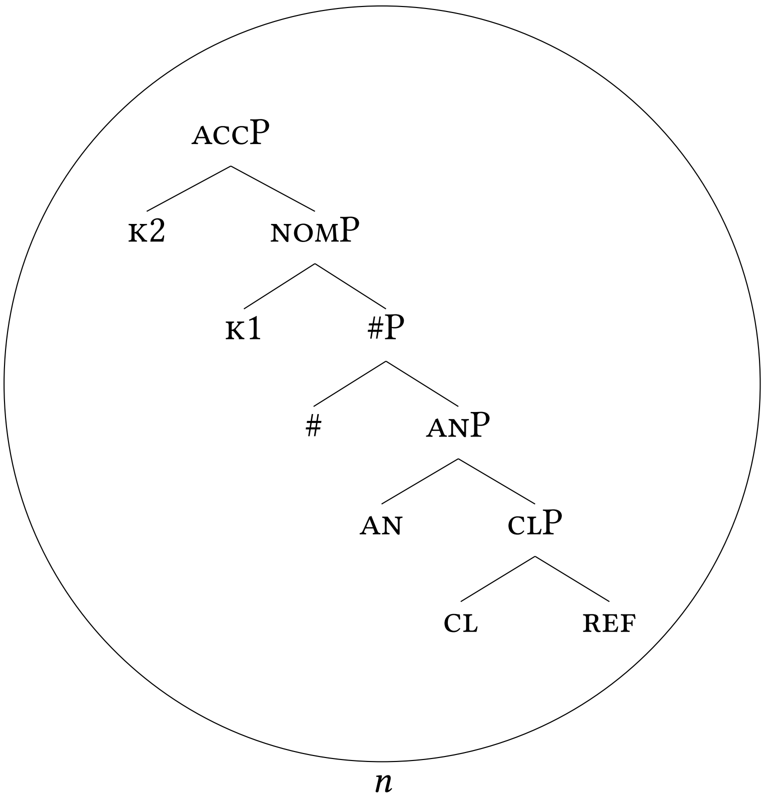


The derivations of the extra light heads are straight-forward ones. The features are merged one by one, and after each new phrase is created, it is spelled out as a whole. I still go through them step by step.

First, the features ref and cl are merged, and the clP is created. The syntactic structure forms a constituent in the lexical tree in (48a). Therefore, the clP is spelled out as *n*. Exactly the same happens for the features an, # and k1. They are merged, they form a constituent in the lexical tree in (48a), and they are spelled out as *n*.

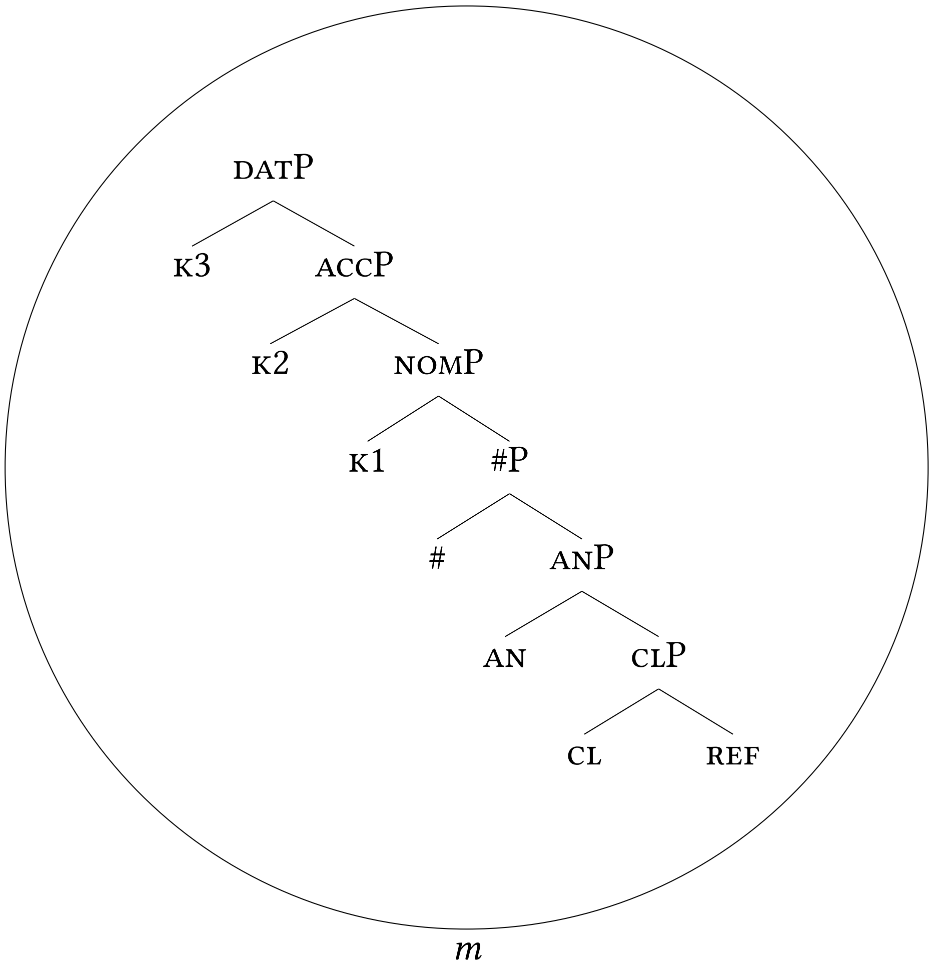
The last feature that is merged for the accusative extra light head is the k2. It is merged, and the accP is created. The syntactic structure forms a constituent in the lexical tree in (48a). Therefore, the accP is spelled out as *n*, as shown in (49).

(49)



For the dative extra light head another feature is merged: the k3. The feature k3 is merged, and the datP is created. The syntactic structure forms a constituent in the lexical tree in (48b). Therefore, the datP is spelled out as *m*, as shown in (50).

(50)



In sum, Modern German headless relatives are derived from a 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 pronoun.

7.5 Comparing light heads and relative pronouns

In this section, I compare the internal syntax of extra light heads to the internal syntax 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 comparisons for Modern German specifically, and that the content of the internal syntax that is being compared is motivated earlier in this chapter.

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 structurally contained in the relative pronoun, and that it can therefore then be deleted. In the third example, neither the light head nor the relative pronoun is structurally contained in the other element. I do not discuss formal containment in this chapter, because it never leads to a successful deletion when structural containment does not.

I start with the situation in which the cases match. Consider the example in (51), 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.

(51) Ich lade [n] ein, **wen** **auch**
1SG.NOM invite.PRES.1SG$_{[ACC]}$ ELH.AN.ACC RP.AN.ACC also
Maria **mag**.
Maria.NOM like.PRES.3SG$_{[ACC]}$
'I invite who Maria also likes.'
(Modern German, adapted from Vogel 2001: 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.

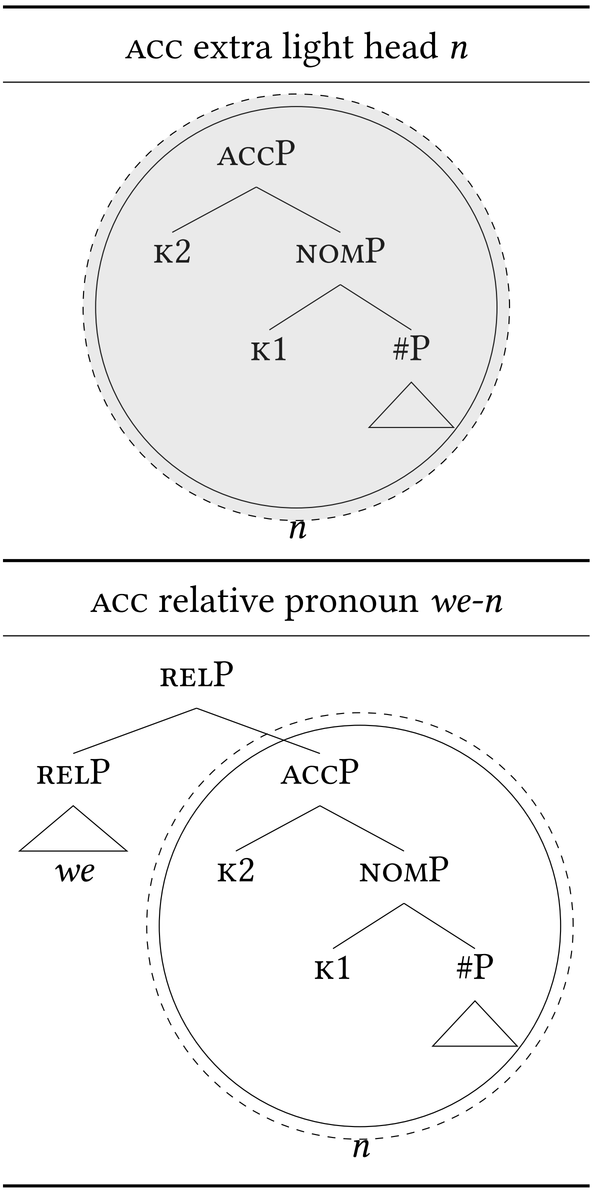


Figure 7.3: Modern German ext$_{\text{ACC}}$ vs. int$_{\text{ACC}}$ → *wen*

The extra light head consists of a single morpheme: *n*. The relative pronoun consists of two morphemes: *we* and *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 the accP, as it is the biggest possible element that is structurally contained in both the extra light head and the relative pronoun.

The extra light head consists of a single morpheme: the accP. This accP is structurally contained in 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 element is the relative pronoun that bears the internal case: *wen*.[24]

For reasons of space I do not show the comparisons of the other matching situations. These are situations in which both the internal and external case are nominative or both the internal and external case are dative. The same logic as I showed in Figure 7.3 works for these situations too.

I continue with the situation in which the internal case is the more complex one. Consider the example in (52), 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.

(52) Ich lade [n] ein, **wem auch**
1SG.NOM invite.PRES.1SG$_{[ACC]}$ ELH.AN.DAT RP.AN.DAT also
Maria vertraut.
Maria.NOM trust.PRES.3SG$_{[DAT]}$
'I invite whoever Maria also trusts.'
(Modern German, adapted from Vogel 2001: 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 extra light head consists of a single morpheme: *n*. The relative pronoun consists of two morphemes: *we* and *m*. I draw a dashed circle around the ACCP, as it is the biggest possible element that is structurally a constituent in both the extra light head and the relative pronoun.

The extra light head consists of a single morpheme: the ACCP. This ACCP is structurally contained in 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 element is the relative pronoun that bears the internal case: *wem*.[25]

[24]The relative pronoun (*wen*) also formally contains the extra light head (*n*). The extra light head could also be deleted via formal containment.

[25]Here the relative pronoun (*wem*) does not formally contain the extra light head (*n*). The extra

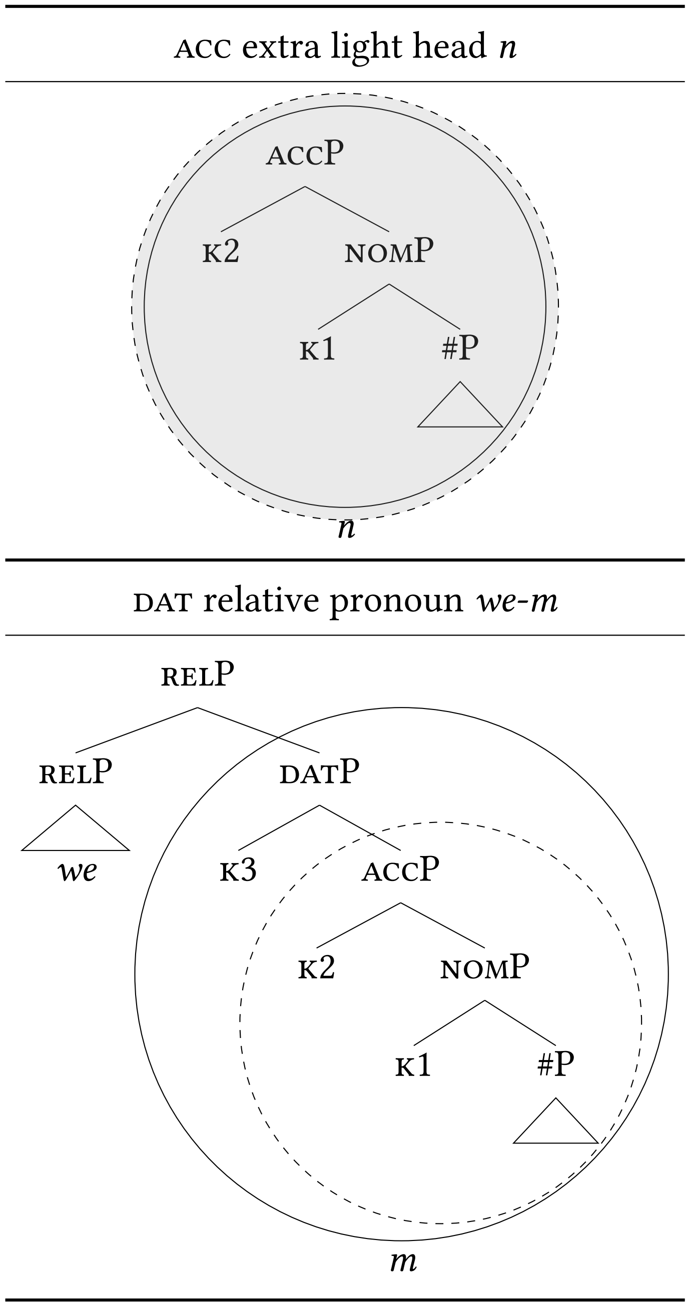


Figure 7.4: Modern German EXT_{ACC} vs. INT_{DAT} → *wem*

For reasons of space I do not show the comparisons of the other situations in which the internal case is more complex. These are situations in which the internal case is dative and the external case is nominative and in which the internal case is accusative and the external case is nominative. The same logic as I showed in Figure 7.4 works for these situations too.

I end with the situation in which the external case is the more complex one. Consider the examples in (53), 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. (53a) 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. (53b) 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.

(53) a. *Ich vertraue [m], **wen** **auch**
1SG.NOM trust.PRES.1SG$_{\text{[DAT]}}$ ELH.AN.DAT RP.AN.ACC also
Maria **mag**.
Maria.NOM like.PRES.3SG$_{\text{[ACC]}}$
'I trust whoever Maria also likes.'
(Modern German, adapted from Vogel 2001: 345)

b. *Ich vertraue m, [**wen**] **auch**
1SG.NOM trust.PRES.1SG$_{\text{[DAT]}}$ ELH.AN.DAT RP.AN.ACC also
Maria **mag**.
Maria.NOM like.PRES.3SG$_{\text{[ACC]}}$
'I trust whoever Maria also likes.'
(Modern German, adapted from Vogel 2001: 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.

The extra light head consists of a single morpheme: *m*. The relative pronoun consists of two morphemes: *we* and *n*. I draw a dashed circle around

light head cannot be deleted via formal containment but only via structural containment.

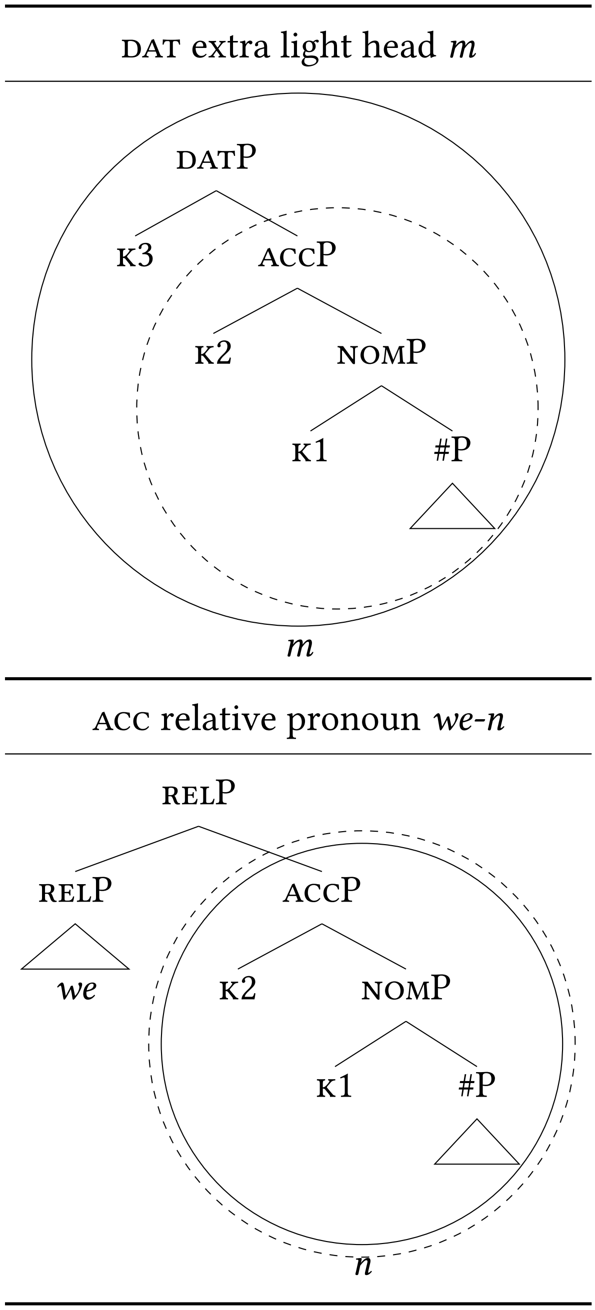


Figure 7.5: Modern German ext$_{\text{dat}}$ vs. int$_{\text{acc}}$ $\not\rightarrow$ *m*/*wen*

the AccP, as it is the biggest possible element that is structurally a constituent in both the extra light head and the relative pronoun.

In this case, the light head is not structurally contained in the relative pronoun. The extra light head consists of a single morpheme: the DatP. The relative pronoun only contains the AccP, and it lacks the K3 that makes a DatP. Since the weaker feature containment requirement is not met, the stronger constituent containment requirement cannot be met either.[26]

The relative pronoun is not structurally contained in the light head. It 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.[27]

For reasons of space I do not show the comparisons of the other situations in which the external case is more complex. These are situations in which the internal case is nominative and the external case is accusative and in which the internal case is nominative and the external case is dative. The same logic as I showed in Figure 7.5 works for these situations too.[28]

---

[26]The relative pronoun contains the AccP, so in principle the AccP could be deleted. Then a new spellout has to be found for the DatP that only contains F3. As this lexical entry does not exist, the structure is ruled out.

[27]None of the elements can be deleted via formal containment either. The relative pronoun *wen* and the extra light head *m* do not show any formal containment.

[28]What I sketched in this section is true for the headless relatives with animates that I gave examples of in Chapter 4. It does not hold for headless relatives with inanimates, which I already briefly mentioned in Chapter 6. I repeat the relevant example in (i), including the extra light head which I assume to be there.

(i)	Ich	erzähle	[s],	**was**	**immer**	**mir**	**gefällt**.
	1SG.NOM	tell.PRES.1SG$_{[\text{ACC}]}$	ELH.INAN.ACC	RP.INAN.NOM	ever	1SG.DAT	pleases.PRES.3SG$_{[\text{NOM}]}$

'I tell whatever pleases me.' (Modern German, adapted from Vogel 2001: 344)

In (i), 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 *gefallen* 'to please' takes nominative objects. The relative pronoun *was* 'REL.INAN.NOM' appears in the nominative case. This is the element that surfaces The external case is accusative, as the predicate *erzählen* 'to tell' takes accusative objects. The extra light head *s* 'ELH.INAN.ACC' appears in the accusative case. It is placed between square brackets because it does not surface. For inanimates, there is a syncretism between nominative and accusative. In these cases, the extra light head can be deleted via formal containment. In what follows, I briefly describe the comparison.

The inanimate accusative extra light head consists of a single morpheme (*s*). The inanimate nominative relative pronoun consists of two morphemes (*wa* and *s*) (see Section 7.2.3). The extra light head (the AccP realized by *s*) is formally contained in the relative pronoun (the RelP realized by *wa-s*). Therefore, the extra light head can be deleted, and the surface element is the relative pronoun that

7.6 Summary and discussion

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 is shown in Figure 7.6.

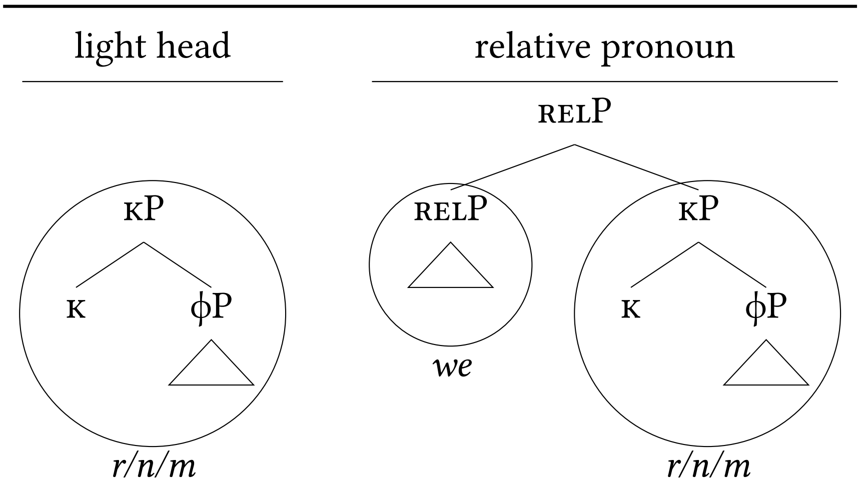


Figure 7.6: ELH and RP in Modern German (repeated)

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 structurally contained in 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 external case is the more complex one, neither the light head nor the relative pronoun is structurally contained in the other element. None of the elements can be deleted, and there is no grammatical headless relative possible.

bears the external case: *was*.

It remains an open question why the extra light head cannot surface as the head of a relative clause. A possible answer comes from drawing a parallel between the two possible light heads and two other forms that are morphologically identical to them. These are the strong and weak definite in Schwarz (2009). Schwarz's (2009) strong definite is anaphoric in nature, and the weak definite encodes uniqueness. I give an example of a strong definite in (54). The strong definite is *dem*, and *dem Freund* 'the friend' refers back to the linguistic antecedent *einen Freund* 'a friend'.

(54) Hans hat heute einen Freund zum Essen mit nach Hause
Hans has today a friend to the dinner with to home
gebracht. Er hat uns vorher ein Foto von dem Freund
brought he has us beforehand a photo of the$_{\text{STRONG}}$ friend
gezeigt.
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 (55). In (55a), the dog is unique in this specific situation of the break-in. In (55b), the moon is unique for us people on the planet. As such, the weak definites *m* in *vom Hund* 'by the dog' and in *zum Mond* 'to the moon' are used.

(55) a. Der Einbrecher ist zum Glück vom Hund verjagt
the burglar is luckily by the$_{\text{WEAK}}$ dog chased away
worden.
been
'Luckily, the burglar was chased away by the dog.'

b. Armstrong flog als erster zum Mond.
Armstrong flew as first one to the$_{\text{WEAK}}$ moon
'Armstrong was the first one to fly to the moon.'
(Modern German, Schwarz 2009: 40)

Dem in (54) is morphologically identical to the demonstrative, and the two instances of *m* in (55) are identical to the extra light head.

The meaning of Schwarz's (2009) strong definite seems similar to the meaning of the demonstrative in the light-headed 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 the weak definite and extra light head differ slightly after all. Another possibility is that the fact that his form combines with a preposition and an overt noun leads to a change in interpretation.

Coming back to why the extra light head never surfaces as a head of the relative clause, consider the sentence in (56).

(56) *Fritz ist jetzt im Haus, das er sich letztes Jahr gebaut hat.
Fritz is now in.the house that he REFL last year built has
'Fritz is now in the house that he built last year.'
(Modern German, Schwarz 2009: 22 after Hartmann 1978: 77)

Just as the extra light head, the weak definite cannot be the head of a relative clause.

Now consider (57).

(57) Fritz ist jetzt in dem Haus, das er sich letztes Jahr gebaut hat.
Fritz is now in the house that he REFL last year built has
'Fritz is now in the house that he built last year.'
(Modern German, Schwarz 2009: 22 after Hartmann 1978: 77)

If the weak definite is replaced with the strong definite, the sentence becomes grammatical. Possibly, whatever causes the ungrammaticality of (56) also rules out a light-headed relative headed by the extra light head.

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.

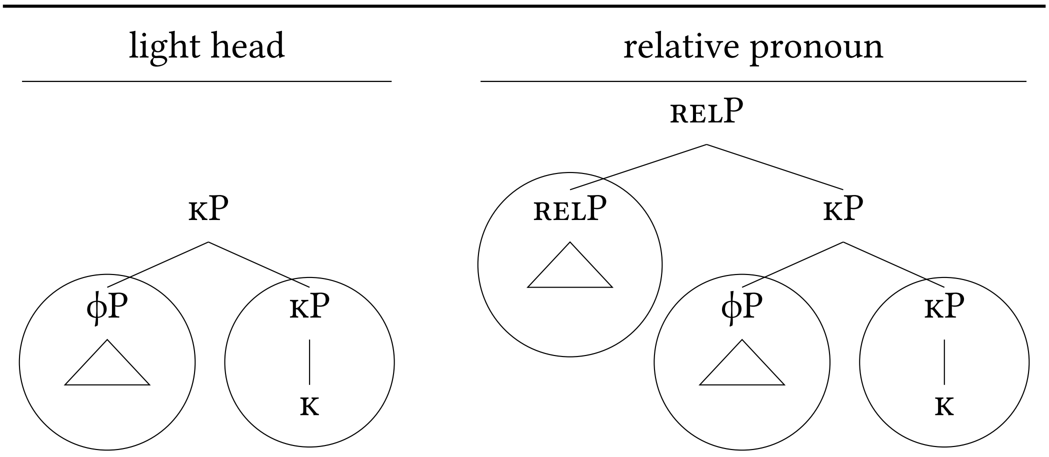


Figure 8.1: lh and rp in the matching type

These lexical entries lead to the grammaticality pattern shown in Table 8.1.

Table 8.1: Grammaticality in the matching type (repeated)

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$\text{K}_{\text{INT}} = \text{K}_{\text{EXT}}$	[K$_1$], [ϕ]	[REL], [K$_1$], [ϕ]	structure	LH	RP$_{\text{INT}}$
$\text{K}_{\text{INT}} > \text{K}_{\text{EXT}}$	[K$_1$], [ϕ]	[REL], [K$_2$[K$_1$]], [ϕ]	no	none	*
$\text{K}_{\text{INT}} < \text{K}_{\text{EXT}}$	[K$_2$[K$_1$]], [ϕ]	[REL], [K$_1$], [ϕ]	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 structurally contained in 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 which the internal case would win 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 (K$_2$ 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 structurally contained in 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 would win 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 structurally contained in 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.

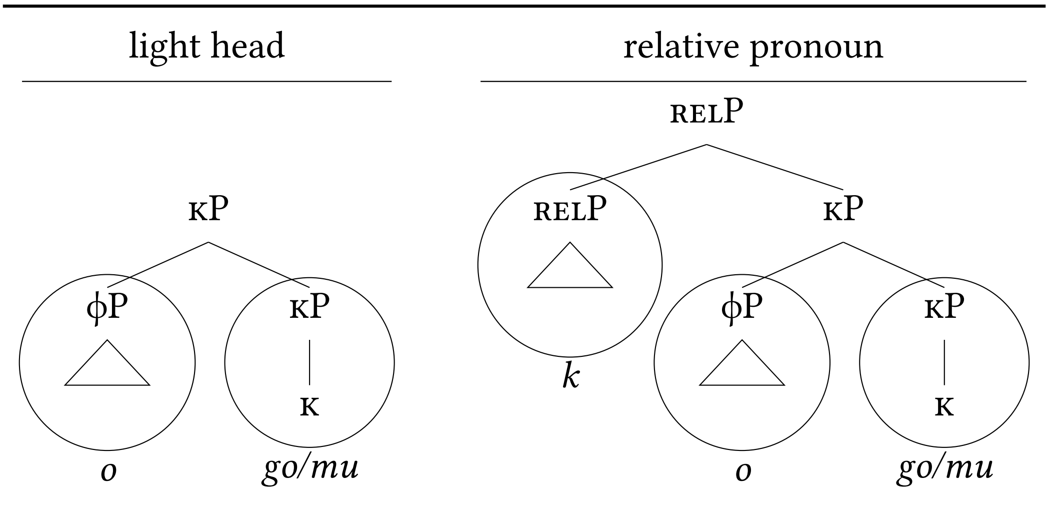


Figure 8.2: lh and rp in Polish

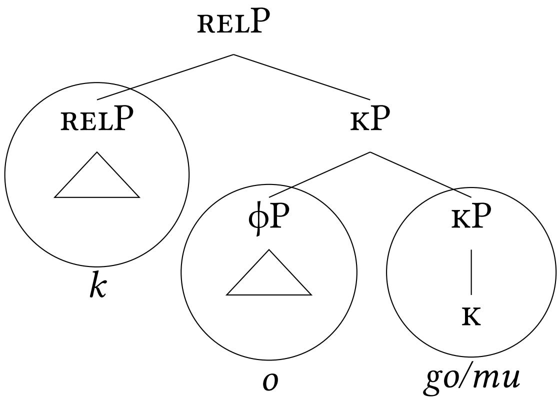
Consider the light head in Figure 8.2. Light heads (i.e. the phi and case features) in Polish are spelled out by two morphemes, which are both circled. The phi features are spelled out as *o* and the case features are spelled out as *go* or *mu*, depending on which case they realize. Consider the relative 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 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 two of the morphemes of the relative pronoun (the ϕP and 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 internal syntax 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).

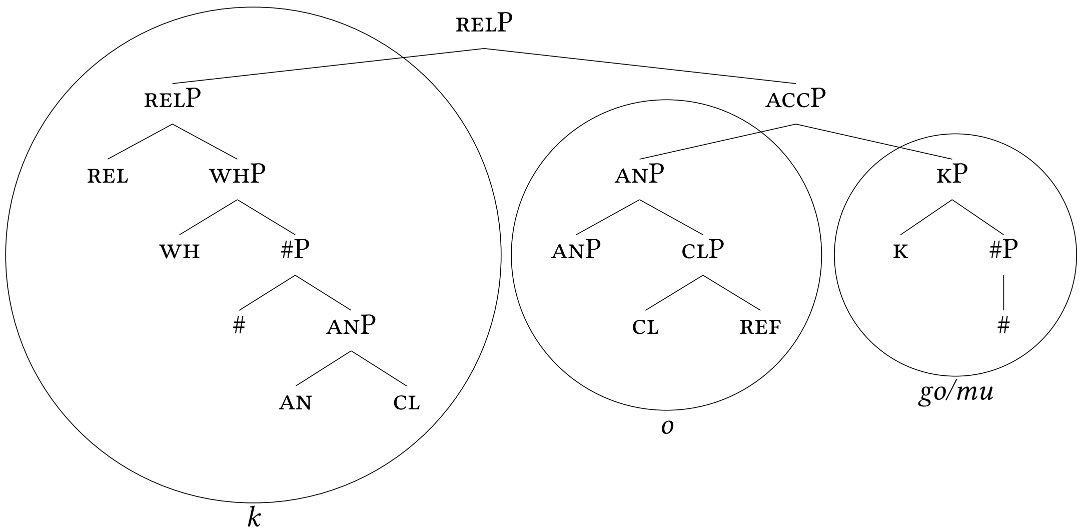
(1)



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 internal syntax 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.

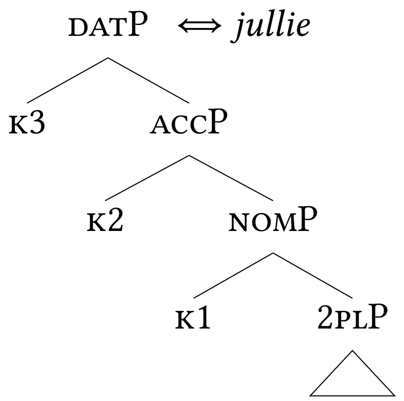
Table 8.2: Syncretism in dative neuter pronouns in Polish (Swan 2002: 156,171)

	M.DAT	N.DAT
je-pronoun	je-mu	je-mu
n-pronoun	nie-mu	nie-mu
DEM	te-mu	te-mu

The table shows three forms: the *je*-pronoun (the long version of the third person singular pronoun), the *n*-pronoun (the third person singular pronoun used after prepositions) (Swan 2002: 156-157), and the DEM (the demonstrative). In all three forms 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 most features. To illustrate this, I repeat the lexical entry for the Dutch *jullie* 'you' in (4).

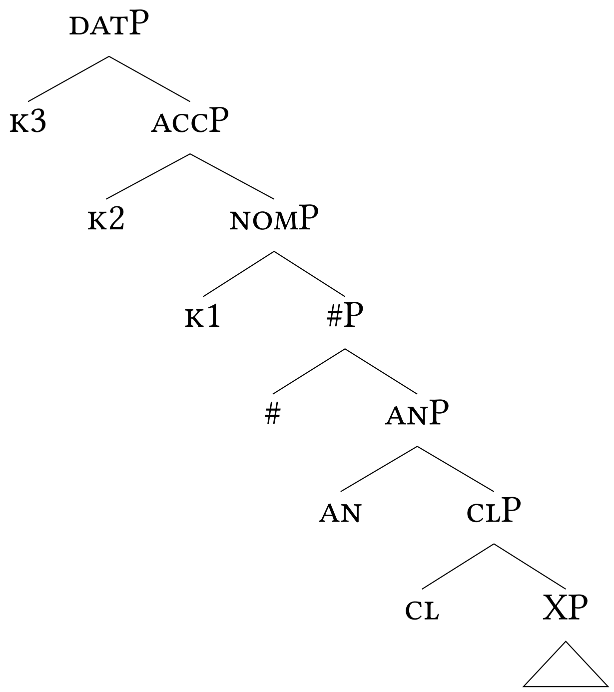
(4)



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 K3 or K3 and the K2) are the top-most features of the lexical tree in (4), so that the constituent that needs to be spelled out is still contained in the lexical tree.

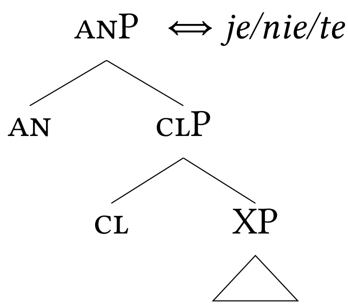
In what follows, I show how I can derive the syncretisms for the forms in Table 8.2. I propose that *jemu*, *niemu* and *temu* spell out the syntactic structure in (5).

(5)



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 # for singular number and case features up to the dative.

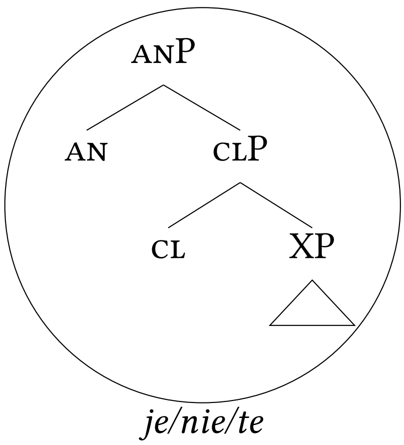
The forms *jemu*, *niemu* and *temu* are syncretic between the masculine and the neuter. This can be captured if the highest feature in the lexical tree is the feature that distinguishes masculine and neuter gender. This distinguishing feature is the feature AN (Harley and Ritter, 2002), which is not the highest feature in (5). Fortunately, different from *jullie*, *jemu*, *niemu* and *temu* are (at least) 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*, as shown in (6).[1]

(6)


This means that *je*, *nie* and *te* spell out gender features and other features, which differ per form and I call XP here.

Since the feature AN is the topmost feature in the lexical tree, it can spell out a structure with or without the feature AN. This means that *je*, *nie* and *te* correspond to the masculine or to the neuter form.

In (7), I give the syntactic structure of a masculine form.

(7)


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.

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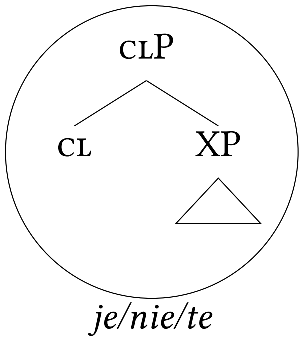
[1]Actually, I assume *je*, *nie* and *te* to be morphologically complex, but I do not discuss this, as this is not relevant for the discussion here.

(8)

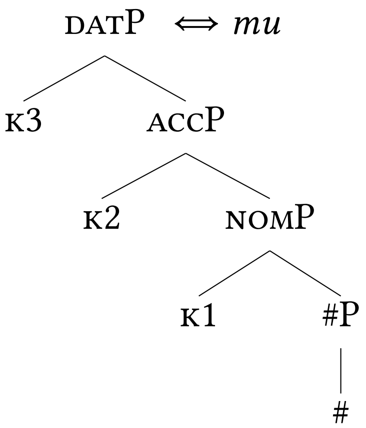


Again, the syntactic structure forms a constituent within the lexical tree in (6), and the structure can be spelled out as *je/nie/te*.

This means that the lexical tree for the suffix *mu* should contain all features in the functional sequence in (5) that are not spelled out by *je/nie/te* so far. These are the number feature and all case features up to the dative.

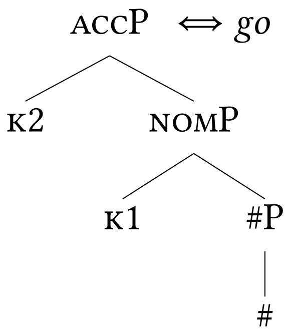
I give the lexical entry for *mu* in (9).

(9)



Notice here that *mu* has a unary bottom, meaning that it has a single feature at the bottom of its structure (just as the morpheme *e:l* in Khanty, see Chapter 3 and Chapter 6). Therefore, it is inserted as the result of movement. It also means that the inserted phonological 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. Later on in this section, I illustrate the movement operation and how it is a step of the Spellout Algorithm.

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 k3 in its lexical entry, as shown in (10).

(10) 

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 pronominal environments, even though it does not surface as an *o*. Consider the relative pronouns in Table 8.3.

Table 8.3: Polish (in)animate relative pronouns (Swan 2002: 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. In the genitive, dative and instrumental, the final suffixes in the animate and the inanimate paradigm are the same.[2] The forms differ

[2] 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.

in their initial consonant and the vowel. The animates have a *k* and an *o* or *i*, and the inanimates have a *cz* and an *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*, *ki*, *cze* and *czy*. The point that is missed then is that the animates always have a *k* and inanimates always have a *cz*.

A second possibility that captures this last observation is an analysis in which Polish has the morphemes *k*, *o*, *i* and *cz*, *e* and *y*.[3] What is not captured now is that numerous WH-elements in Polish start with a *k*. I give some examples in (11).[4]

(11) a. k-tóry
which

b. k-iedy
when

c. g-dzie
where

(Polish, Swan 2002: 180,183,184)

Moreover, according to Swan (2002: 23) *cz* is not a primary consonant in Polish but a derived one, and the consonants *cz* and *c* are derived from *k*. In other words, the *k* goes to *c* in some morphophonological environments, and the *k* goes to *cz* in other morphophonological environments.

I propose that one of the environments in which *k* goes to *c* and *cz* is the inanimate relative pronouns. I suggest that the morphophonological environment that turns *k* into *c* and *cz* is the presence of an *i* in the inanimate relative pronoun paradigm.[5] The presence of *i* also causes other phonological changes to take place. In the animate relative pronoun these phonological changes do not take place, since there the morpheme *i* is not present.[6]

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.

[3] This is more or less what Wiland (2019) proposes.

[4] The *k* in (11c) gets voiced into *g* because it is followed by *d*.

[5] Phonologically, the *k* corresponds to /k/, the *c* corresponds to /ts/ and the *cz* corresponds to the /tʂ/ (Swan 2002: 7). For readability I give the orthographic forms and not the phonological ones in this section.

[6] As first sight, there seems to be a contradiction here: the inanimate is featurally speaking less

In Table 8.4, I show the animate relative pronouns on the left and what I propose to be the underlying forms of the inanimate relative pronouns on the right.[7]

Table 8.4: Underlying forms of Polish (in)animate relative pronouns

	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. I place the underlying forms and the surface form of the inanminate relative pronoun side by side in Table 8.5.

Table 8.5: Underlying and surface forms of Polish inanimate relative pronouns

	underlying	surface
NOM	k-i-o	c-o
ACC	k-i-o	c-o
GEN	k-i-o-go	cze-go
DAT	k-i-o-mu	cze-mu
INS	k-i-i-m	czy-m

complex than the animate (cf. Harley and Ritter, 2002), but morphologically the inanimate is more complex than the animate: it contains the additional morpheme *i*. I return to this point in footnote 13 of this chapter to show how this apparent contradiction can be resolved.

[7] I do not decompose the animate nominative relative pronoun (unlike Wiland 2019, who identifies the *t* as the demonstrative stem). My reason for not decomposing *kto* is that it does not contain a suffix that can be observed elsewhere in the language (unlike the other cases which can be found in for instance adjectival inflection, see Swan 2002126). Therefore, I assume *kto* to be a fixed expression. I do not give a detailed analysis of the pronoun, as it is not a form I discuss in my derivations.

The sequence *k-i-i* becomes *czy* in the instrumental, and the sequence *k-i-o* becomes *cze* in the genitive and dative.[8] To get from the underlying form to the surface form, several phonological processes are taking place, which are all independently observed within Polish. I go through them one by one. In the discussion I use the orthographic counterparts of the sounds, since the evidence I provide can also be observed in orthography. Below the rules that I introduce I give the IPA symbols to make clear to which sounds the orthography corresponds. First I discuss the instrumental, in which *k-i-i* becomes *czy*.

I start with the combination of *k* and *i* becoming *c*, as shown in (12).

(12) *k* + *i* ⟶ *c*
/k/ + /i/ ⟶ /t͡s/

Consider the paradigm for the singular of *lampa* 'light' and the singular of *córka* 'daugther' in Table 8.6.

Table 8.6: Polish feminine nouns with hard p/k stem (Swan 2002: 47,49)

	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.[9] There, the stem of *córka* does no longer end with a *k*, but with a *c*. Also, part of the suffix, the *i*, has disappeared. Analyzing *córce* as *córk-i-e* brings back regularity in the paradigm. Assuming that this change also takes place in the inanimate relative pronoun, the result of this change is *c-i-m*.

I continue with the combination of *c* and *i* becoming *czy*, as shown in (13).

(13) a. *c* + *i* ⟶ *czy*
/t͡s/ + /i/ ⟶ /t͡ʂɨ/

[8] Under this analysis, the WH-element *czyj* 'whose' is underlyingly *k-i-i-j*.

[9] There is also the change from *i* to *y* in the genitive of *lampa*.

This change can be independently observed in (14).

(14) walc-ik: walczyk
waltz-DIM waltz.DIM

(Swan 2002: 26)

The noun *walc* 'waltz' combines with the diminutive marker *ik*. The sequence *c-ik* changes to *czyk*. Assuming that this change also takes place in the inanimate relative pronoun, the result of this change is *czy-m*.

I repeat the table with the underlying and surface forms in Table 8.7. Compare the nominative and the accusative to the genitive and the dative.

Table 8.7: Underlying and surface forms of Polish inanimate relative pronouns

	underlying	surface
NOM	k-i-o	c-o
ACC	k-i-o	c-o
GEN	k-i-o-go	cze-go
DAT	k-i-o-mu	cze-mu
INS	k-i-i-m	czy-m

The sequence *k-i-o* changes into *co* in the nominative and accusative. The same *k-i-o* sequence turns into *cze* in the genitive and dative. This raises the question of how two identical sequences can lead to two different outcomes.

I start by looking at the nominative and the accusative. Here only one phonological change seems to take place, which is the combination of *k* and *i* becoming *c*, which I also showed for the instrumental. I repeat it in (15).

(15) $k + i \longrightarrow c$
/k/ + /i/ ⟶ /t͡s/

Assuming that this change also takes place in the inanimate relative pronoun, the result of this change is *co*.

Now consider the genitive and the dative. If here only the *k* plus *i* becomes *c* change takes place, the result would be *c-o-go*/*c-o-mu*, which is incorrect. The sequence *c-o* should somehow still change into *cze*. Now assume that in the genitive and the dative the *i* would have double effect, meaning that it also has an influence on the vowel *o*. Before I discuss how the *i* can sometimes have a double effect and sometimes single effect, I show that the required phonological processes are attested in Polish.

I start with the combination of *i* and *o* becoming *e*, as shown in (16).

(16) *i* + *o* ⟶ *e*
/i/ + /o/ ⟶ /ɛ/

Consider the paradigm for the singular of *biurko* 'desk' and the singular of *słońce* 'sun' in Table 8.8.

Table 8.8: Polish neuter nouns with hard k/c stem (Swan 2002: 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*. Remember that the *c* is not a primary consonant in Polish (Swan 2002: 23) and that it is possibly derived from a combination of *k* and *i* (see (15)). Analyzing *słońc-e* as *słońk-i-o* brings back regularity in the paradigm.[10] Assuming that this change also takes place in the inanimate relative pronoun, the result of this change is *c-e-go*/*c-e-mu*.

I continue with the change in which the combination of *c* and *e* become *cze*, as shown in (17).

(17) *c* + *e* ⟶ *cze*
/t͡s/ + /ɛ/ ⟶ /t͡ʂɛ/

I give the example in which the combination of *c* and *e* results in *cze* in (18).

[10]Under this analysis, *słońc-a* and *słońc-u* are underlyingly *słońk-i-a* and *słońk-i-u*. In these two forms, the *i* would need to change the *k* into a *c* but not affect the vowel.

(18) ojc-e: ojcze
father-voc father.voc

(Swan 2002: 26)

The noun *ojc* 'father' combines with the vocative marker *e*. The sequence *c-e* changes to *cze*. Assuming that this change also takes place in the inanimate relative pronoun, the result of this change is *cze-go*/*cze-mu*.

It is crucial for the analysis that the *i* in *co* has a single effect, and it only affects the initial consonant. In the genitive and the dative there is a double effect, and both the initial consonant and the vowel are affected. I propose that this difference is not due to a difference in the *i*, but a difference in the *o*. Morphologically, the *o* in the genitive and dative spells out different features than the *o* in the nominative and the accusative, such as nominative and accusative case, which in the case of the genitive and dative are realized by *go* and *mu*. As the two forms are morphologically different, they have separate lexical entries, and they can correspond to different phonology. The phonological representation of the *o* in the nominative and accusative should be such that it resists the effect of the *i*, and the *o* in the genitive and dative should welcome the effect of the *i*. I do not work out a phonological proposal for how this works.[11]

The conclusion I draw from this rather long reasoning is that the morpheme *o* in *kogo* and *komu* is not specific to animate relative pronouns, but it also appears elsewhere, for instance in inanimate relative pronouns, demonstratives and in the *n*- and *je*-pronouns, as shown in Table 8.9.[12]

Table 8.9: Underlying and surface forms of Polish dative pronouns

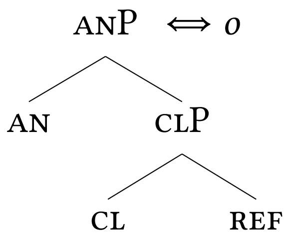
	underlying	surface
DEM	t-i-o-mu	te-mu
nie-pronoun	n-i-o-mu	nie-mu
je-pronoun	i-o-mu	je-mu

[11] Maybe it is possible to analyze the *o* in the nominative and accusative as an *o* plus a slot for a vowel and the *o* in the genitive and dative as an *o* without a slot for a vowel. The vowel in the genitive and the dative then needs to share a vowel slot with a different vowel, in this case the *i*.

[12] 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. See footnote 13 of this chapter for why the morpheme is not inserted in animate relative pronouns.

Under my analysis, the *o* is present in all these pronouns, although it does not appear on the surface. The *o* combines with other morphemes like the *i* (in all other pronouns), the *t* in demonstratives and the *n* in pronouns that combine with prepositions.

What these elements (i.e. relative pronoun, demonstratives and third singular pronouns) 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 (19).

(19) 

Finally, I discuss the 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.

Just as in Modern German, number and gender features are already spelled out once, this time by the suffixes *go* and *mu*. Again I assume that they are spelled out twice within the relative pronoun. They are semantically present twice, but their double presence is purely due to spellout reasons.

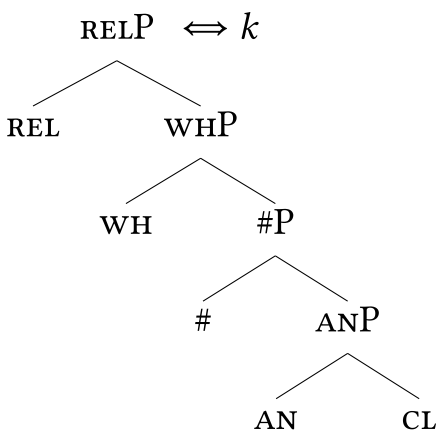
I start with the operator features WH and REL. The Polish relative pronouns are WH-pronouns, and they are also used as interrogatives. Therefore, just as the Modern German *we*, the Polish *k* spells out the features WH and REL.

Finally, since the relative pronouns do not have a morphological plural, I assume that *k* contains the feature #. Lastly, I assume that *k* also contains the features AN and CL. For this I do not have any independent support. [13]

In sum, the morpheme *k* realizes the features WH, REL, #, AN and CL.

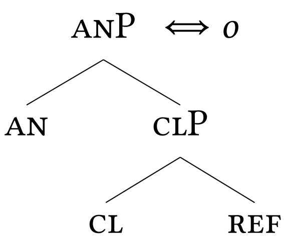
[13] I make this assumption to make room for the *i* to be inserted in the inanimate. To be able to derive the inanimate relative pronoun, I also assume that there is a pointer in the lexical entry for *k*, as shown in (i) (see Wyngaerd 2018 which illustrates the use of pointers).

(20)

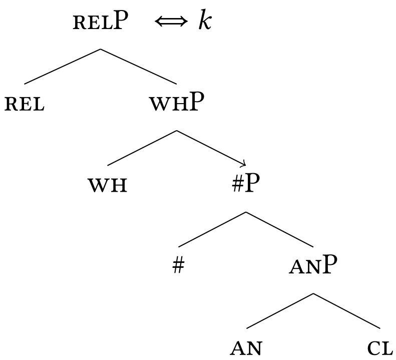


In what follows, I show how the Polish relative pronouns are constructed. I follow the same functional sequence as I did for Modern German. Also, of course, the spellout procedure is identical. The outcome is different because of the different lexical entries Polish has. I repeat the available lexical entries in (21).

(21) a.

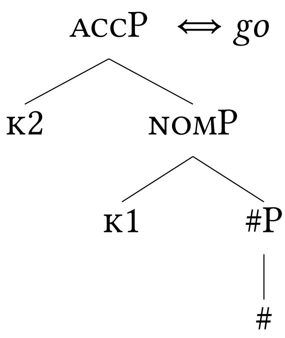


(i)

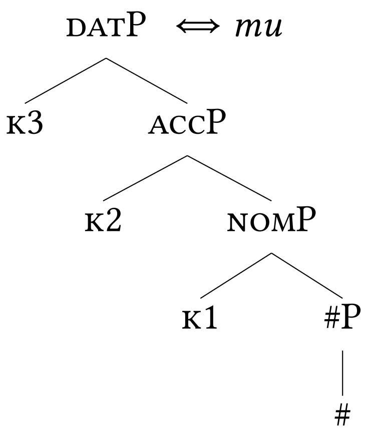


The pointer is situated above the #P. That means that if there is no animate feature in the structure, the # can also not be spelled out with *k*. Then there is another morpheme necessary that contributes the feature #. I propose that this is *i*, which causes the phonological processes described in this section.

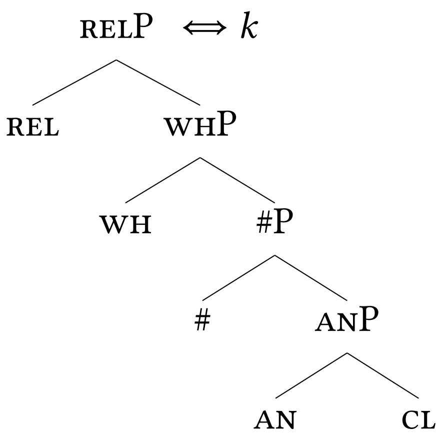
b.



c.

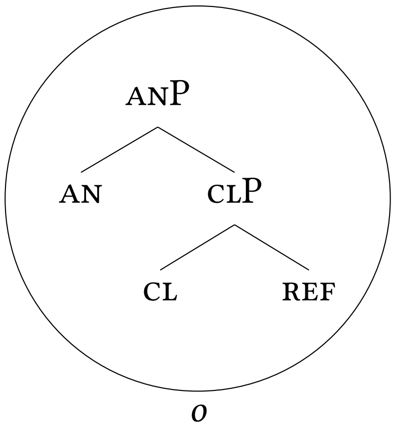


d.



Starting the derivation 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 (21a), 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 an ANP is created. The syntactic structure forms a constituent in the lexical tree in (21a). Therefore, the ANP is spelled out as *o*, shown in (22).

(22)



The next feature in the functional sequence is the feature #. It is merged, and an #P is created. This syntactic structure does not form a constituent in the lexical tree in (21a). There is no other lexical tree that contains the syntactic structure as a constituent. Therefore, there is no successfull spellout for the syntactic structure in the derivational step in which the structure is spelled out as a single phrase ((23a) in the Spellout Algorithm, repeated from Chapter 7).

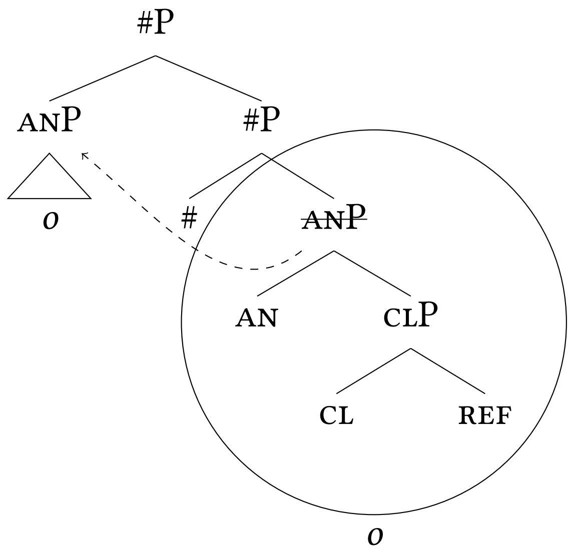
(23) **Spellout Algorithm** (as in Caha 2021, based on Starke 2018)

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 (23b). 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 (23c). In this case, the complement of #, the anP, is moved to the specifier of #P. I show this movement in (24).[14]

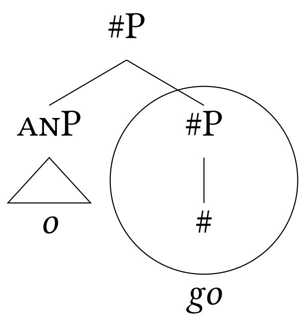
[14] In its landing position the internal structure of the anP is no longer shown (to save some space), and its phonological form is placed under the triangle. The strikethrough of the lower anP indicates that the complement of # disappears.

(24)



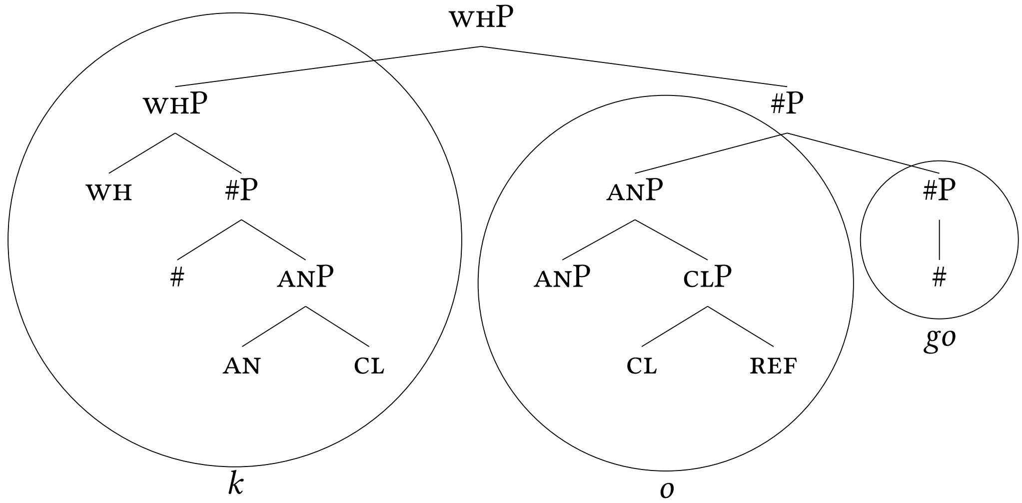
The #P has a different internal syntax now. It still contains the feature #, but the ANP is no longer a sister of #. Now the ANP is moved away, the #P forms a constituent in the lexical tree of (21b). Therefore, the #P is spelled out as *go*, as shown in (25).

(25)



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 spell-out driven movements leads to a successful spellout. Therefore, in a second workspace, the feature WH is merged with the feature # (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: # 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: #, AN and CL. This syntactic structure forms a constituent in the lexical tree in (21d), 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 (26).

(26)

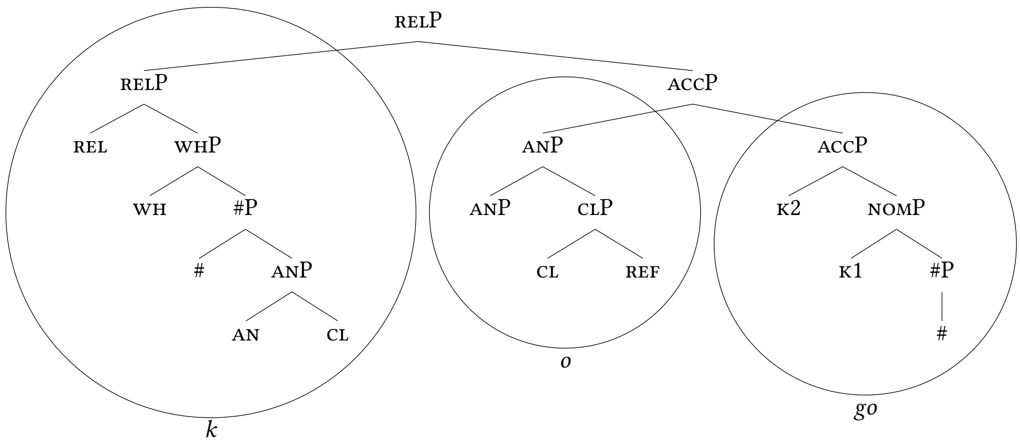


The next feature in the functional sequence is the feature REL. The derivation for this feature resembles the derivation of REL in Modern German. The feature is merged with the existing syntactic structure, creating a RELP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the WHP from the #P. The feature REL is merged in both workspaces, so with WHP and and with #P. The spellout of REL is successful when it is combined with the WHP. It forms a constituent in the lexical tree in (21d), 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 K1. This feature should somehow end up merging with #P, because it forms a constituent in the lexical tree in (21b), 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 K1 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 #P. The feature K1 is merged in both workspaces, so with the REL P and and with the #P. 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 #P, however, there is a specifier, which is moved to the specifier of NOMP. This syntactic structure forms a constituent in the lexical tree in (21b), 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 K2. Its derivation proceeds the same as the one for the feature K1. The feature K2 is merged with the existing syntactic structure, creating an 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 K2 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 (21b), 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 (27).

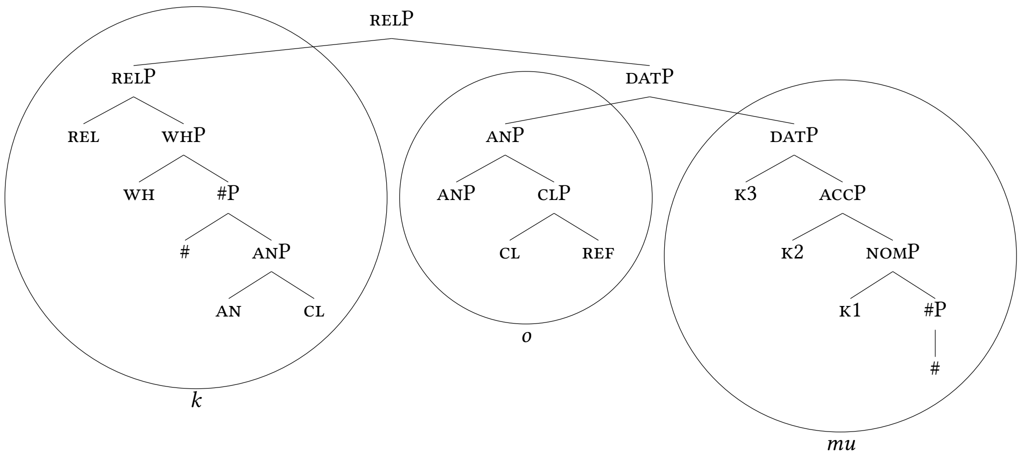
(27)



For the dative relative pronoun, the last feature on the functional sequence is the feature K3. Its derivation proceeds the same as the one for the feature

K2. The feature K3 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 K3 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 (21c), 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 (28).

(28)



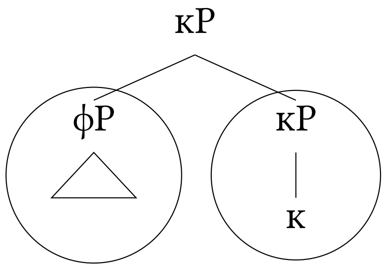
To summarize, I decomposed the relative pronoun into three morphemes: *k*, *o* and the suffix (*go* and *mu*). I showed which features each of the morphemes spells out and what the internal syntax looks like that they are combined into. It is this internal syntax that determines whether the light head can be deleted or not.

8.2 The Polish extra light head

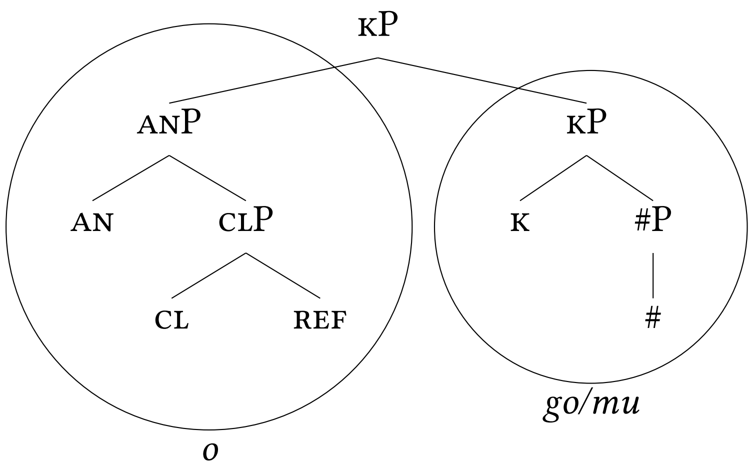
I have suggested that headless relatives are derived from light-headed relatives. The light head or the relative pronoun can be deleted when either of them is contained in the other one. In Chapter 6, I mentioned that languages have two possible light heads. I also noted that headless relatives in Polish (just like the ones in Modern German) can only be derived from light-headed relatives that are headed by one of these heads. In this section I give arguments that exclude the second light head as a possible light head.

For Modern German, I discussed both possible light heads. I started by discussing a light-headed relative that is attested in Modern German. I considered this scenario, and I gave two arguments against it. Then I took the light head from the existing light-headed relative as a point of departure, and I modified it in such a way that it is appropriate as a light head for a headless relative in Modern German. I argued that this light head is the head of the light-headed relative that Modern German headless relative are derived from. I do the same investigation for Polish, and I reach the same conclusion as I did for Modern German.

In the introduction of this chapter, I claimed that the internal syntax of light heads in Polish looks as shown in (29).

(29)


In this section, I determine the exact feature content of the light head. As I suggested in Chapter 7 for Modern German, I end up claiming that the phi and case features morpheme of the relative pronoun is the light head in headless relatives. I show the complete structure that I work towards in this section in (30).

(30)


Consider the existing Polish light-headed relative in (31).

(31) Jan śpiewa to, co Maria śpiewa.
Jan sings DEM.M.SG.ACC RP.AN.ACC Maria sings
'John sings what Mary sings.' (Polish, Citko 2004: 103)

This light-headed relative, headed by the demonstrative, could potentially be the source of 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 (32).

(32) Jan śpiewa co -kolwiek Maria śpiewa.
Jan sings RP.AN.ACC ever Maria sings
dJan sings everything Maria sings.' (Polish, Citko 2004: 116)

Light-headed relatives do not allow this morpheme to be inserted, illustrated in (33).[15]

(33) *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, Citko 2004: 116)

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 as in Modern German, Polish headless relatives can be analyzed as either universal or definite (Citko 2004: 103). Light-headed relatives, such as the one in (31), only have the definite interpretation.

Just as I did for Modern German, I conclude that Polish headless relatives are not derived from a light-headed relative headed by a demonstrative. I sug-

[15]Citko (2004) takes the complementary distribution of *kolwiek* 'ever' and the demonstrative 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 demonstrative is that they are semantically incompatible.

gest that Polish headless relatives are also derived from light-headed relatives headed by an extra light head.

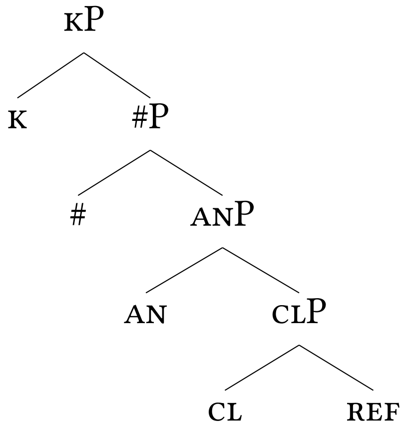
In the remainder of this section, I discuss the two extra light heads that I compare the internal syntax of in Section 8.3. These are the accusative animate and the dative animate, shown in (34).

(34) a. o-go ‘ELH.AN.ACC’
b. o-mu ‘ELH.AN.DAT’

In Polish, these forms do not surface as light heads in a light-headed relative, and they do also not surface anywhere else in the language.

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 (35).

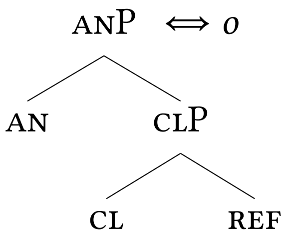
(35)



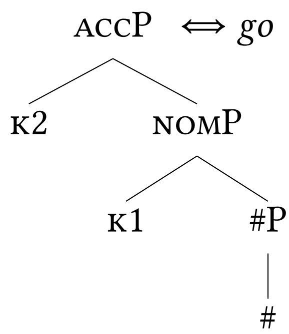
The functional sequence contains the pronominal feature REF, the gender features CL and AN, the number feature # and case features K.

I introduced the lexical entries that are required to spell out these features in Section 8.1. I repeat them in (36).

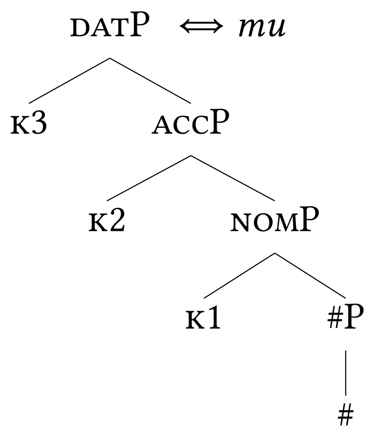
(36) a.



b.

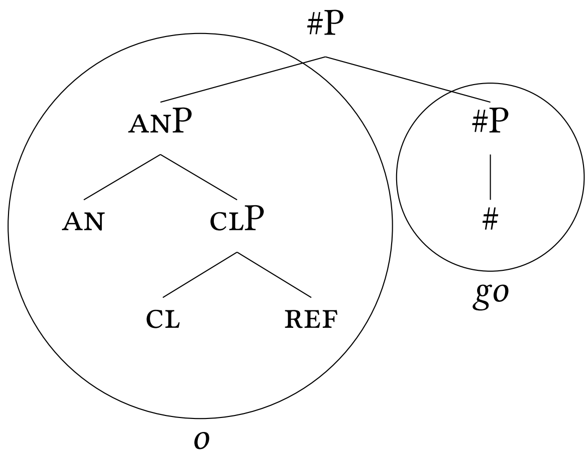


c.



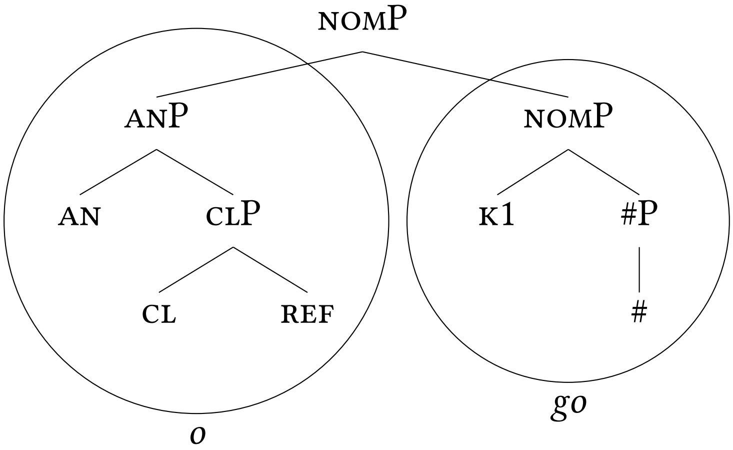
In what follows, I construct the Polish extra light heads. Until the feature #, the derivation is identical to the one of the relative pronoun. I give the syntactic structure at that point in (37).

(37)



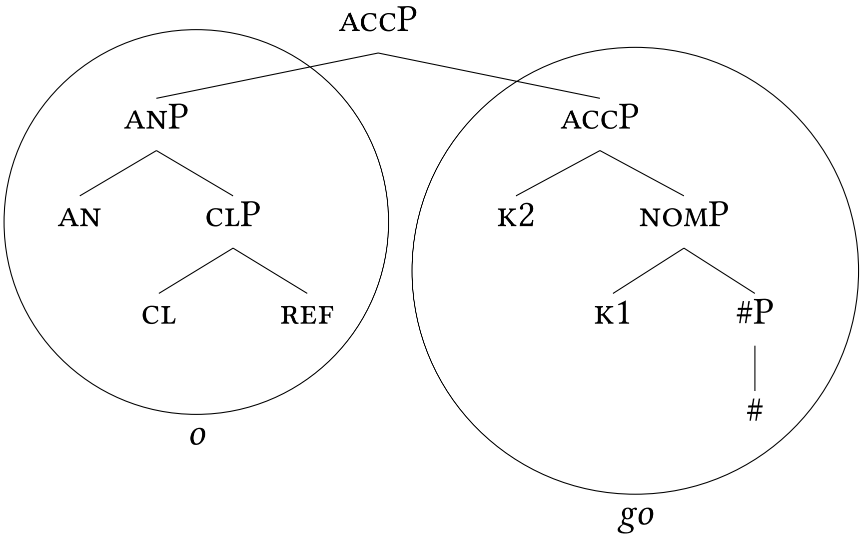
Then, the feature k1 is merged. The feature k1 is merged with the #P, forming a nomP. This phrase is not contained in any of the Polish lexical entries. The first movement is tried, and the specifier of the #P, the anP, is moved to the specifier of nomP. This phrase is contained in the lexical tree in (36b), so it is spelled out as *go*, as shown in (38).

(38)



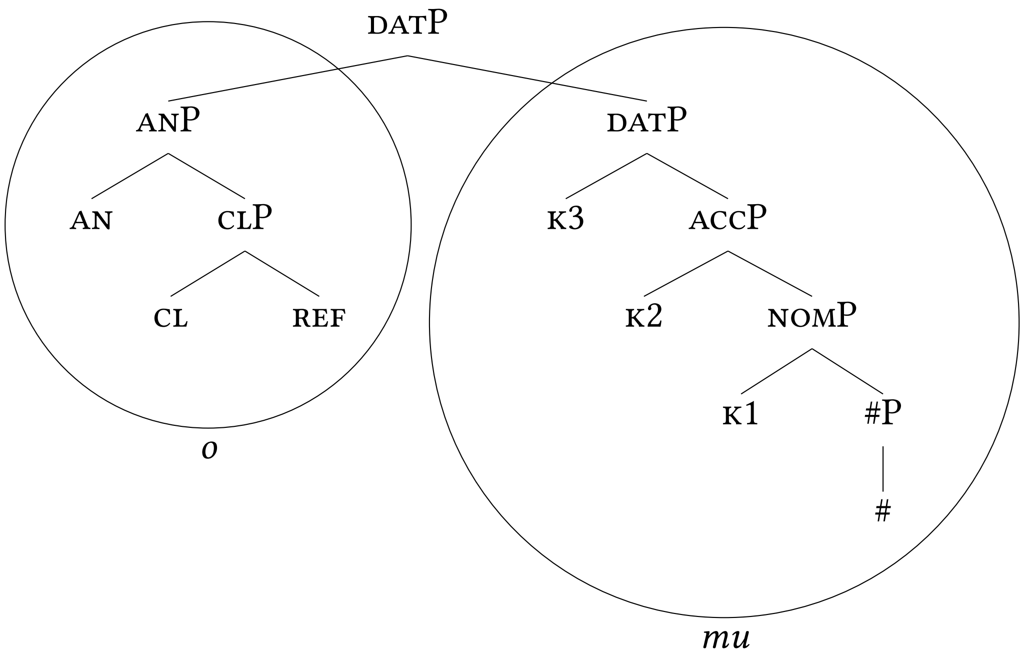
For the accusative extra light head, the last feature is merged: the k2. The feature is merged with the nomP, forming an accP. This phrase is not contained in any of the lexical entries. The first movement is tried, and the specifier of the nomP, the anP, is moved to the specifier of accP. This phrase is contained in the lexical tree in (36b), so it is spelled out as *go*, as shown in (39).

(39)



For the dative relative pronoun, one more feature is merged: the k3. 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 (36c), so it is spelled out as *mu*, as shown in (40).

(40)



In sum, Polish headless relatives are derived from a light-headed relative headed by an extra light head, just as 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 pronoun.

8.3 Comparing light heads and relative pronouns

In this section, I compare the internal syntax of extra light heads to the internal syntax 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 comparisons for Polish specifically, and that the content of the internal syntax that is being compared is motivated earlier in this chapter.

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 structurally contained in 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 structurally contained in the other element. I do not discuss formal containment in this chapter, because it never leads to a successful deletion when structural containment does not.

I start with the matching cases. Consider the example in (41), 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.

(41)	Jan	lubi	[ogo]	**kogo**	**-kolkwiek**	**Maria**
	Jan	like.3SG$_{[\text{ACC}]}$	ELH.ACC.AN.SG	RP.ACC.AN	ever	Maria
	lubi.					
	like.3SG$_{[\text{ACC}]}$					

'Jan likes whoever Maria likes.'

(Polish, adapted from Citko 2013 after Himmelreich 2017: 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 extra light head consists of two morphemes: *o* and *go*. The relative pronoun consists of three morphemes: *k*, *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 the ACCP, as it is the biggest possible element that is structurally a constituent in both the extra light head and the relative pronoun.

The extra light head consists of two constituents: the ANP and the (lower) ACCP. Together they form the (higher) ACCP. This (higher) ACCP is structurally contained in 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 element is the relative pronoun that bears the

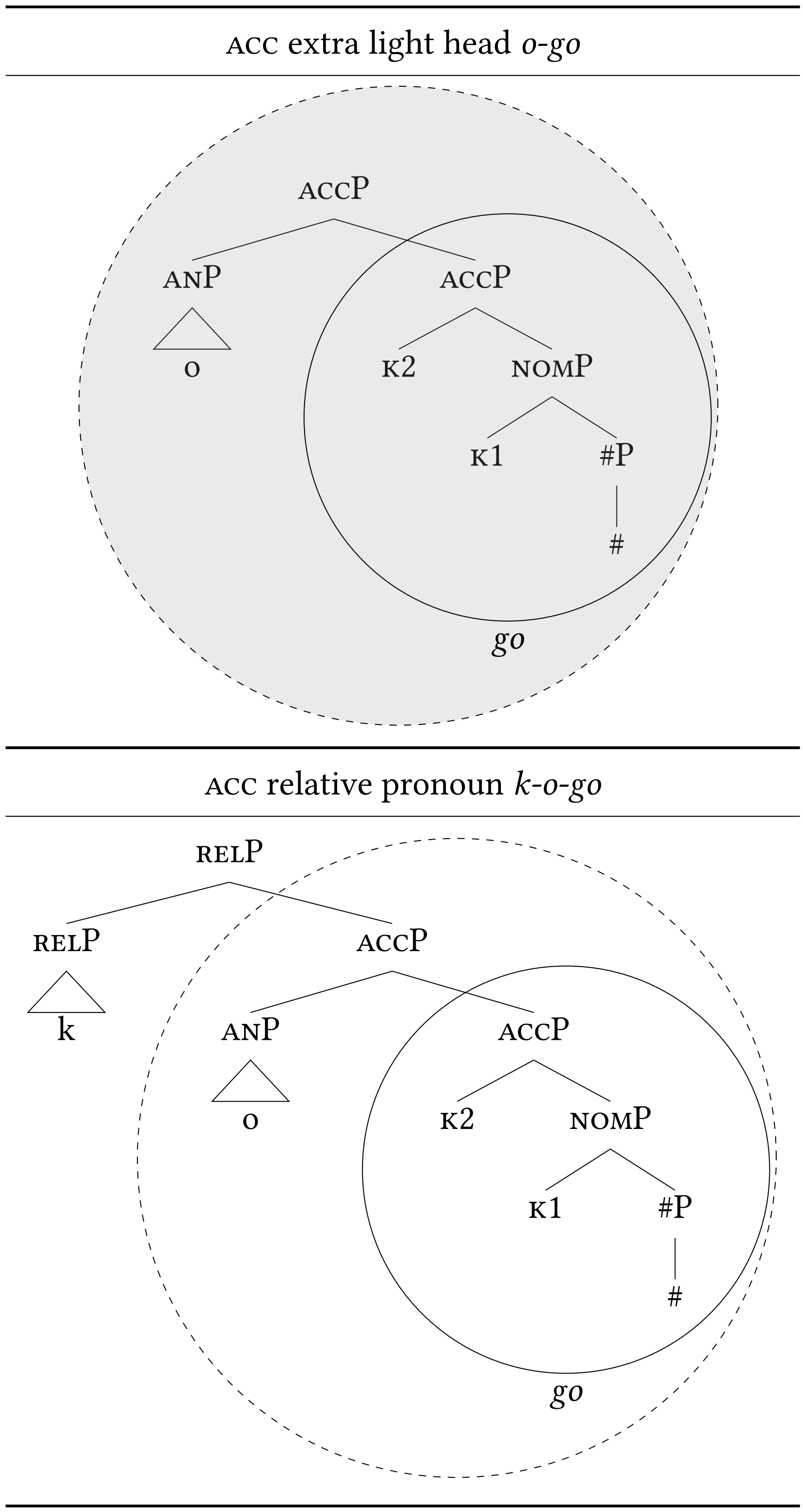


Figure 8.3: Polish EXT_{ACC} vs. INT_{ACC} ⟶ *kogo*

internal case: *kogo*.[16]

I continue with the example in which the internal case is more complex than the external 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 dative, as the predicate *dokuczać* 'to tease' takes dative objects. The relative pronoun *komu* 'RP.AN.DAT' appears in the dative case. The external case is accusative, as the predicate *lubić* 'to like' takes accusative objects. The extra light head *ogo* 'ELH.AN.ACC' appears in the accusative 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 lubi [ogo] **komu** **-kolkwiek**
Jan like.3SG$_{[ACC]}$ ELH.ACC.AN RP.DAT.AN.SG ever
dokucza.
tease.3SG$_{[DAT]}$
'Jan likes whoever he teases.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

b. *Jan lubi ogo [**komu**] **-kolkwiek**
Jan like.3SG$_{[ACC]}$ ELH.ACC.AN RP.DAT.AN.SG ever
dokucza.
tease.3SG$_{[DAT]}$
'Jan likes whoever he teases.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 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 light head consists of two morphemes: *o* and *go*. The relative pronoun consists of three morphemes: *k*, *o* and *mu*. I draw a dashed circle around the ANP and the ACCP, as they are the biggest possible elements that are structurally constituents in both the extra light head and the relative pronoun.

[16]The relative pronoun (*kogo*) also formally contains the extra light head (*ogo*). The extra light head could also be deleted via formal containment.

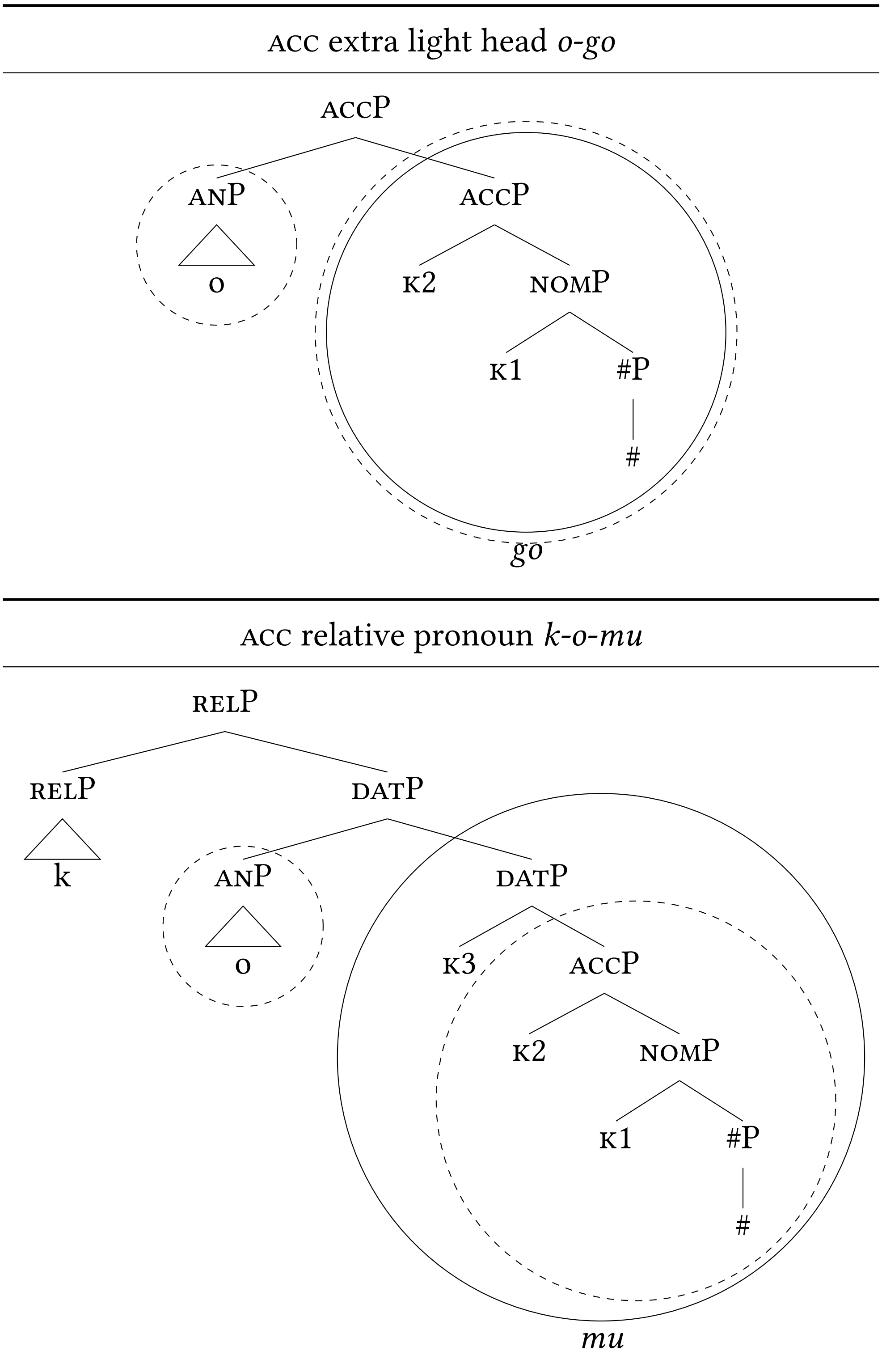


Figure 8.4: Polish EXT_{ACC} vs. INT_{DAT} $\not\rightarrow$ *ogo*/*komu*

In this case, the light head is not a constituent that is structurally contained in the relative pronoun. The extra light head consists of two constituents: the ANP and the (lower) ACCP. Together they form the (higher) ACCP. Both of these constituents are also constituents that are structurally contained in the relative pronoun. However, the (higher) ACCP is not a constituent that is structurally contained in the relative pronoun. The constituent in which the ACCP is contained also contains the feature K3 that makes it a DATP. 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 in the relative pronoun. Therefore, the extra light head cannot be deleted.

Recall from Section 7.5 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 in 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 in 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.[17]

The relative pronoun is not a constituent that is structurally or formally contained in the light head. It 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.[18]

I end with the example in which the external case is more complex than the internal case. Consider the examples in (43), 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

[17]A single constituent that is contained in the relative pronoun is the ANP. This could be deleted, leaving the ACCP, spelled out as *go*. This structure would then be ruled out, because *go* cannot be the head of a relative clause. The same holds for only deleting *go* and leaving *o* behind.

[18]None of the elements can be deleted via formal containment either. The relative pronoun *komu* and the extra light head *ogo* do not show any formal containment.

this situation. The internal case is accusative, as the predicate *wpuścić* 'to let' takes accusative objects. The relative pronoun *kogo* 'RP.AN.ACC' appears in the accusative case. The external case is dative, as the predicate *ufać* 'to trust' takes dative objects. The extra light head *omu* 'ELH.AN.DAT' appears in the dative case. (43a) 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. (43b) 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.

(43) a. *Jan ufa [omu] **kogo -kolkwiek wpuścil do domu**.
Jan trust.3SG$_{[\text{DAT}]}$ ELH.DAT.AN RP.ACC.AN ever let.3SG$_{[\text{ACC}]}$ to home
'Jan trusts whoever he let into the house.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

b. *Jan ufa omu [**kogo**] **-kolkwiek wpuścil do domu**.
Jan trust.3SG$_{[\text{DAT}]}$ ELH.DAT.AN RP.ACC.AN ever let.3SG$_{[\text{ACC}]}$ to home
'Jan trusts whoever he let into the house.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 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 light head consists of two morphemes: *o* and *mu*. The relative pronoun consists of three morphemes: *k*, *o* and *go*. I draw a dashed circle around the ANP and the ACCP, as they are the biggest possible elements that are structurally constituents in both the extra light head and the relative pronoun.

In this case, the light head is not a constituent that is structurally contained in the relative pronoun. The light head consists of two morphemes: *o* and *mu*. The relative pronoun only contains the ACCP, and it lacks the K3 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 in the light head. It lacks the complete constituent RELP. Therefore, the extra light cannot be deleted, and the relative pronoun cannot be deleted either. As

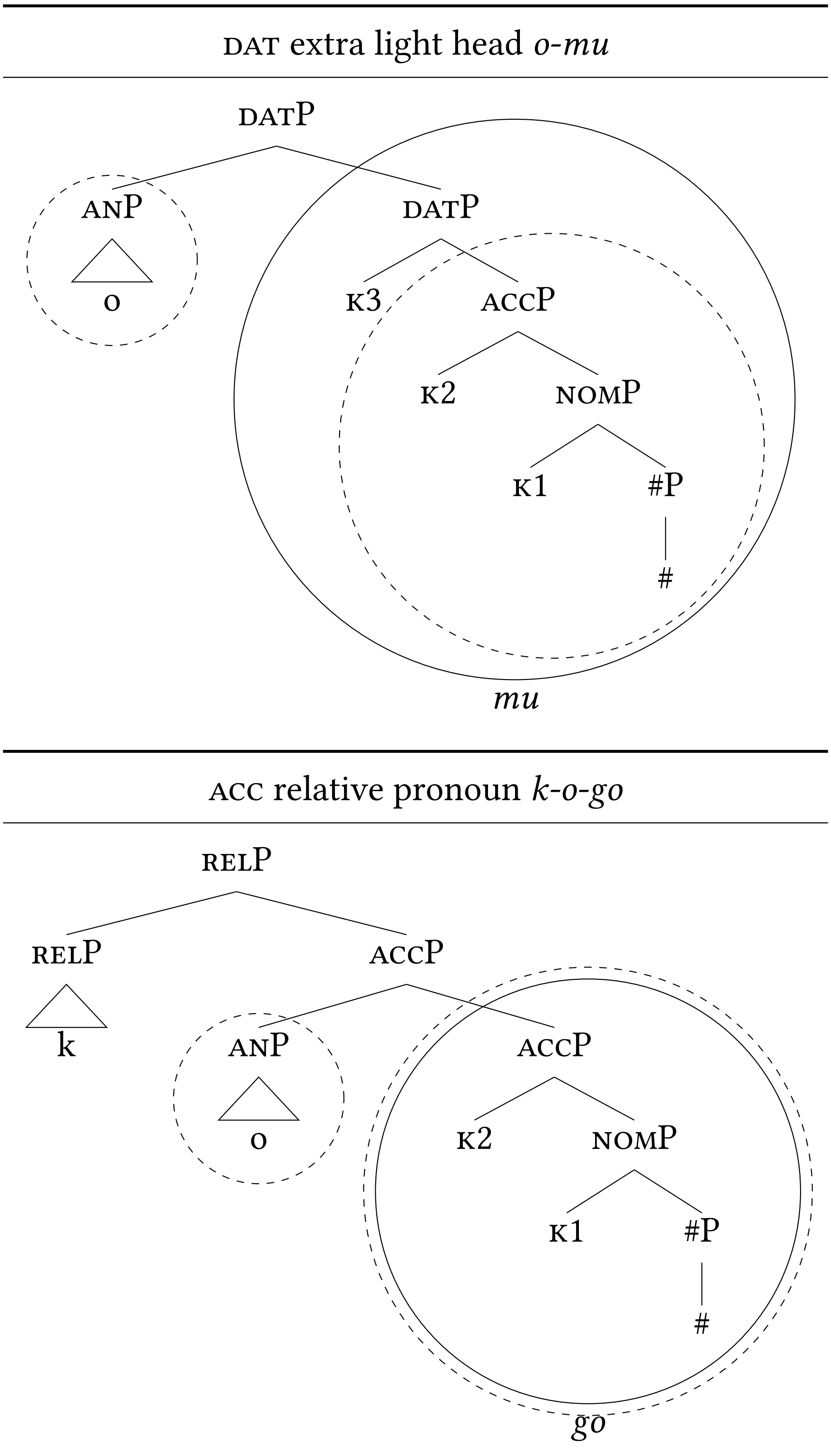


Figure 8.5: Polish EXT_{DAT} vs. $\text{INT}_{\text{ACC}} \nrightarrow$ *omu*/*kogo*

a result, there is no grammatical headless relative possible.[19]

8.4 Summary and discussion

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 is shown in Figure 8.6.

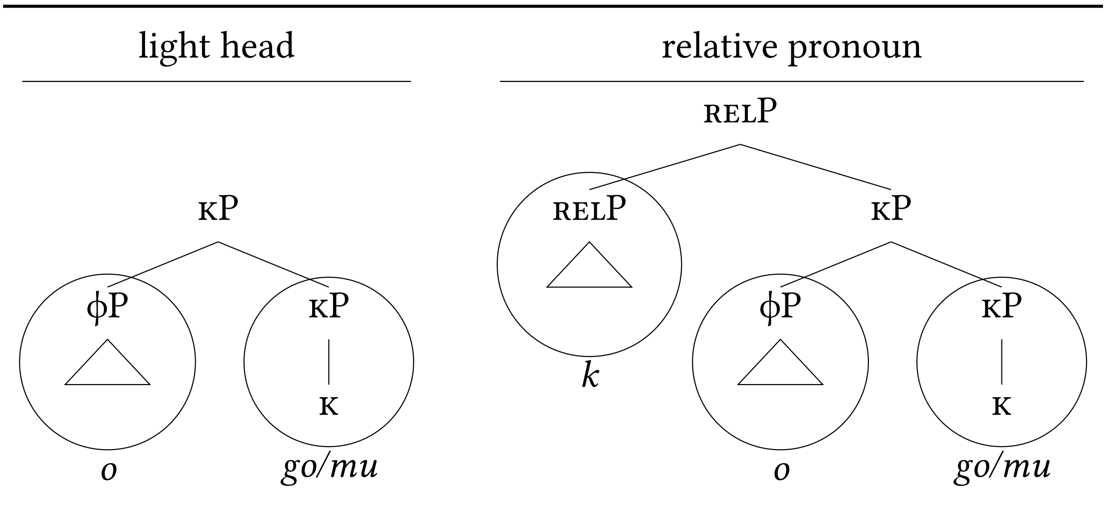


Figure 8.6: elh and rp in Polish (repeated)

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 structurally contained in the relative pronoun when the internal and the external 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 structurally contained in the other element. None of the elements can be deleted, and there is no grammatical headless relative possible.

[19]None of the elements can be deleted via formal containment either. The relative pronoun *kogo* and the extra light head *omu* do not show any formal containment.

The crucial difference between Modern German and Polish that leads them to be of different language types is that I analyze Modern German extra light heads as monomorphemic (e.g. *n*) and Polish extra light heads as bimorphemic (e.g. *o-go*). This raises the question of whether Polish extra light heads could not be monomorphemic too. A possible hypothesis would be that the morpheme *go* is the extra light head and not *o-go*.

A parallel between the Polish *go* (and *mu*) and the Modern German *n* (and *m*) is that they both surface as pronouns in their respective languages. However, there is a difference between the Polish *go* and Modern German *n*. The Polish *go* is analyzed as a clitic (Swan, 2002), whereas the Modern German *n* is analyzed as a weak pronoun (see Section 7.2.1). According to Cardinaletti and Starke (1994), clitics and weak pronouns differ from each other in that clitics cannot follow prepositions whereas weak pronouns can, and weak pronouns cannot follow dative objects whereas clitics can. Polish *go* and *mu* cannot follow prepositions (Swan 2002: 157), whereas Modern German *n* and *m* can (see Section 7.2.1).[20] Theoretically, clitics lack certain pronominal features (REF and Σ, see Section 7.2.1), which are indeed not spelled out by the clitic in my analysis of Polish, but by *o*.[21] I assume that the weak pronoun in Polish is *o-go* (which combines with the *i* I introduced in Section 8.1 to become a strong pronoun). A question that remains unanswered is why *o-go* does not surface as a weak pronoun. Admittedly, this is a weak point in this analysis, since the grammaticality of headless relatives is derived solely from the internal structure of relative pronouns and light heads, which in this case cannot be independently observed in the language.

[20] As I mentioned in Section 7.2.1 not all speakers of Modern German allow the *n* and *m* to follow prepositions. This might suggests that these pronouns are clitics in their grammar, just as in Polish. This raises the question of whether these speakers are also like Polish speakers with the respect to headless relatives, in that they only accept matching cases (which is the version of Modern German described in Groos and van Riemsdijk 1981 and variants of German discussed in Vogel 2002; Himmelreich 2017). I leave it for future research to investigate whether this prediction is borne out.

[21] In my analysis, Polish clitics also lack gender features.

Chapter 9

Deriving the unrestricted type

In Chapter 6, I suggested that languages of the unrestricted type have two possible light heads. Headless relatives can be derived from light-headed relatives headed by either of the two light heads. The different light heads are part of the derivation under different circumstances. The light-headed relative headed by the first possible light head derives the pattern correctly for the situation in which the internal and external case match and for the situation in which the internal case is more complex than the external case. The light-headed relative headed by the second possible light head derives the pattern correctly for the situation in which the internal and external case match and for the situation in which the 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 the first possible light head and the relative pronoun looks as shown in Figure 9.1.

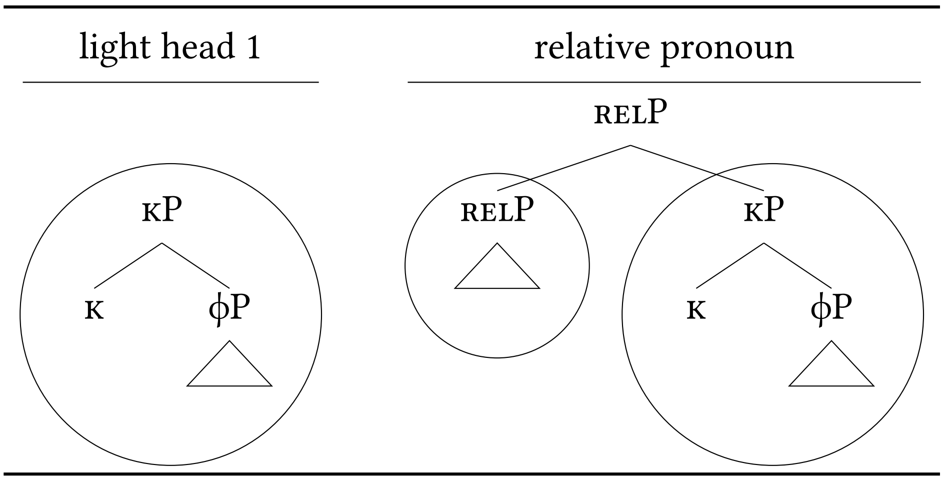


Figure 9.1: LH-1 and RP in the unrestricted type

These lexical entries lead to the grammaticality pattern shown in Table 9.1.

Table 9.1: Grammaticality in the unrestricted type with LH-1 (repeated)

situation	lexical entries		containment	deleted	surfacing
	LH-1	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	*

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 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 structurally contained in the relative pronoun. Therefore, the light head can be deleted, and the relative pronoun surfaces, bearing the internal case.

Consider now the situation in which 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 (K_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 structurally contained in the relative pronoun. Therefore, the light head can be deleted, and the relative pronoun surfaces, bearing the internal case.

Consider now the situation in which the external 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 (K_2 in Figure 9.1). The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is structurally contained in the other element. Therefore, none of the elements can be deleted, and there is no headless relative construction possible.

In this chapter, I show that Old High German has light heads and relative pronouns with the type of internal syntax described in Figure 9.1. I give a compact version of the structures in Figure 9.2.

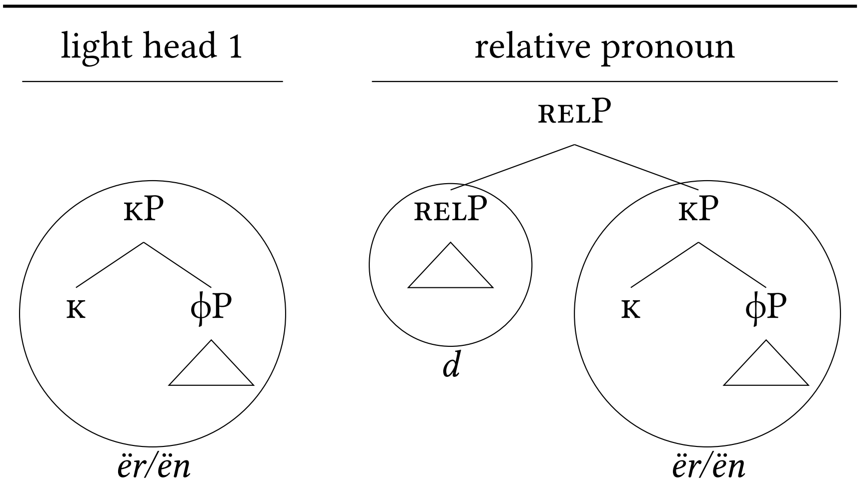


Figure 9.2: LH-1 and RP in Old High German

Consider the first possible light head in Figure 9.2. This light head (i.e. phi and case features) in Old High German is spelled out by a single morpheme, indicated by the circle around the structure. It is spelled out as *ër* or *ën*, depending on which case it realizes. Consider the relative pronoun in Figure 9.2. The relative pronoun in Old High German consists 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 the first possible light head and the relative pronoun, I give lexical entries for them, and I show how these lexical entries lead to the internal syntax shown in Figure 9.2.

As shown in Table 9.1, the first possible light head is able to derive a grammatical headless relative in which the internal and external case match or in which the internal case is more complex than the external case. However, it cannot derive a grammatical headless relative in which the external case is more complex than the internal case. This is where the second possible light head comes into play.

The second possible light head differs from the first possible head in that it contains a feature more than the relative pronoun instead of a feature less. I call the additional feature X. The phi and case features are still spelled out by the phi and case portmanteau. The XP that contains the feature X and the feature REL is spelled out by its own lexical entry. The relative pronoun is spelled out by that same phi and case portmanteau plus a separate lexical entry that spells out the feature REL. Crucially, the morpheme that spells out the XP has the same spellout as the morpheme that spells out the feature REL (here α). This means that the internal syntax of the second possible light head and the relative pronoun looks as shown in Figure 9.3.

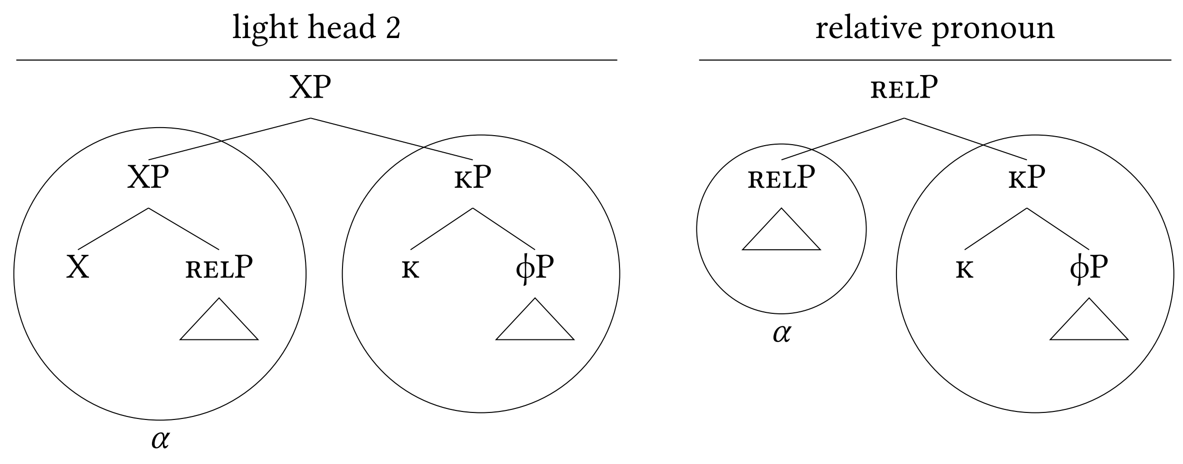


Figure 9.3: LH-2 and RP in the unrestricted type

These lexical entries lead to the grammaticality pattern shown in Table

9.2.

Table 9.2: Grammaticality in the unrestricted type with LH-2 (repeated)

situation	lexical entries		containment	deleted	surfacing
	LH-2	RP			
$K_{INT} = K_{EXT}$	α, β	α, β	form	RP	LH_{EXT}
$K_{INT} > K_{EXT}$	α, β	α, γ	no	none	*
$K_{INT} < K_{EXT}$	α, β	α, β	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 (spelled out as β) plus a morpheme that spells out REL and X, which corresponds to phonological form α. The relative pronoun consists of the same phi and case feature morpheme (also spelled out as β) and a morpheme that spells out the feature REL, which corresponds to the phonological form α too. The lexical entries create a syntactic structure such that the light head and the relative pronoun are syncretic, so the relative pronoun is formally contained in the light head. Therefore, the relative pronoun can be deleted, and the light head surfaces, bearing the external case.[1]

Consider now the situation in which the internal case wins the case competition. The light head consists of a phi and case feature portmanteau (spelled out as β) plus a morpheme that spells out REL and X, which corresponds to phonological form α. 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), which is spelled out as γ, plus a morpheme that spells out the feature REL, which corresponds to the phonological form α too. The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is structurally or formally contained in 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 and case feature

[1]The same holds the other way around: the light head is also formally contained in the relative pronoun, so the light head can be deleted too. In Section 9.4 I come back to why it is the relative pronoun that is deleted here and not the light head.

morpheme (spelled out as β) and a morpheme that spells out the feature REL, which corresponds to the phonological form α. Compared to the relative pronoun, the light head has in addition the feature X, which is spelled out as α, and it contains at least one more case feature (K_2 in Figure 7.1), which is spelled out as γ. The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is structurally or formally contained in 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 is formally contained in the light head. Therefore, the relative pronoun can be deleted, and the light head remains, bearing external case. Then, the remaining 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 (in addition to the light head shown in Figure 9.2) light heads and relative pronouns with the type of internal syntax described in Figure 9.3. I give a compact version of the structures in Figure 9.4.

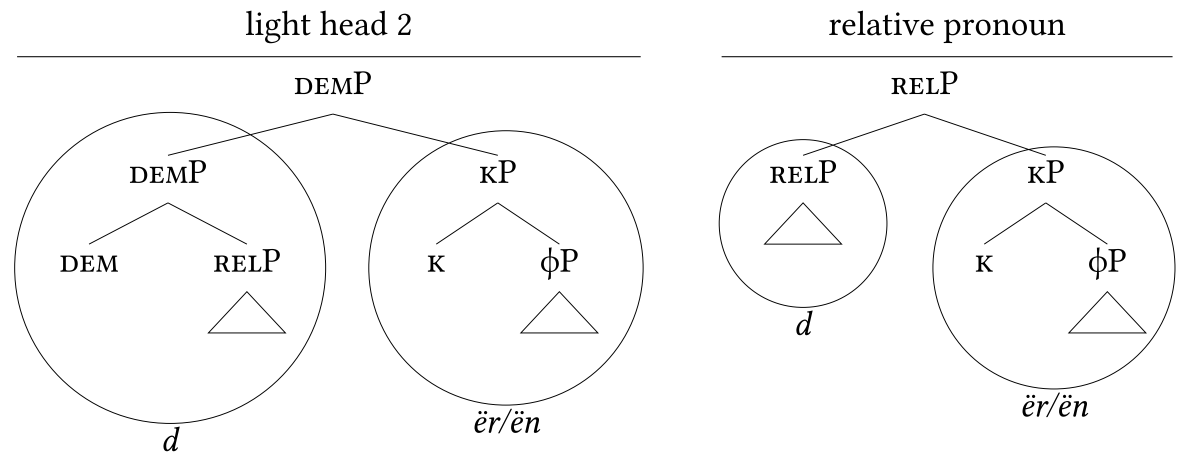


Figure 9.4: LH-2 and RP in Old High German

The phrase I so far called XP is replaced here by DEMP. I come back to this in Section 9.2.2. Consider the second possible light head in Figure 9.4.

The light head (i.e. the phi and case features and DEMP) is spelled out by two morphemes, which are both circled. The DEMP 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. The relative pronoun in Old High German consists of two morphemes: the constituent that spells out phi and case features and the constituent that spells out 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 *d*. Throughout this chapter, I discuss, just as I do for the first possible light head, 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 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 9.4. Then I show which features each of the morphemes corresponds to. Next, I discuss the two possible light heads. I argue that Old High German headless relatives can, unlike Modern German and Polish headless relatives, be derived from two different light-headed relatives. One of these light-headed relatives does not surface in the language, and the other one does. The light head in the light-headed relative that does not surface is the extra light head. The features that form the Old High German extra light head and relative pronoun are the same ones that form the Modern German and Polish extra light head and relative pronoun. I show that the Old High German extra light head has the same internal syntax as the Modern German extra light head: it corresponds to one of the morphemes of the relative pronoun (the KP in Figure 9.2).

The second light-headed relative that headless relatives can be derived from is one headed by a demonstrative. Remember that Modern German and Polish also have this light-headed relative in their language, but headless relatives cannot be derived from them. Crucially, headless relatives in Old High German can be derived from light-headed relatives headed by a demonstrative because the demonstrative and the relative pronoun are syncretic in the language. Both of them start with a *d*, followed by a phi and case feature morpheme. This syncretism leads Old High German to be an unrestricted type of language.[2]

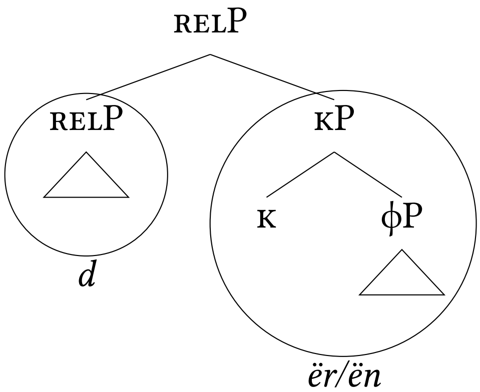
[2]Remember that Modern German also has relative pronouns and demonstratives that are syncretic, but these are not the relative pronouns that appear in headless relatives. I return to this matter in Section 9.2.2.

Next, I compare the internal syntax of the extra light head and the demonstrative to that of the relative pronoun. I show that the extra light head can be deleted via structural containment when the internal case and external case match and when the internal case is more complex than the external case. The relative pronoun can be deleted via formal containment 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 account for the more complex external case surfacing, I show the larger syntactic structure of light-headed and headless relatives. Finally, I reflect on the assumption that two different light-headed relatives can be the source of Old High German headless relatives. I investigate whether there is support for this assumption coming from their interpretation and the larger syntactic structure.

9.1 The Old High German German relative pronoun

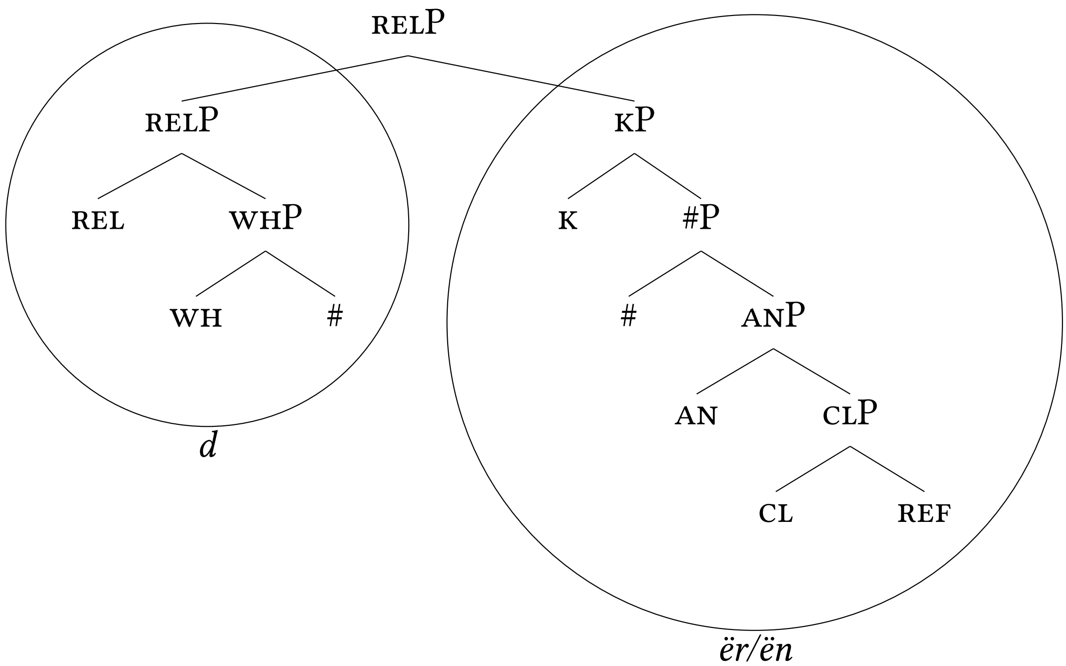
In the introduction of this chapter, I suggested that the internal syntax of relative pronouns in Old High German looks as shown in (1).

(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. 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 that the first light head does not contain. I show the complete structure that I work towards in this section in (2).

(2)



I discuss two relative pronouns: the masculine singular nominative and the masculine singular accusative. These are the two forms that I compare the internal syntax of in Section 9.3.[3] I show them in (3).

(3) a. d-ër 'RP.M.SG.NOM'
 b. d-ën 'RP.M.SG.ACC'

I decompose the relative pronouns into two morphemes: the *d* and the suffix (*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 suffixes 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

[3]For reasons of space, I do not discuss the animate dative *dëmu/dëmo* 'RP.M.SG.DAT'. I assume its analysis is identical to the one I propose for *dër* and *dën*, except that *dëmu/dëmo* spells out more case features. I work out the proposal for *dër* and *dën*, because I have not found an example in which the internal dative case wins over the external accusative case.

cases.[4]

Table 9.3: Old High German relative pronouns (Braune 2018: 339)

	N.SG	M.SG	F.SG
NOM	d-aʒ	d-ër	d-iu
ACC	d-aʒ	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.

Table 9.4: Old High German adjectives of *a/ō*-declension (Braune 2018: 300)

	N.SG	M.SG	F.SG
NOM	jung, jung-aʒ	jung, jung-ēr	jung, jung-iu
ACC	jung, jung-aʒ	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

For some forms, the table gives two different forms, the first one being nominal inflection and the second one being pronominal inflection (Braune,

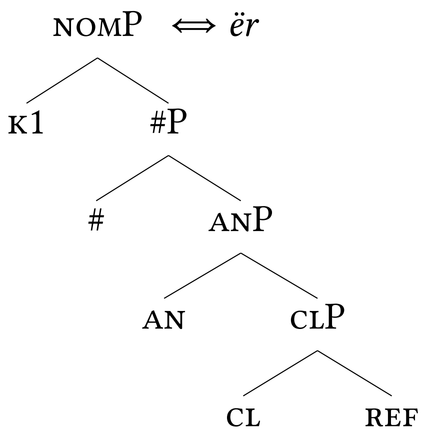
[4] *d* can also be written as *dh* and *th*, *ë* and *ē* can also be *e* and *é* (Braune 2018: 339).

2018). 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 different from the one in Modern German, in which adjectives only combine with the final consonant of relative pronouns and demonstratives (compare with Table 7.2 and Table 7.4 in Chapter 7). For this reason, I assume that in Old High German, the vowel is part of the phi and case morpheme, and in Modern German it is not.

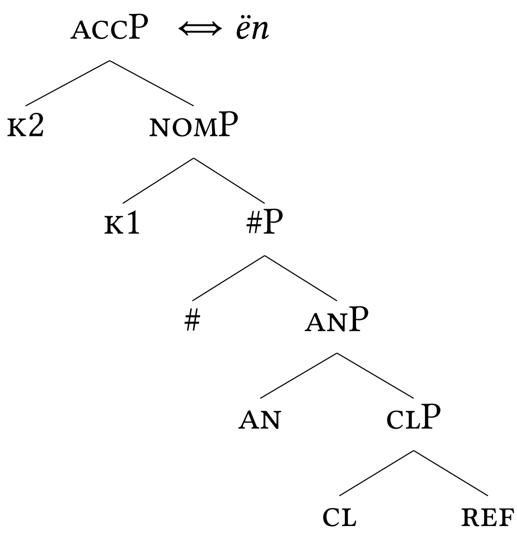
Besides gender, number and case features, I assume that the suffix also contains pronominal features. I do not only do so because the suffix is called pronominal inflection (*Pronominalflexion*) in the literature (Braune 2018: 338), but also because it appears in other pronominal forms too, such as possessives (Braune 2018: 337-338), demonstratives with the *dës*-stem (Braune 2018: 342) and interrogatives (Braune 2018: 345).

I give the lexical entries for *ër* and *ën* in (4a) and (4b). The *ër* is the nominative masculine singular, so it spells out the features REF, CL, AN, # and K1. The *ën* is the accusative masculine singular, so it spells out the features that the *ër* spells out plus K2.

(4) a.



b.

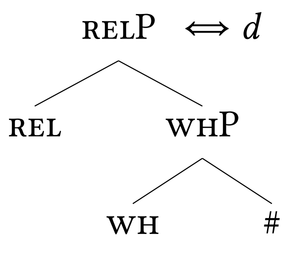


I continue with the morpheme *d*. This morpheme corresponds to what I called the REL-feature in Chapter 6 and in the introduction to this chapter. I argue that this morpheme actually spells out the feature REL, the feature WH and a number feature.

I assume that the *d* spells out the operator features WH and REL because the *d* functions as a relative pronoun in Old High German. I assume that *d* also spells out the feature #. This is a theory-internal assumption that is required by the spellout algorithm. The feature # is copied from the first workspace when I build a complex specifier.

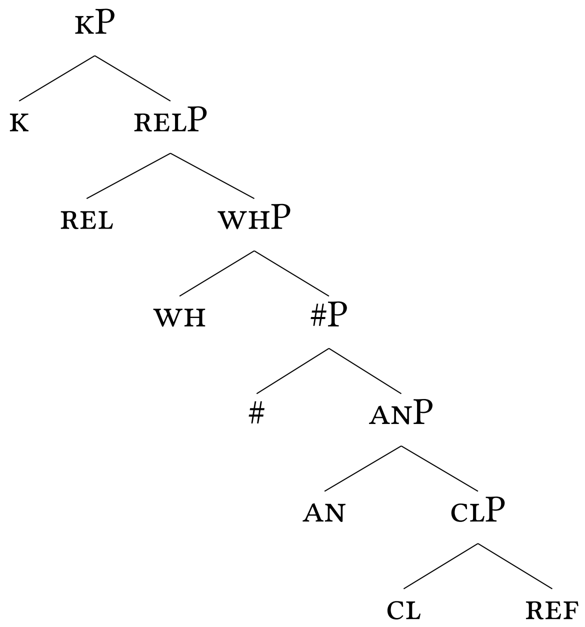
In sum, the morpheme *d* corresponds to the features REL, WH and # as shown in (5).

(5)



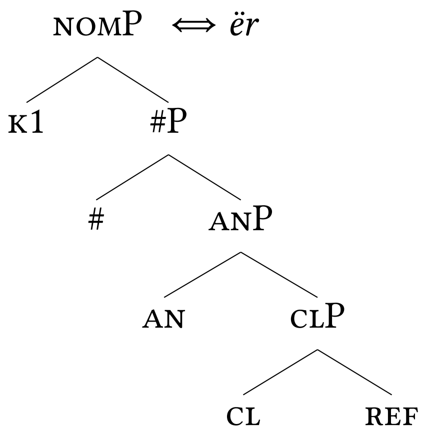
In what follows, I show how the Old High German relative pronouns are constructed. I follow the same functional sequence as I did for Modern German and Polish. I give the functional sequence in (6).

(6)

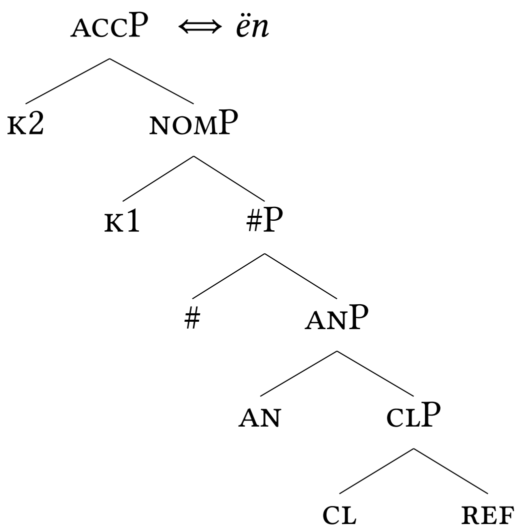


Of course, the spellout procedure remains the same. The outcome is different because of the different lexical entries Old High German has. I repeat the available lexical entries in (7).

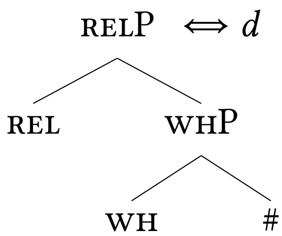
(7) a.



b.

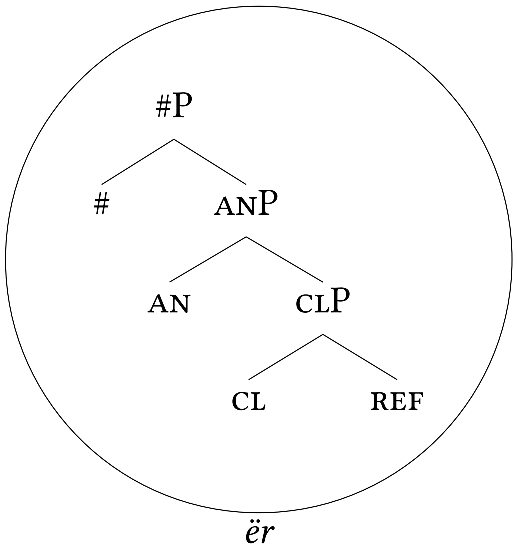


c.



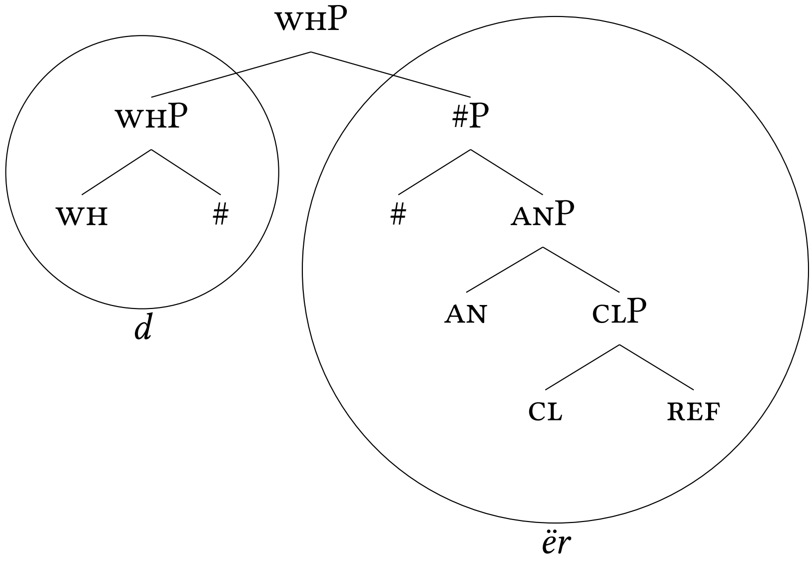
Starting from the bottom, the first two features that are merged are REF and CL, creating a CLP. The syntactic structure forms a constituent in the lexical tree in (7a), which corresponds to *ër*. Therefore, the CLP is spelled out as *ër*, which I do not show here. Then, the feature AN is merged, and an ANP is created. The syntactic structure forms a constituent in the lexical tree in (7a). Therefore, the ANP is spelled out as *ër*, which I do not show here either. Then, the feature # is merged, and a #P is created. The syntactic structure forms a constituent in the lexical tree in (7a). Therefore, the #P is spelled out as *ër*, which I show in (8).

(8)



Next, the feature WH 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 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 # (the previous syntactic feature on the functional sequence) into a WHP. This syntactic structure forms a constituent in the lexical tree in (7c), which corresponds to the *d*. Therefore, the WHP 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 (9).

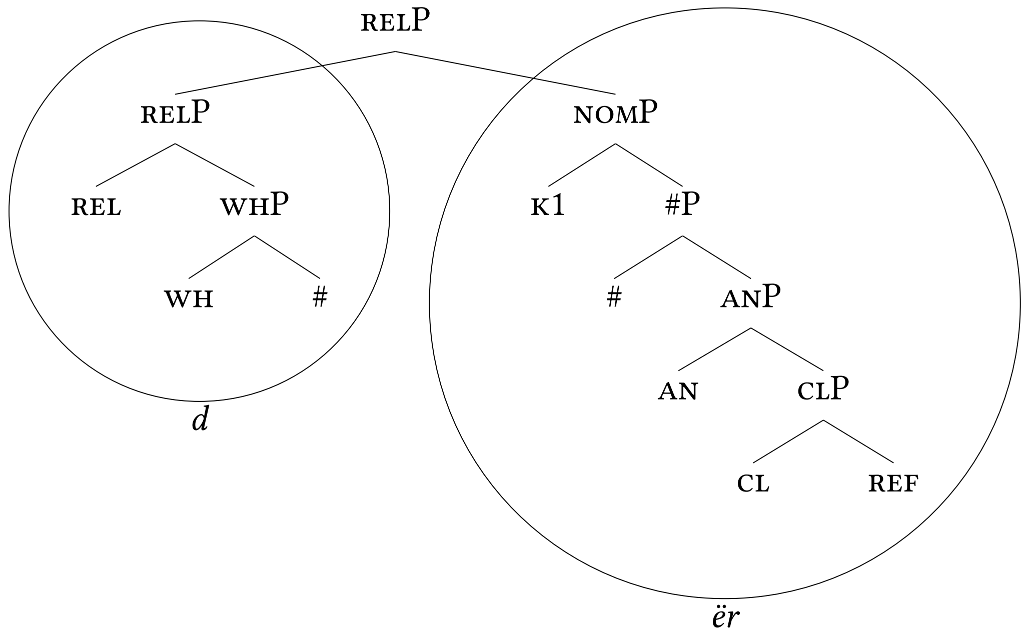
(9)



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 WHP from the #P. The feature REL is merged in both workspaces, so with WHP and and with #P. The spellout of REL is successful when it is combined with the WHP. It forms a constituent in the lexical tree in (7c), which corresponds to the *d.* The RELP is spelled out as *d*, and it is merged back to the existing syntactic structure.

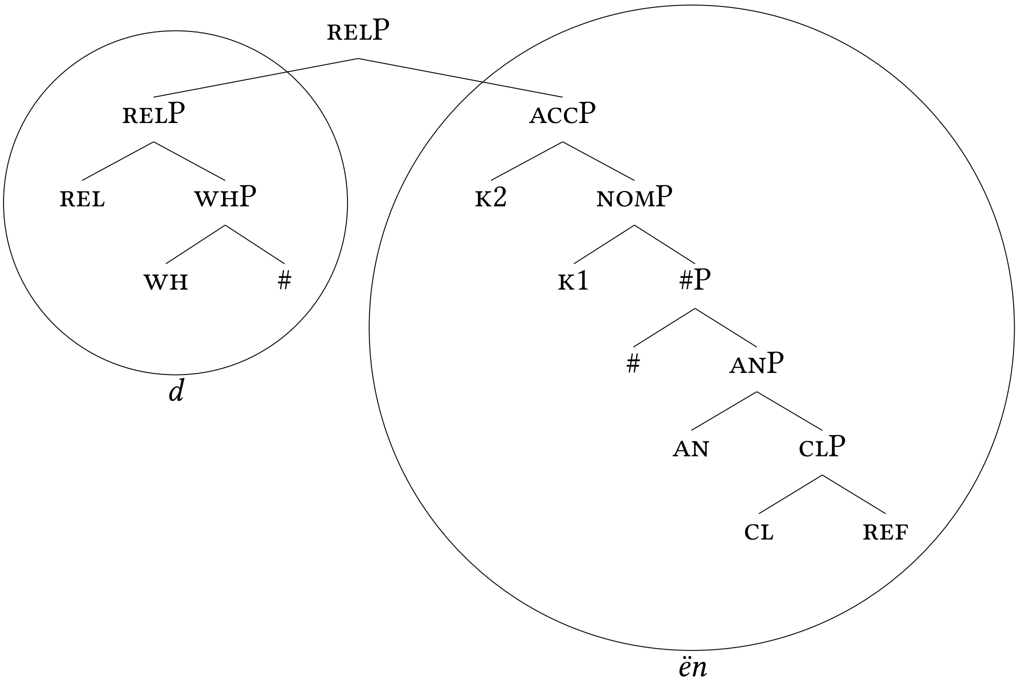
For the nominative relative pronoun, the last feature is merged: the K1. This feature should somehow end up merging with #P, because it forms a constituent in the lexical tree in (7a), which corresponds to the *ër.* This is achieved via Backtracking in which phrases are split up and going through the Spellout Algorithm. I go through the derivation step by step. The feature K1 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 #P. The feature K1 is merged in both workspaces, so with the RELP and and with the #P. The spellout of K1 is successful when it is combined with the #P. It forms a constituent in the lexical tree in (7a), 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 (10).

(10)



For the accusative relative pronoun, the last feature is merged: the k2. The derivation for k2 resembles the derivation of k1. The feature is merged with the existing syntactic structure, creating an 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 k2 is merged in both workspaces, so with the relP and and with the nomP. The spellout of k2 is successful when it is combined with the nomP. It forms a constituent in the lexical tree in (7b), 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 (11).

(11)



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 or the relative pronoun can be deleted or not.

9.2 The Old High German light heads

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 contained in the other one. In Chapter 6 and in the introduction of this chapter, I suggested that Old High German has two possible light heads: the extra light head and the demonstrative. That means that there are also two different light-headed relatives that can be the source of the headless relative.

For Modern German and Polish, I considered two kinds of light-headed relatives as the potential source of the headless relative. The first possible scenario would be that the headless relative is derived from an existing light-headed relative. The second possible scenario would be that the headless relative is derived from a light-headed relative that does not surface. I concluded for Modern German and Polish that the second scenario is the one that is attested in the languages. For Old High German I argue that headless relatives can be derived from both kinds of light-headed relatives.

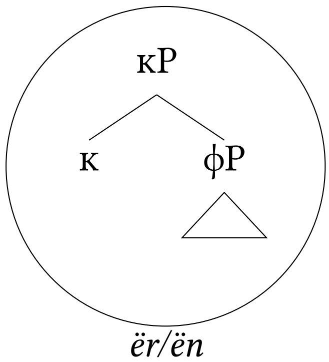
In Section 9.2.1, I introduce the extra light head that does not surface in the language in a light-headed relative as the first possible light head. In Section 9.2.2, I introduce the demonstrative that does surface in the language in a light-headed relative as the second possible light head.

9.2.1 The extra light head

As I mentioned in the introduction of this section, headless relatives in Old High German can be derived from two different light-headed relatives. In this section I discuss the first one, the light-headed relative that does not surface in the language. This light-headed relative is headed by the extra light head, just as in Modern German and Polish.[5]

In the introduction of this chapter, I suggested that the extra light head (or the first possible light head as I called it there) in the unrestricted type of language consists of two features: ϕ and ĸ. I claimed that the internal syntax of the extra light head is as shown in (12).

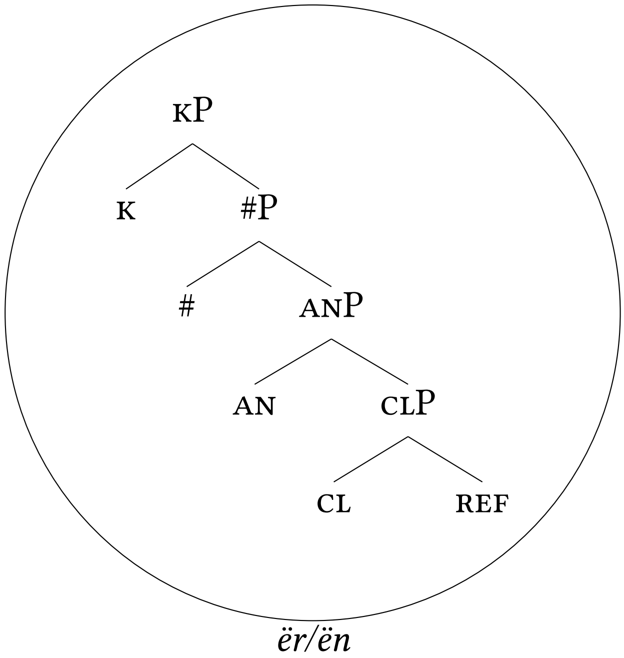
(12)



In this section, I give the exact feature content of the extra light head. I claim that the extra light head corresponds to the phi and case feature morpheme of the relative pronoun, just as it does in Modern German and Polish. I show the complete structure that I work towards in this section in (13).

[5] In the sections on extra light heads in Modern German and Polish I discussed the possible interpretations of headless relatives in these languages. In this section I do not do so for Old High German. I come back to this in Section 9.4.

(13)



The internal syntax of the Old High German extra light head is identical to the internal syntax of the Modern German extra light head. They both form a single phi and case feature portmanteau.

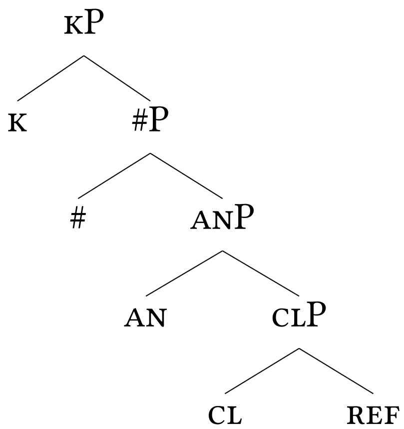
In the remainder of this section, I discuss the two extra light heads that I compare the internal syntax of in Section 9.3. As I noted before, these forms do not surface as light heads in a light-headed relative. They do also not surface anywhere else in the language. They are the nominative masculine singular and the accusative masculine singular, shown in (14).[6]

(14) a. ër 'elh.m.sg.nom'
b. ën 'elh.m.sg.acc'

Just as in Modern German and Polish, the functional sequence for the extra light head is as shown in (15).

[6] Again, for reasons of space, I do not discuss the dative form. I assume its analysis is identical to the one I propose for the nominative and the accusative.

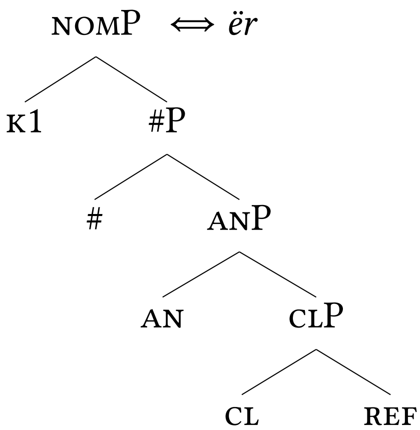
(15)



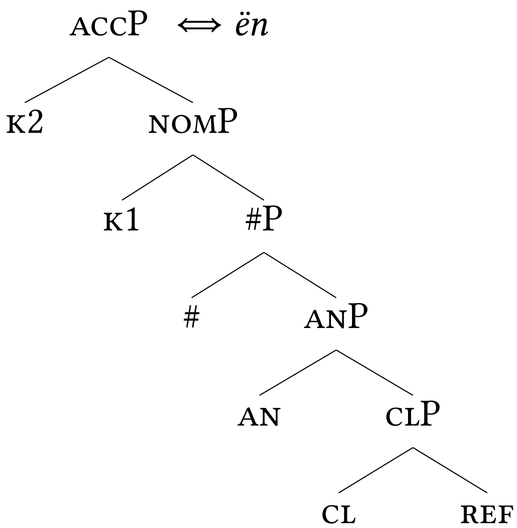
The functional sequence contains the pronominal feature REF, the gender features CL and AN, the number feature # and case features K.

I introduced the lexical entries that are required to spell out these features in Section 9.1. I repeat them in (16).

(16) a.

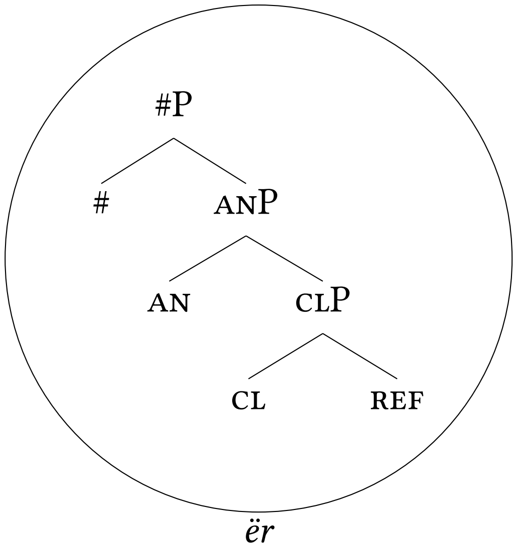


b.



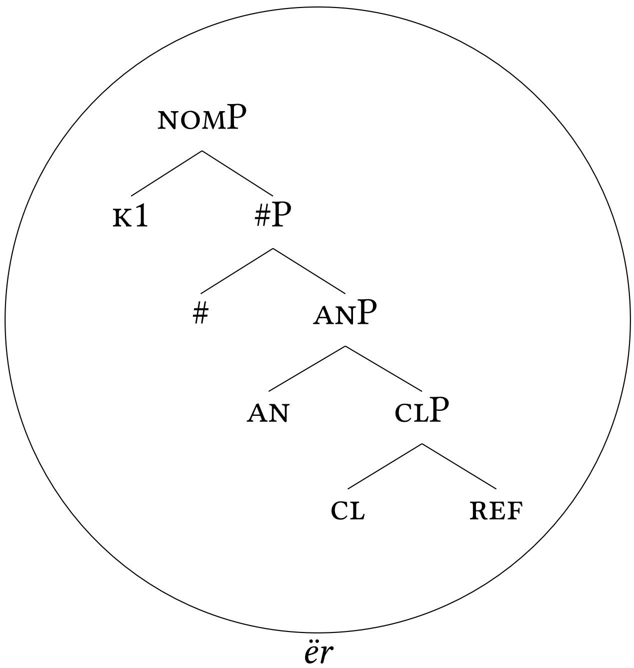
In what follows, I construct the Old High German extra light heads. Until the feature #, the derivation is identical to the one of the relative pronoun. I give the syntactic structure at that point in (17).

(17)



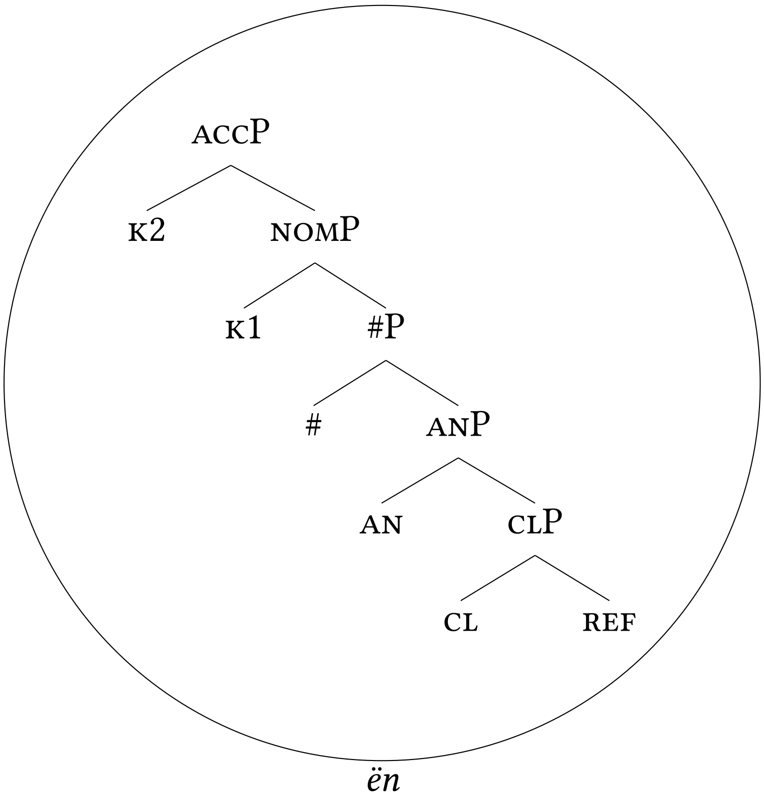
The last feature that is merged for the nominative extra light head is the K1. It is merged, and the nomP is created. The syntactic structure forms a constituent in the lexical tree in (16a). Therefore, the nomP is spelled out as *ër*, as shown in (18).

(18)



For the accusative extra light head, one more feature is merged: the K2. It is merged, and the accP is created. The syntactic structure forms a constituent in the lexical tree in (16b). Therefore, the accP is spelled out as *ën*, as shown in (19).

(19)



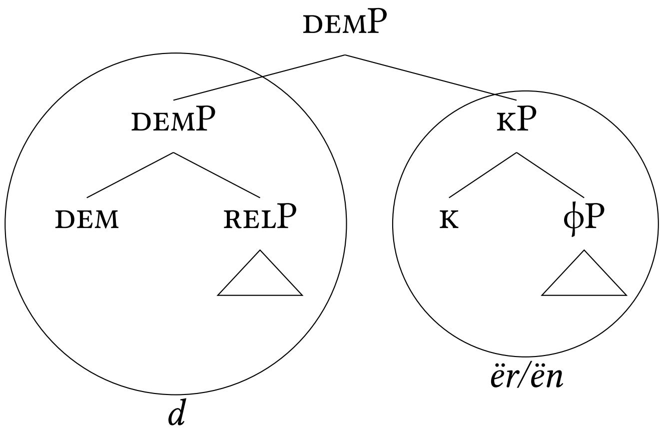
In sum, Old High German headless relatives can be derived from a light-headed relative headed by an extra light head, just as in Modern German and Polish. This extra light head is spelled out by a single phi and case feature portmanteau, just as in Modern German. The lexical entries used to spell out this extra light head are also used to spell out a morpheme of the internal syntax of the relative pronoun.

9.2.2 The demonstrative

As I mentioned in the introduction of this section, headless relatives in Old High German can be derived from two different light-headed relatives. In this section I discuss the second one, the light-headed relative that also surfaces in the language. This light-headed relative is headed by a demonstrative. It cannot be the source of a headless relative in Modern German or Polish, but it can in Old High German. The reason for that is that in Old High German, the demonstrative is syncretic with the relative pronoun (that surfaces in headless relatives).

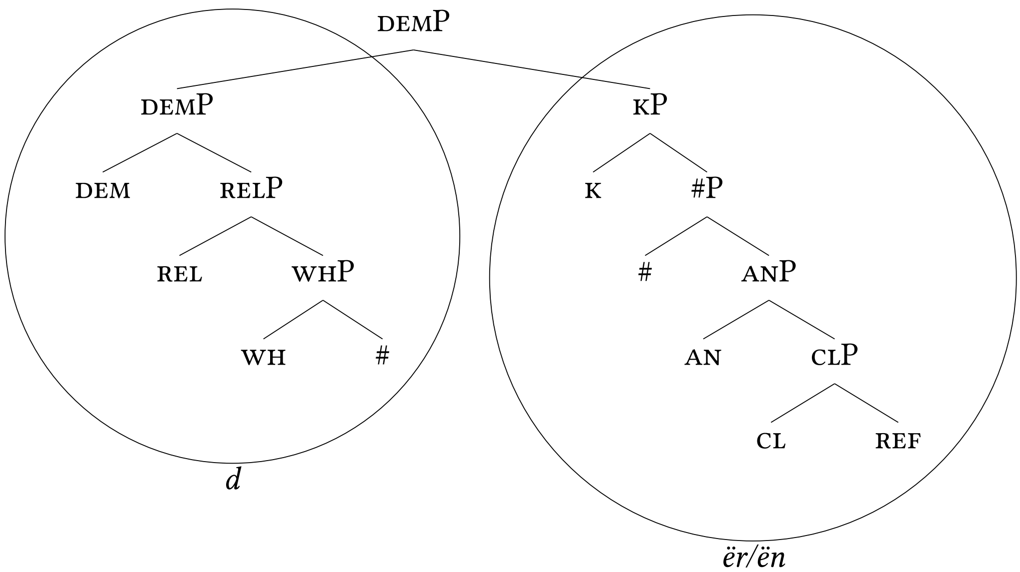
In the introduction of this chapter, I suggested that the internal syntax of the demonstrative is as shown in (20).

(20)



Also in the introduction of this chapter, I suggested that the demonstrative in the unrestricted type of language consist of four features: DEM, REL, ϕ and K. The demonstrative is spelled out by the same lexical entries as the relative pronoun. This raises the question of how the features DEM and REL are connected. This is what I discuss in this section. I show the complete structure that I work towards in this section in (21).

(21)



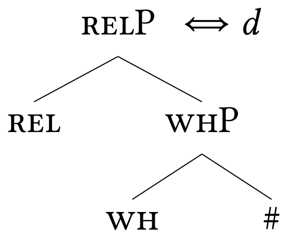
I give an example of a relative clause headed by a demonstrative in (22). The *ther* 'DEM.SG.M.NOM' not marked in bold is the demonstrative that is the head of the relative clause. The *ther* 'RP.SG.M.NOM' marked in bold is the relative pronoun in the relative clause.[7]

(22) Crist, uuer ist ther **ther** **dih**
Christ who.AN.NOM be.3SG DEM.SG.M.NOM RP.SG.M.NOM 2SG.ACC
slehit?
hit.3SG
'Christ, who is the one that hit you?'
(Old High German, Tatian 192:2)

As (22) shows and as I mentioned earlier in this chapter, relative pronouns and demonstrative pronouns are syncretic in Old High German. Both of them start with a *d*, followed by a phi and case feature portmanteau. I already discussed the phi and case feature morpheme in Section 9.1. In what follows, I discuss how the two *d*s are related.

As I mentioned, both relative pronouns and demonstratives start with a *d*. As I discussed throughout this dissertation (especially in Chapter 3), a syncretism can be described by letting the two forms correspond to the same lexical entry.[8] The lexical entry for *d* I gave so far is the one in (23).

(23)

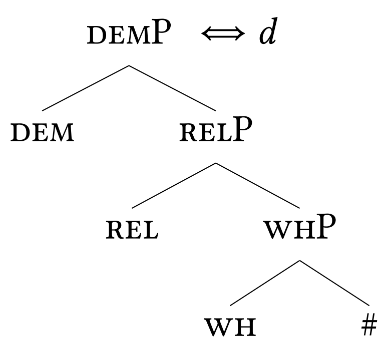


Logically speaking, the syncretism can be derived by either placing the DEM feature above the feature REL or below it in the functional sequence. I show the two options in (24).

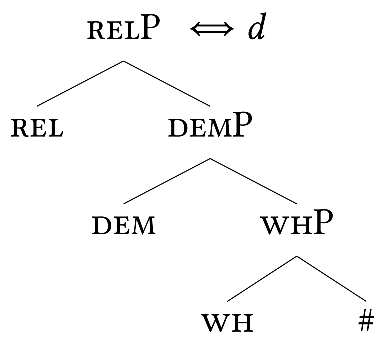
[7]I assume that whether both the demonstrative and the relative pronoun or only one of them surfaces is determined by information structure. In (22), it seems plausible that the one that hit Christ is emphasized, and that therefore no deletion takes place.

[8]It is also possible to argue that they are accidentally syncretic. As the syncretism between relative pronouns and demonstratives is attested in multiple (albeit mostly Germanic) languages (Baunaz and Lander, 2018a), I do not discuss that option.

(24) a.



b.



With both lexical entries, the *d* is inserted for the RELP and the DEMP (because of the Superset Principle). The feature DEM could not be placed below WH, as Old High German uses pronouns starting with *(h)w* for interrogatives. If the feature DEM was below WH, it would be the *(h)w* that would be inserted and not the *d* (because of the Elsewhere Condition, see Chapter 3).

If you also consider the syncretisms in Modern German and in Polish, then only the ordering in (24a) can derive the patterns. These languages have a syncretism between the interrogative and the relative pronoun to the exclusion of the demonstrative. I give an overview of the syncretism patterns in the different languages I discussed in Table 9.5.[9]

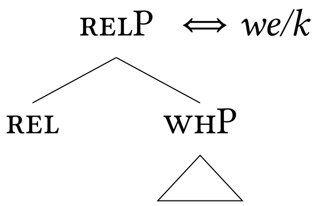
Table 9.5: Syncretisms between DEM, REL and WH

language	DEM	REL	WH
Old High German	d	d	(h)w
Modern German	d	w	w
Polish	t	k	k

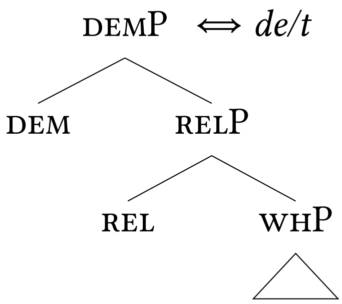
[9] As discussed in Chapter 7, headed relatives in Modern German take the relative pronoun that starts with a *d*. Table 9.5 shows only the relative pronouns that appear in headless relatives. In footnote 10 I show how the two different relative pronouns can be modeled.

I give the lexical entries for Modern German and Polish that derive this pattern in (25).[10]

(25) a.



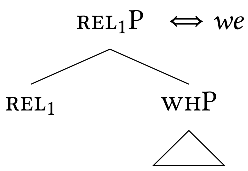
b.



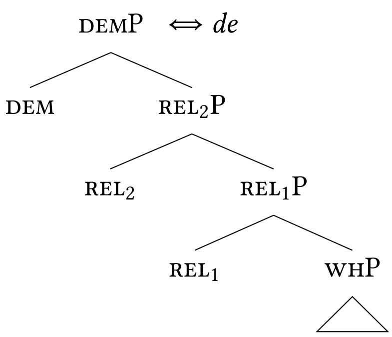
The functional sequence in (24a) has also been proposed by Baunaz and Lander (2018a), who in addition include a complementizer and an indefinite

[10] As discussed in Chapter 7, Modern German actually has two relative pronouns: one starting with a *d* and one starting with a *w*. To capture that, I assume that the REL-head should actually consist of two heads, say REL_1 and REL_2. Up to REL_1, the structure is spelled out as *we* and from REL_2 on the structure is spelled out as *de*. I give the lexical entries that derive this result in (i).

(i) a.



b.



Splitting up the REL head in two heads does not make a difference for Old High German and Polish. Old High German only lets *h(w)* spell out the WHP, and Polish lets *k* spell out the WHP and both RELPs.

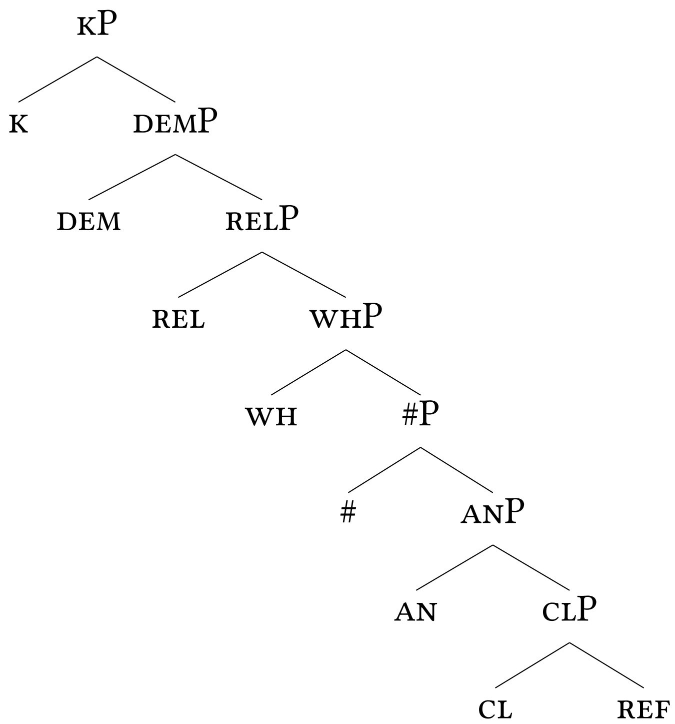
(which is not what I call the extra light head). They provide evidence from crosslinguistic patterns of syncretism and morphological containment.[11]

In the remainder of this section, I discuss the two demonstratives that I compare the internal syntax of in Section 9.3. These are the nominative masculine singular and the accusative masculine singular, shown in (26).[12]

(26) a. d-ër 'DEM.M.SG.NOM'
b. d-ën 'DEM.M.SG.ACC'

The functional sequence for the demonstrative is as shown in (27).

(27)

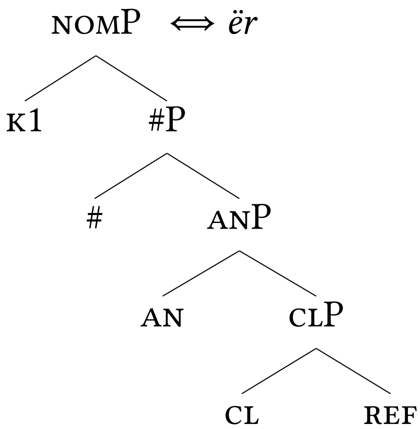


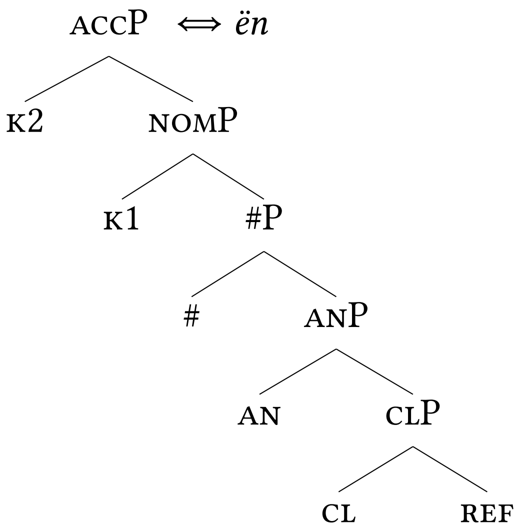
The functional sequence contains the pronominal feature REF, the gender features CL and AN, the number feature #, the operator features WH, REL and DEM and case features K.

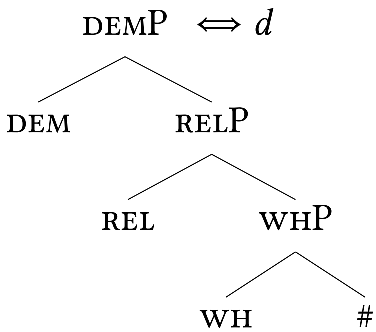
I introduced the lexical entries that are required to spell out these features in Section 9.1 and earlier in this section. I repeat them in (28).

[11]Semantically, this functional sequence can be interpreted as follows: WH introduces a set of alternatives, REL establishes a relation, and DEM picks an individual out of the set of alternatives.

[12]Again, for reasons of space, I do not discuss the dative form. I assume its analysis is identical to the one I propose for the nominative and the accusative.

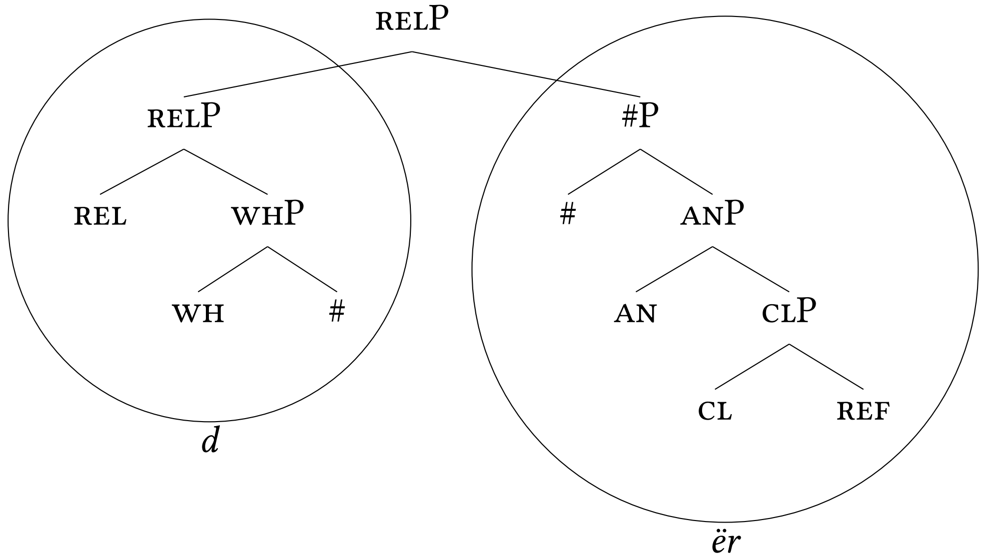
(28) a.


b.


c.


In what follows, I construct the Old High German demonstratives. Until the feature REL, the derivation is identical to the one of the relative pronoun. I give the syntactic structure at that point in (29).

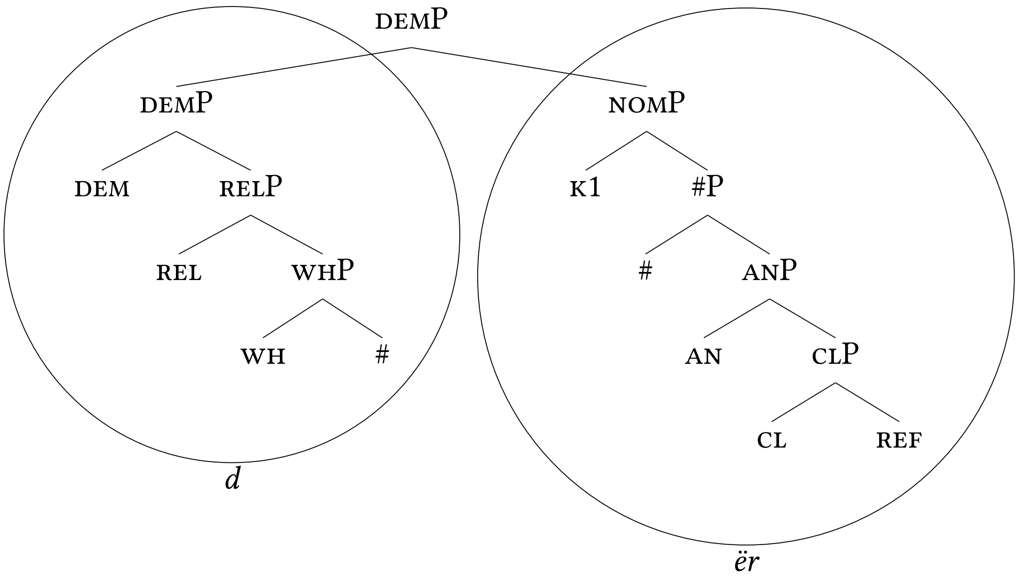
(29)



The next feature that is merged is the feture dem. The derivation for this feature resembles the derivation of rel. The feature is merged with the existing syntactic structure, creating a demP. 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 #P. The feature dem is merged in both workspaces, so with relP and and with #P. The spellout of rel is successful when it is combined with the relP. It forms a constituent in the lexical tree in (28c), which corresponds to the *d*. The demP is spelled out as *d*, and it is merged back to the existing syntactic structure.

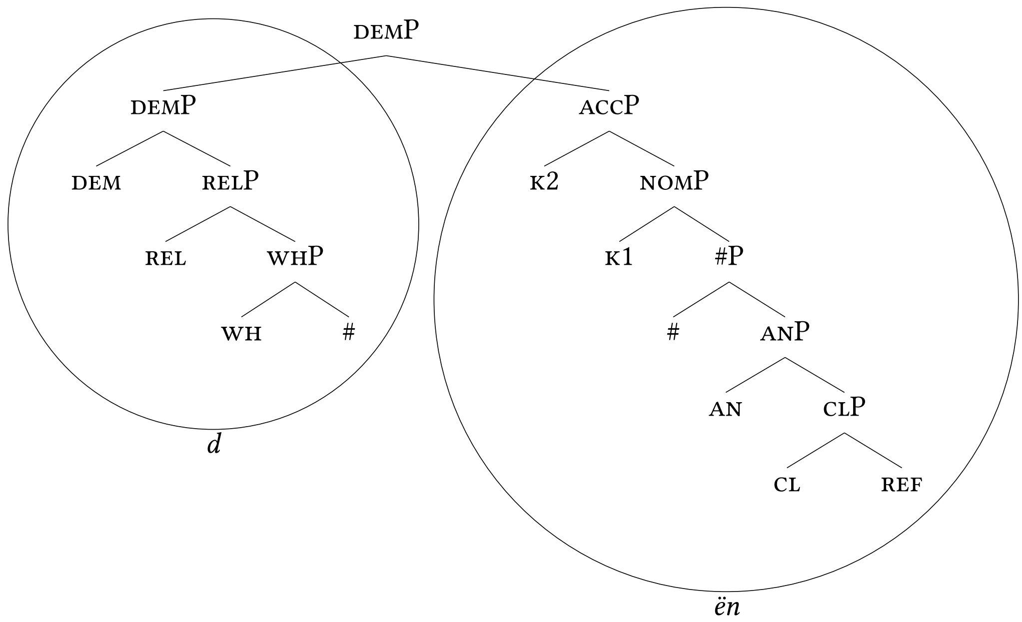
For the nominative relative pronoun, the last feature is merged: the k1. This feature should somehow end up merging with #P, because it forms a constituent in the lexical tree in (28a), which corresponds to the *ër*. This is achieved via Backtracking in which phrases are split up and going through the Spellout Algorithm. I go through the derivation step by step. The feature k1 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 demP from the #P. The feature k1 is merged in both workspaces, so with the demP and and with the #P. The spellout of k1 is successful when it is combined with the #P. It forms a constituent in the lexical tree in (28a), 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 (30).

(30)



For the accusative relative pronoun, the last feature is merged: the K2. The derivation for K2 resembles the derivation of K1. The feature is merged with the existing syntactic structure, creating an 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 DEMP from the NOMP. The feature K2 is merged in both workspaces, so with the DEMP and and with the NOMP. The spellout of K2 is successful when it is combined with the NOMP. It forms a constituent in the lexical tree in (28b), 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 (31).

(31)



In sum, Old High German headless relatives can be derived from a light-headed relative headed by a demonstrative. This demonstrative is spelled out by a morpheme that spells out the features of the relative pronoun plus the feature dem. The lexical entries used to spell out the demonstrative are also used to spell out the relative pronoun, as the demonstrative and the relative pronoun are syncretic.

9.3 Comparing light heads and relative pronouns

In this section, I compare the internal syntax of extra light heads and demonstratives to the internal syntax 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 comparisons for Old High German specifically, and that the content of the internal syntax that is being compared is motivated earlier in this chapter.

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 light-headed relative headed by the extra light head or the light-headed relative headed by the demonstrative as the source of the headless relative. 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-headed relative headed by the demonstrative as the source of the headless relative and not the light-headed relative headed by the extra light head. Before I can properly do that, I take a necessary but brief 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 light-headed relative headed by the extra light head as the source of the headless relative and not the light-headed relative headed by the demonstrative.[13]

I start with the situation in which the cases match. Consider the example in (32), in which the internal nominative case competes against the external nominative case. The relative clause is marked in bold. (32a) shows the example with the extra light head, and (32b) shows the example with the demonstrative. The internal case is nominative, as the predicate *senten* 'to send' takes nominative subjects. In both examples, the relative pronoun *dher* 'RP.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 (32a), the extra light head *er* 'ELH.SG.M.NOM' appears in the nominative case. It is placed between square brackets because it does not surface. In (32b), the demonstrative *dher* 'DEM.SG.M.NOM' appears in the nominative case. Here the relative pronoun is placed between square brackets because it does not surface.

(32) a. quham [er] **dher**
come.PST.3SG$_{[\text{NOM}]}$ ELH.SG.M.NOM RP.SG.M.NOM

[13] In this section I discuss two different light heads (the extra light head and the demonstrative) and two different types of containment (structural containment and formal containment). That means that I could make four comparisons per headless relative: (1) one with the extra light head and structural containment, (2) one with the extra light head and formal containment, (3) one with the demonstrative and structural containment, and (4) one with the demonstrative and formal containment. I do not do this. Instead, I only discuss the first and the last option, namely whether there is structural containment with the extra light head and whether there is formal containment with the demonstrative. The other two comparisons (extra light head with formal containment and demonstrative with structural containment) never lead to a deletion, because the containment never holds when the other type of containment does not either.

chisendit **scolda** **uuerdhan**
send.PST.PTCP$_{[\text{NOM}]}$ should.PST.3SG become.INF
'the one, who should have been sent, came'
(Old High German, Isid. 35:5)

b. quham dher [**dher**]
come.PST.3SG$_{[\text{NOM}]}$ DEM.SG.M.NOM RP.SG.M.NOM
chisendit **scolda** **uuerdhan**
send.PST.PTCP$_{[\text{NOM}]}$ should.PST.3SG become.INF
'the one, who should have been sent, came'
(Old High German, Isid. 35:5)

Both examples in (32) can be the source of the headless relative. First I show the comparison of the internal syntax of the extra light head and relative pronoun in (32a). Then I show the comparison of the internal syntax of the demonstrative and the relative pronoun in (32b).

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.

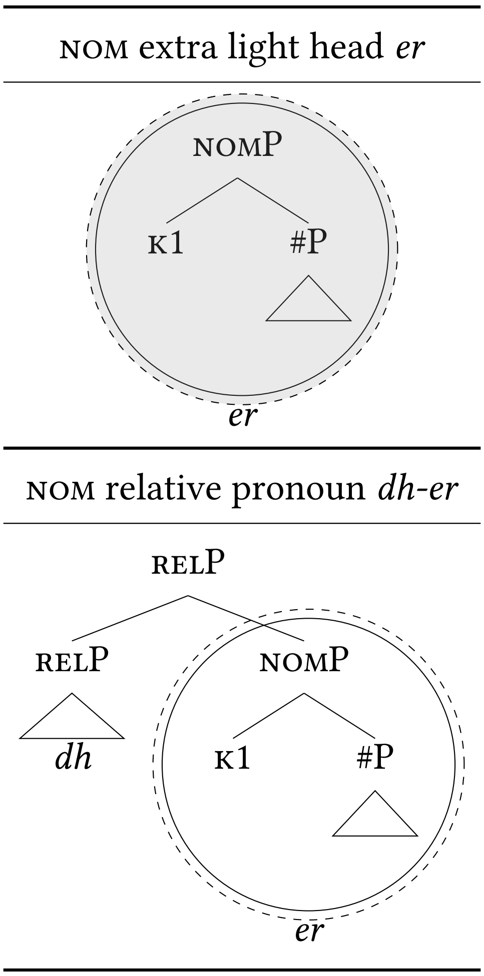


Figure 9.5: Old High German EXT$_{\text{NOM}}$ VS. INT$_{\text{NOM}}$ $\longrightarrow$ *dher* (ELH)

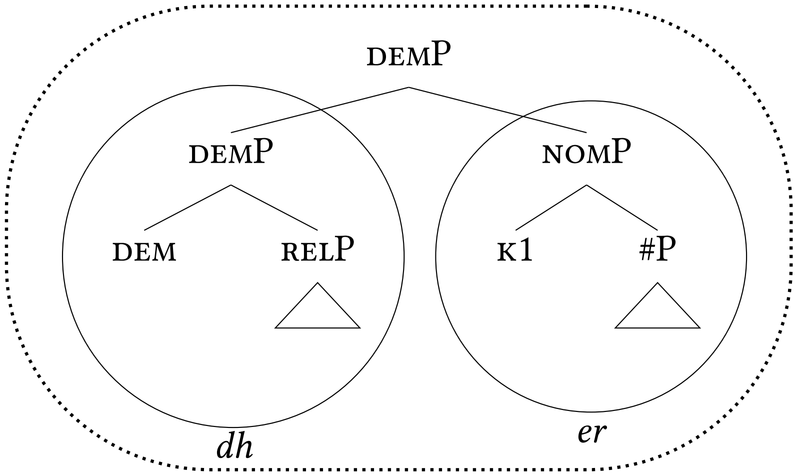
The extra light head consists of a single morpheme: *er*. The relative pronoun consists of two morphemes: *dh* and *er*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around the NOMP, as it is the biggest possible element that is structurally contained in both the extra light head and the relative pronoun.

The extra light head consists of a single morpheme: the NOMP. This NOMP is structurally contained in 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 element is the relative pronoun that bears the internal case: *dher*.[14]

[14]The relative pronoun (*dher*) also formally contains the extra light head (*er*). The extra light head could also be deleted via formal containment.

In Figure 9.6, I give the syntactic structure of the demonstrative at the top and the syntactic structure of the relative pronoun at the bottom.

NOM demonstrative *dh-er*



NOM relative pronoun *dh-er*

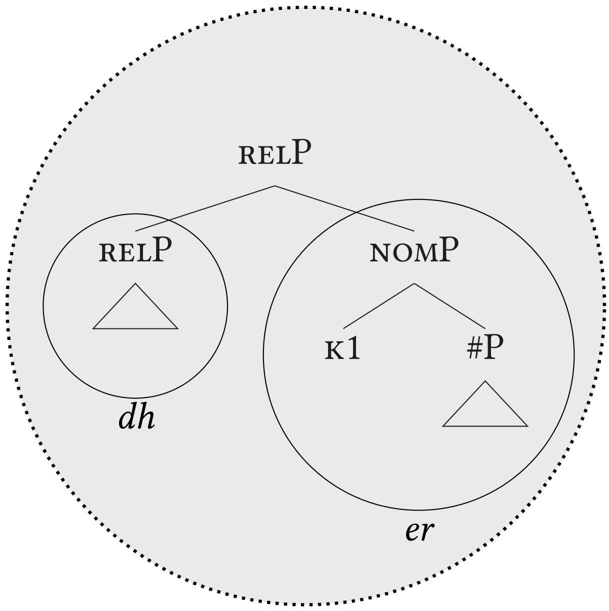


Figure 9.6: Old High German EXT_{NOM} vs. $\text{INT}_{\text{NOM}} \longrightarrow$ *dher* (DEM)

The demonstrative consists of two morphemes: *dh* and *er*. The relative pronoun also consists of two morphemes: *dh* and *er*. I draw a dotted circle around the DEMP and the RELP, as they are the biggest possible elements that are formally contained in both the demonstrative and the relative pronoun.

The relative pronoun (the RELP realized by *dher*) is formally contained in the demonstrative (the DEMP realized by *dher*). Therefore, the relative pronoun can be deleted. I signal the deletion of the relative pronoun by marking the content of its circle gray. The surface element is the demonstrative that bears the external case: *dher*.[15,16]

For reasons of space I do not show the comparisons of the other matching situations. These are situations in which both the internal and external case are accusative or both the internal and external case are dative. The same logic as I showed in Figure 9.5 and Figure 9.6 works for these situations too.

I continue with the situation in which the external case is the more complex one. Consider the examples in (33), in which the internal nominative case competes against the external accusative case. The relative clause is marked in bold. (33a) shows the example with the extra light head, and (33b) shows the example with the demonstrative. The internal case is nominative, as the predicate *gisizzen* 'to possess' takes nominative subjects. In both examples, the relative pronoun *dher* 'RP.SG.M.NOM' appears in the nominative case. The external case is accusative, as the predicate *bibringan* 'to create' takes accusative objects. In (33a), 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 (33b), the demonstrative *dhen* 'DEM.SG.M.ACC' appears in the accusative case. Here the relative pronoun is placed between square brackets because it does not surface.

(33) a.

ih	bibringu	fona	iacobes	samin	endi
1SG.NOM	create.PRES.1SG$_{[ACC]}$	of	Jakob.GEN	seed.SG.DAT	and

fona	iuda	[en]	**dher**	**mina**
of	Judah.DAT	ELH.SG.M.ACC	RP.SG.M.NOM	my.ACC.M.PL

berga	**chisitzit**
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)

[15] The same holds the other way around: the demonstrative (the DEMP realized by *dher*) is formally contained in the relative pronoun (the RELP realized by *dher*). Therefore, with the information I have given so far, it could also be that the demonstrative is deleted. In Section 9.4 I discuss the larger syntactic structure of headless relatives and I show in this case only the relative pronoun can be deleted because of c-command relations.

[16] Here the relative pronoun (*dher*) does not structurally contain the demonstrative (*dher*). The demonstrative cannot be deleted via structural containment but only via formal containment.

b. ih bibringu fona iacobes samin endi
1SG.NOM create.PRES.1SG$_{[ACC]}$ of Jakob.GEN seed.SG.DAT and
fona iuda dhen **[dher]** **mina**
of Judah.DAT DEM.SG.M.ACC RP.SG.M.NOM my.ACC.M.PL
berga **chisitzit**
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)

Only (33b) can be the source of the headless relative. First I show the comparison of the internal syntax of the extra light head and relative pronoun in (33a), which does not lead to a grammatical headless relative. Then I show the comparison of the internal syntax of the demonstrative and the relative pronoun in (33b), which does derive a grammatical headless relative.

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.

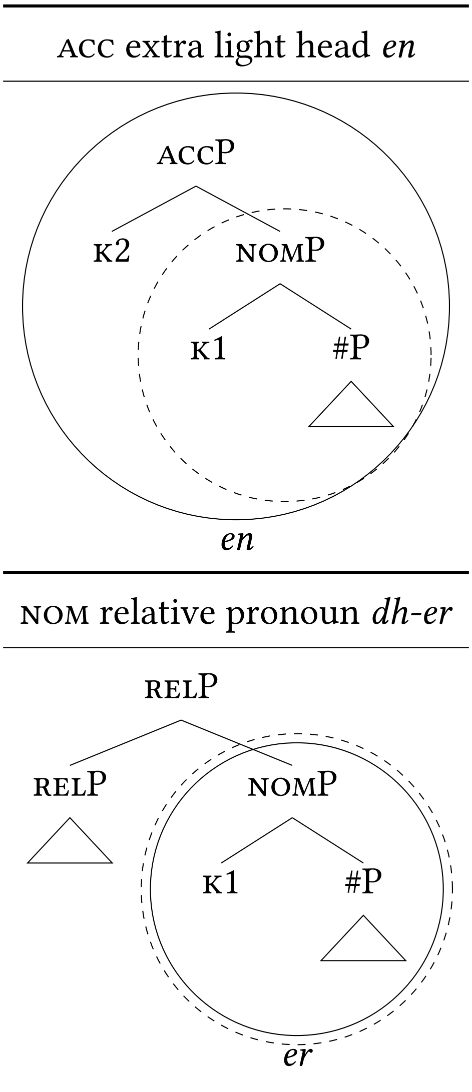


Figure 9.7: Old High German EXT$_{\text{ACC}}$ vs. INT$_{\text{NOM}}$ $\nrightarrow$ *en*/*dher* (ELH)

The extra light head consists of a single morpheme: *er*. The relative pronoun consists of two morphemes: *dh* and *en*. I draw a dashed circle around the NOMP, as it is the biggest possible element that is structurally contained in both the extra light head and the relative pronoun.

In this case, the extra light head is not structurally contained in the relative pronoun. The extra light head consists of a single morpheme: the ACCP. The relative pronoun only contains the NOMP, and it lacks the K2 that makes an ACCP. Since the weaker feature containment requirement is not met, the stronger constituent containment requirement cannot be met either. The relative pronoun is not structurally contained in the extra light head. It lacks the complete constituent RELP. The extra light head cannot be deleted, and the relative pronoun cannot be deleted either. As a result, the light-headed relative headed by the extra light head cannot be the source of the headless relative.[17]

In Figure 9.8, I give the syntactic structure of the demonstrative at the top and the syntactic structure of the relative pronoun at the bottom.

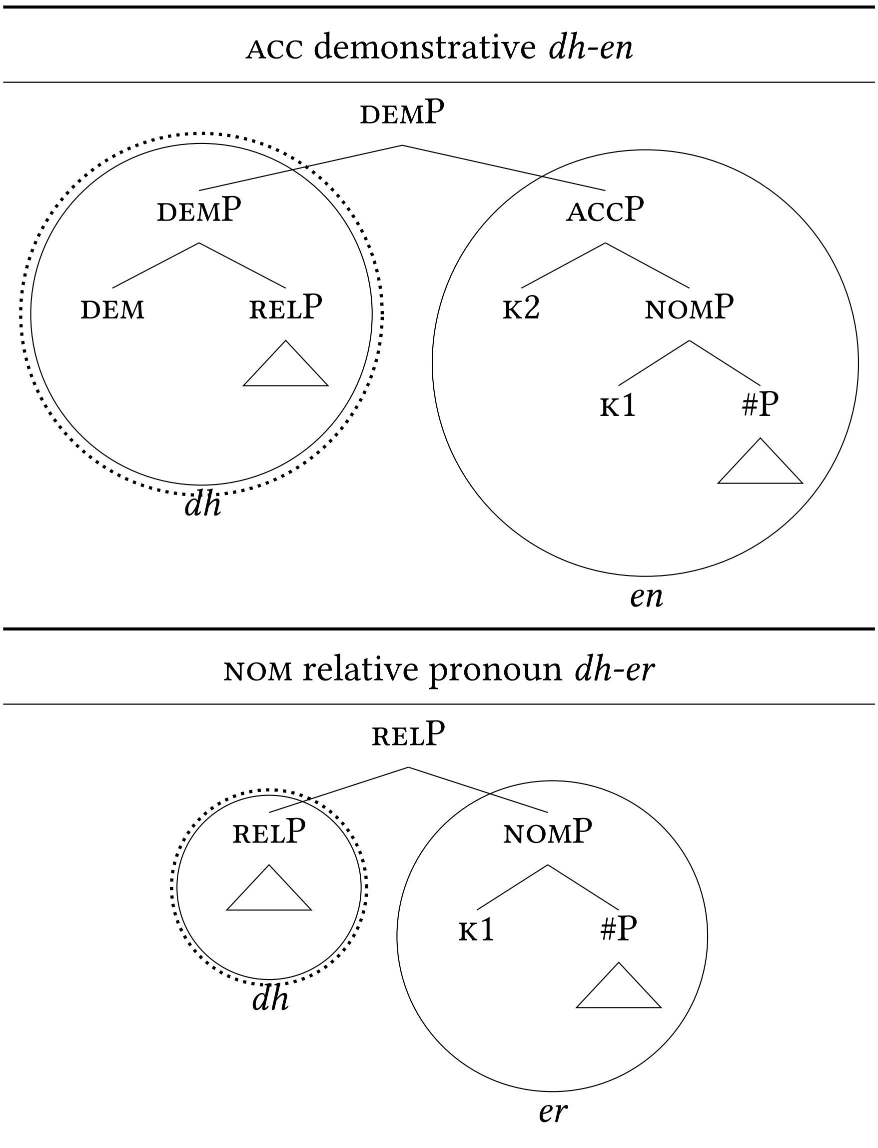


Figure 9.8: Old High German EXT$_{\text{ACC}}$ vs. INT$_{\text{NOM}}$ $\not\to$ *dhen*/*dher* (DEM)

The demonstrative consists of two morphemes: *dh* and *en*. The relative pronoun also consists of two morphemes: *dh* and *er*. I draw a dotted circle

[17]None of the elements can be deleted via formal containment either. The relative pronoun *dhen* and the extra light head *er* do not show any formal containment.

around the DEMP and the RELP, as they are the biggest possible elements that are formally contained in both the demonstrative and the relative pronoun.

The demonstrative is realized as *dhen*, and the relative pronoun is realized as *dher*. The demonstrative is not formally contained in the relative pronoun, and the relative pronoun is not formally contained in the demonstrative. Therefore, the demonstrative cannot be deleted, and the relative pronoun cannot be deleted either.[18] The inevitable result seems to be that the light-headed relative headed by the demonstrative cannot be the source of the headless relative. This is not what the data suggests, however, as a more complex external case is allowed to surface in Old High German.

To understand how a grammatical headless relative with a more complex external case gets to surface, the larger syntactic structure needs to be considered. I repeat the light-headed relative that is the source of the example from (33b) in (34).

(34)

ih	bibringu	fona	iacobes	samin	endi	fona
1SG.NOM	create.PRES.1SG$_{[\text{ACC}]}$	of	Jakob.GEN	seed.SG.DAT	and	of

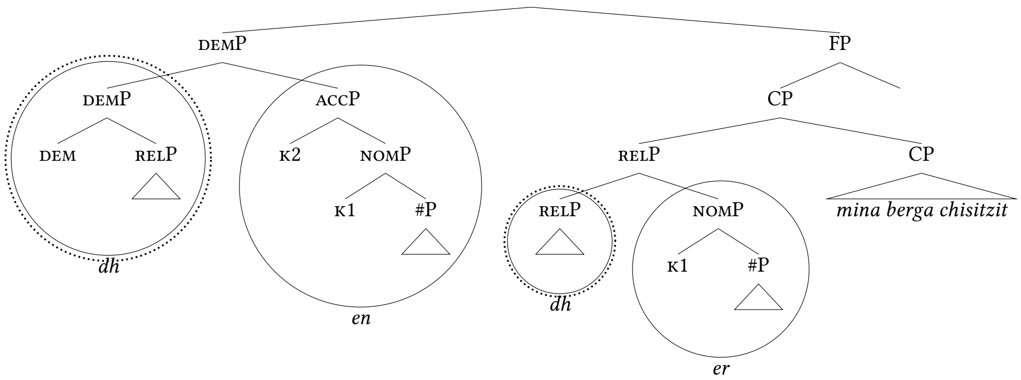
iuda	dhen	[**dher**]	**mina**	**berga**
Judah.DAT	DEM.SG.M.ACC	RP.SG.M.NOM	my.ACC.M.PL	mountain.ACC.PL

chisitzit
possess.PRES.3SG$_{[\text{NOM}]}$
'I create of the seed of Jacob and of Judah the one, who possess my mountains' (Old High German, Isid. 34:3)

Consider the syntactic structure in (35) that represents part of the sentence in (34).

[18] None of the elements can be deleted via structural containment either. The relative pronoun *dhen* and the demonstrative *dher* do not show any formal containment.

(35)

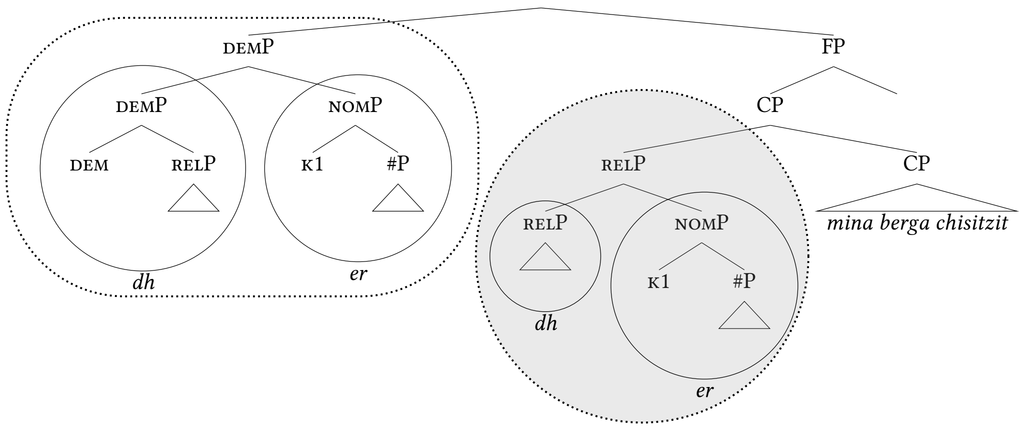


The DEMP on the left (that spells out as *dhen*) is the demonstrative from Figure 9.8. The RELP in the middle (that spells out as *dher*) is the relative pronoun from Figure 9.8. It is situated in the specifier of the CP. The CP on the right represents the relative clause without the relative pronoun. I do not show its internal structure, as it is not relevant for the discussion. The remainder of the main clause is also not part of this syntactic structure. This is because at this point in the derivation the features that spell out *ih bibringu fona iacobes samin endi fona iuda* 'I bring of the seed of Jacob and of Judah' have not been merged yet.

The structure in (35) has come into being by merging features one by one. The last feature that has been merged is K2, which created the ACCP within the DEMP. Remember from the functional sequence in (27) that case features are the highest features, so they are the last ones to be merged. Before the feature K2 was merged, the syntactic structure looked as in (36).[19]

[19] The feature K2 ends up in its position via several steps of Backtracking in which different workspaces are split up and features are merged in both workspaces, as explained in Chapter 7. First, the DEMP and the FP are split up and K2 is merged in both workspaces. None of them leads to a successful spellout, so both workspaces are split up further, giving three workspaces: the DEMP, the NOMP and the lowest CP. Now K2 can be spelled out with the NOMP. All workspaces are merged back together and the result is the structure in 9.8.

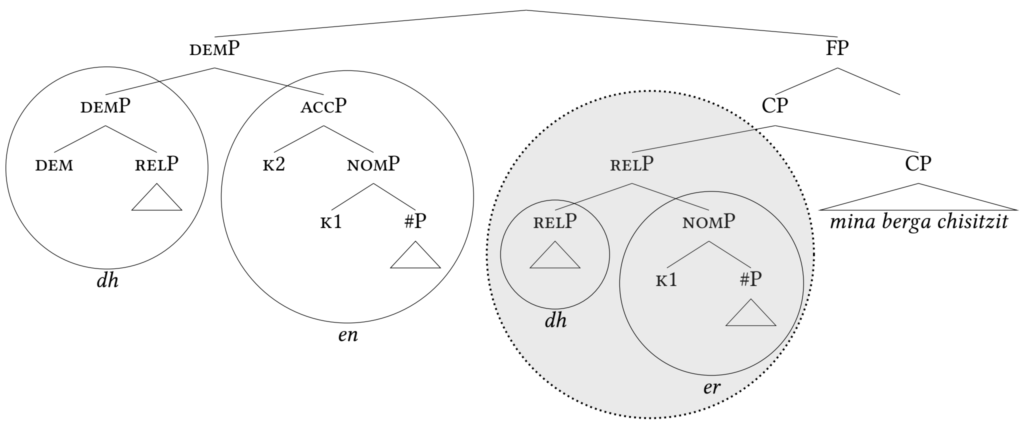
(36)



The demP on the left (that spells out as *dher*) is the demonstrative from Figure 9.6. The relP in the middle (that spells out as *dher*) is the relative pronoun from Figure 9.6. At this point in the derivation, the relative pronoun is formally contained in the demonstrative. Therefore, the relative pronoun can be deleted. I signal the deletion of the relative pronoun by marking the content of its circle gray in (36). The surface element is the demonstrative that bears the external case: *dher*.

Then the feature κ2 is merged, and the demonstrative is spelled out as *dhen*, as shown in (37).

(37)



The relative pronoun has been deleted in the previous stage of the derivation, so it is still absent. However, it is no longer the case that the demonstrative formally contains the relative pronoun. This example shows that it is crucial to not only consider the endpoint of a derivation, but also the steps in between.

For Modern German and Polish these steps in between do not make a difference. The reason for that is that it is only relevant when the external case is more complex than the internal one. Only then a previous step in the derivation is one in which the cases match. When the cases match, the endpoint of the derivation is already the relevant step in the derivation. At the end of this section, I explain why the cases never match when the internal case is more complex. In the situation in which the external case is more complex Modern German and Polish are not helped, as there is no syncretism between demonstratives and relative pronouns. Therefore, there is never any formal containment that can lead to a deletion.

For reasons of space I do not show the comparisons of the other situations in which the external case is more complex. These are situations in which the internal case is nominative and the external case is dative and in which the internal case is accusative and the external case is dative. The same logic as I showed in Figure 9.7 and (37) works for these situations too.

I end with the situation in which the internal case is the more complex one. Consider the examples in (38), in which the internal accusative case competes against the external nominative case. The relative clause is marked in bold. (38a) shows the example with the extra light head, and (38b) shows the example with the demonstrative. The internal case is accusative, as the predicate *zellen* 'to tell' takes accusative objects. In both examples, the relative pronoun *then* 'RP.SG.M.ACC' appears in the accusative case. In (38a), 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 (38b), the demonstrative *dher* 'DEM.SG.M.NOM' appears in the nominative case. Here the relative pronoun is placed between square brackets because it does not surface.

(38) a. Thíz ist [er] **then**
DEM.SG.N.NOM be.PRES.3SG$_{[\text{NOM}]}$ ELH.SG.M.NOM RP.SG.M.ACC
sie zéllent
3PL.M.NOM tell.PRES.3PL$_{[\text{ACC}]}$
'this is the one whom they talk about'
(Old High German, Otfrid III 16:50)

b. Thíz ist ther **[then]**
DEM.SG.N.NOM be.PRES.3SG$_{[\text{NOM}]}$ DEM.SG.M.NOM RP.SG.M.ACC

sie **zéllent**
3PL.M.NOM tell.PRES.3PL$_{[ACC]}$
'this is the one whom they talk about'
(Old High German, Otfrid III 16:50)

Only (38a) can be the source of the headless relative. First I show the comparison of the internal syntax of the extra light head and relative pronoun in (38a), which leads to a grammatical headless relative. Then I show the comparison of the internal syntax of the demonstrative and the relative pronoun in (38b), which does not derive a grammatical headless relative.

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.

The extra light head consists of a single morpheme: *er*. The relative pronoun consists of two morphemes: *th* and *en*. I draw a dashed circle around the NOMP, as it is the biggest possible element that is structurally a constituent in both the extra light head and the relative pronoun.

The extra light head consists of a single morpheme: the NOMP. This NOMP is structurally contained in 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 element is the relative pronoun that bears the internal case: *then*.[20]

In Figure 9.10, I give the syntactic structure of the demonstrative at the top and the syntactic structure of the relative pronoun at the bottom.

The demonstrative consists of two morphemes: *th* and *er*. The relative pronoun also consists of two morphemes: *th* and *en*. I draw a dotted circle around the DEMP and the RELP, as they are the biggest possible elements that are formally contained in both the demonstrative and the relative pronoun.

The demonstrative is realized as *ther*, and the relative pronoun is realized as *then*. The demonstrative is not formally contained in the relative pronoun, and the relative pronoun is not formally contained in the demonstrative. Therefore, the demonstrative cannot be deleted, and the relative pronoun cannot be deleted either. As a result, the light-headed relative headed by the demonstrative cannot be the source of the headless relative.[21]

[20]Here the relative pronoun (*then*) does not formally contain the extra light head (*er*). The extra light head cannot be deleted via formal containment but only via structural containment.

[21]None of the elements can be deleted via structural containment either. The demonstrative *ther* and the relative pronoun *then* do not show any formal containment.

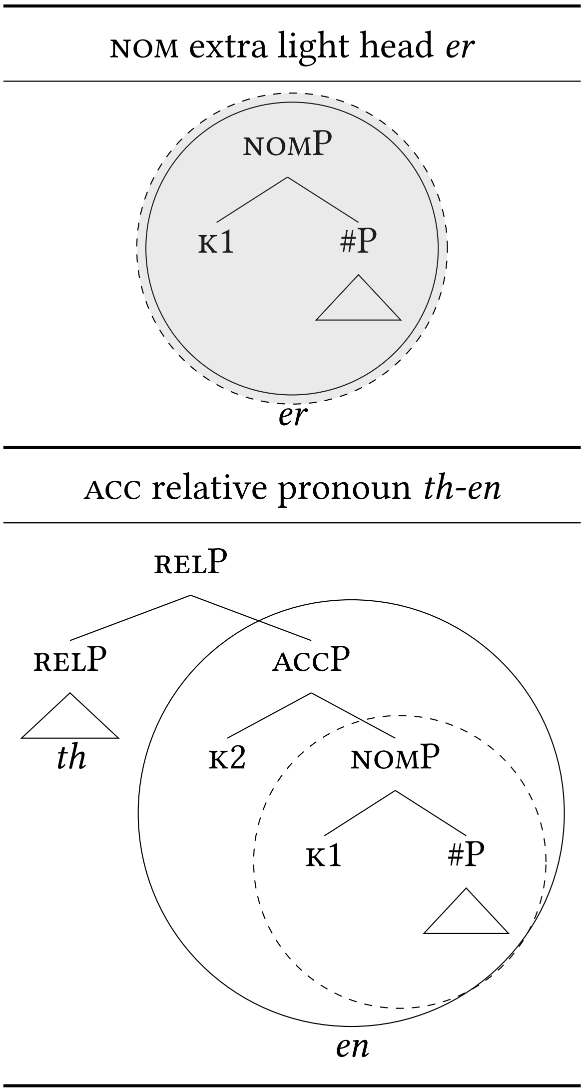


Figure 9.9: Old High German EXT_{NOM} vs. INT_{ACC} $\longrightarrow$ *then* (ELH)

In this situation, when the internal case is more complex than the external one, it does not make a difference to look at previous steps in the derivation. The last case feature was merged on the relative pronoun before the first case feature was merged on the demonstrative. Going back in the derivation removes case features from the demonstrative (so external case features) and not those from the relative pronoun. As long as the internal case is more complex, there is no step in the derivation in which the cases match.

For reasons of space I do not show the comparisons of the other situations in which the internal case is more complex. These are situations in which the internal case is dative and the external case is nominative and in which the internal case is dative and the external case is accusative. The same logic as

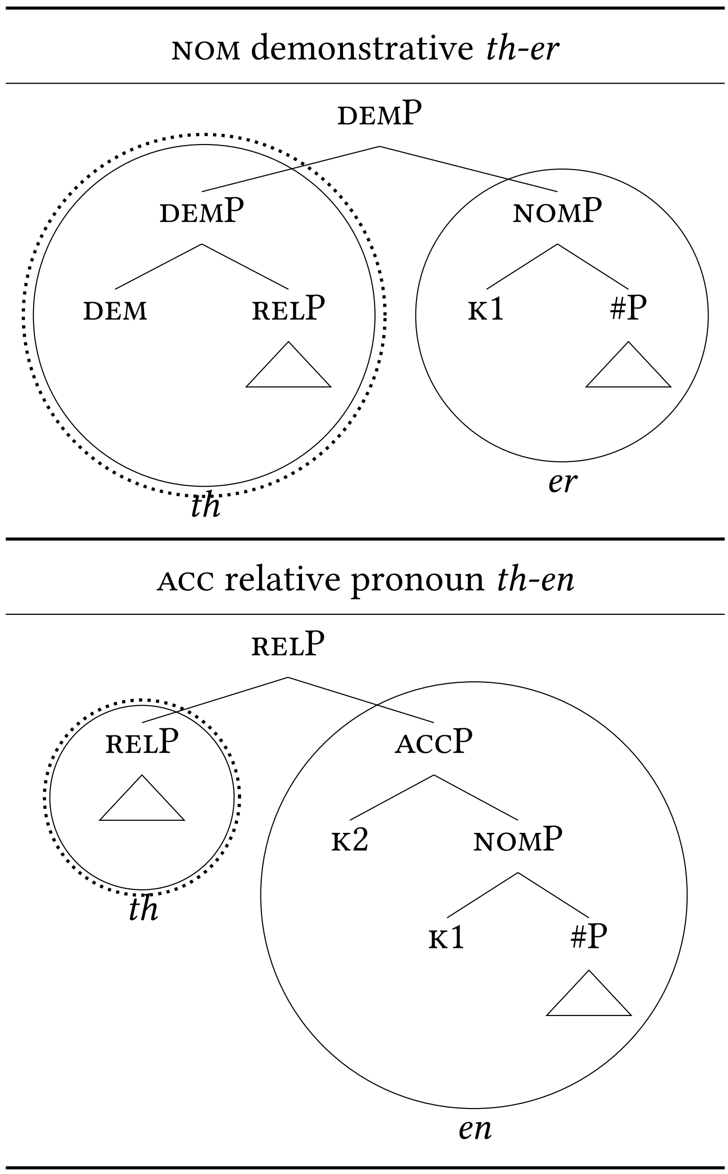


Figure 9.10: Old High German EXT$_{\text{NOM}}$ vs. INT$_{\text{ACC}}$ $\not\to$ *ther*/*then* (DEM)

I showed in Figure 9.9 and Figure 9.10 works for these situations too. Remember that I have not found an example in which the internal case is dative and the external case is accusative. The system I set up does not provide an explanation for why this example would be absent.

9.4 Coming back to the light heads

In this chapter I have suggested that headless relatives in Old High German can be derived from two different light-headed relatives: one headed by an extra light head and one headed by a demonstrative. In Section 9.2 I did not provide any motivation for why there should be two different sources for headless relatives in the language. In this section I consider whether there is any support that suggests so. In Section 9.4.1, I consider headless relatives in which an extra light head is deleted have a different interpretation from headless relatives in which the relative pronoun is deleted. I do not find such support. In Section 9.4.2, I place the light heads and the relative pronoun into a larger syntactic structure. I put the different light heads in the syntactic structure in such a way that deletion always takes place under c-command. In that way, there seems to be a resemblance with what other researchers have suggested.

9.4.1 The interpretation of Old High German headless relatives

Before I start the discussion on the interpretation of headless relatives in Old High German, I make a more general note on studying meaning in extinct languages. First of all, the intended meaning can only be derived from the context. This means that there is always room for interpretation. Second, although a particular interpretation of a construction is not attested, it does not necessarily mean it would be ungrammatical. This may mean that a particular interpretation is possible, but it is not attested.

Keeping that in mind, 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 (cf. Fuß, 2017). This is confirmed by my data. In (39) I give an example, repeated from Chapter 4.

(39) gihortut ir **thiu** **ih** **íu**
listen.PST.2PL$_{[\text{ACC}]}$ 2PL.NOM RP.PL.N.ACC 1SG.NOM 2PL.DAT
quad
speak.PST.1SG$_{[\text{ACC}]}$
'you listened to those things, that I said to you'
not: 'you listened to whatever I said to you'
(Old High German, Tatian 165:6)

In this example, the author refers to the specific things that the I-person said, and not to whatever the I-person said.

Now consider Table 9.6, that gives the grammaticality pattern for headless relatives derived from light-headed relatives headed by an extra light head.

Table 9.6: Grammaticality in Old High German with ELH

situation	lexical entries		containment	deleted	surfacing
	ELH	RP			
$\text{K}_{\text{INT}} = \text{K}_{\text{EXT}}$	[K1[ϕ]]	[REL], [K1[ϕ]]	structure	LH	RP$_{\text{INT}}$
$\text{K}_{\text{INT}} > \text{K}_{\text{EXT}}$	[K1[ϕ]]	[REL], [K2[K1[ϕ]]]	structure	LH	RP$_{\text{INT}}$
$\text{K}_{\text{INT}} < \text{K}_{\text{EXT}}$	[REL], [K1[ϕ]]	[K2[K1[ϕ]]]	no	none	*

Consider also Table 9.7, that gives the grammaticality pattern for headless relatives derived from light-headed relatives headed by a demonstrative.

Table 9.7: Grammaticality in Old High German with LH

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$\text{K}_{\text{INT}} = \text{K}_{\text{EXT}}$	α, β	α, β	form	RP	LH$_{\text{EXT}}$
$\text{K}_{\text{INT}} > \text{K}_{\text{EXT}}$	α, β	α, γ	no	none	*
$\text{K}_{\text{INT}} < \text{K}_{\text{EXT}}$	α, β	α, β	form	RP	LH$_{\text{EXT}}$

As can be seen in the tables, examples in which the internal and external case match can be derived from both types of light-headed relatives. The example in (39) is one in which the internal and the external case match. Therefore, this example can be derived from the two different light-headed relatives: one headed by an extra light head, as shown in (40a), and one headed by a demonstrative, as shown in (40b).

(40) a. gihortut ir [iu] **thiu** **ih**
listen.PST.2PL[ACC] 2PL.NOM ELH.PL.N.NOM RP.PL.N.ACC 1SG.NOM
íu **quad**
2PL.DAT speak.PST.1SG[ACC]
'you listened to those things, that I said to you'
(Old High German, Tatian 165:6)

b. gihortut ir thiu **[thiu]** **ih**
listen.PST.2PL[ACC] 2PL.ACC DEM.PL.N.NOM RP.PL.N.NOM 1SG.NOM
íu **quad**
2PL.DAT speak.PST.1SG[ACC]
'you listened to those things, that I said to you'
(Old High German, Tatian 165:6)

When the internal and external case do not match, only one of the light-headed relatives can be the source of the headless relative. Table 9.6 and Table 9.7 show that a headless relative with a more complex internal case needs to be derived from a light-headed relative headed by an extra light head. The light-headed relative headed by a demonstrative does not generate a grammatical example. On the other hand, the tables show that a headless relative with a more complex external case needs to be derived from a light-headed relative headed by a demonstrative. The light-headed relative headed by an extra light head does not generate a grammatical example.

This situation allows me to investigate whether headless relatives in which an extra light head is deleted have a different interpretation from headless relatives in which the relative pronoun is deleted. As I already mentioned in the introduction, I do not find such support. All headless relatives have a definite interpretation.

In (41) I give an example, in which the external case is more complex than the internal case, repeated from Chapter 4.

(41) 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$_{[\text{NOM}]}$
'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 Pittner 1995: 199)

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. This example can only be derived from a light-headed relative headed by a demonstrative, as shown in (42).

(42)

enti aer	ant uurta	demo	[**der**]
and 3SG.M.NOM	reply.PST.3SG$_{[\text{DAT}]}$	RP.SG.M.DAT	DEM.SG.M.NOM

zaimo	**sprah**
to 3SG.M.DAT	speak.PST.3SG$_{[\text{NOM}]}$

'and he replied to the one who spoke to him'
(Old High German, Mons. 7:24, adapted from Pittner 1995: 199)

The interpretation is a definite one.

In (43) I give an example, in which the internal case is more complex than the external case, repeated from Chapter 4.

(43)

Thíz	ist	**then**	**sie**
DEM.SG.N.NOM	be.PRES.3SG$_{[\text{NOM}]}$	RP.SG.M.ACC	3PL.M.NOM

zéllent
tell.PRES.3PL$_{[\text{ACC}]}$
'this is the one whom they talk about'
not: 'this is whoever they talk about'
(Old High German, Otfrid III 16:50)

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. This example can only be derived from a light-headed relative headed by an extra light head, as shown in (44).

(44)

Thíz	ist	[er]	**then**
DEM.SG.N.NOM	be.PRES.3SG$_{[\text{NOM}]}$	ELH.SG.M.NOM	RP.SG.M.ACC

sie **zéllent**
3PL.M.NOM tell.PRES.3PL$_{[\text{ACC}]}$
'this is the one whom they talk about'
(Old High German, Otfrid III 16:50)

The interpretation is still a definite one. This seems to be the surprising example. In Chapter 7 and 8, I suggested that Modern German and Polish have this extra light head in their light-headed relatives because this allows for a universal interpretation. A possible reason for why Old High German does not show this interpretation is the form of its relative pronoun: different from Modern German and Polish, relative pronouns in Old High German start with the definite *d* and not with a *wh*.

Still, what I predict not to exist is an Old High German headless relative with a more complex external case and a universal interpretation. This headless relative would need to be derived from a light-headed relative headed by a demonstrative. If such an example it attested, it falsifies the analysis put forward in this chapter.

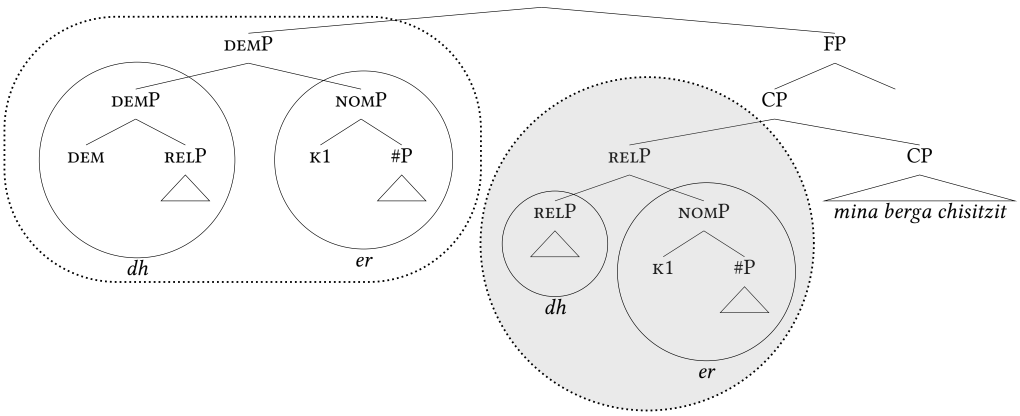
In conclusion, all headless relatives in Old High German have a definite interpretation. This means that there is no independent support coming from the interpretation that motivates the claim that Old High German has two different light-headed relative structures that are the source of the different headless relatives.

9.4.2 The larger syntactic structure and deletion operation

In this section, I place the different light heads and the relative pronoun in Old High German in a larger syntactic structure. I show that deletion always takes place under c-command.

Consider the syntactic structure with the demonstrative and the relative pronoun both appearing in nominative case in (45), repeated from (36).

(45)



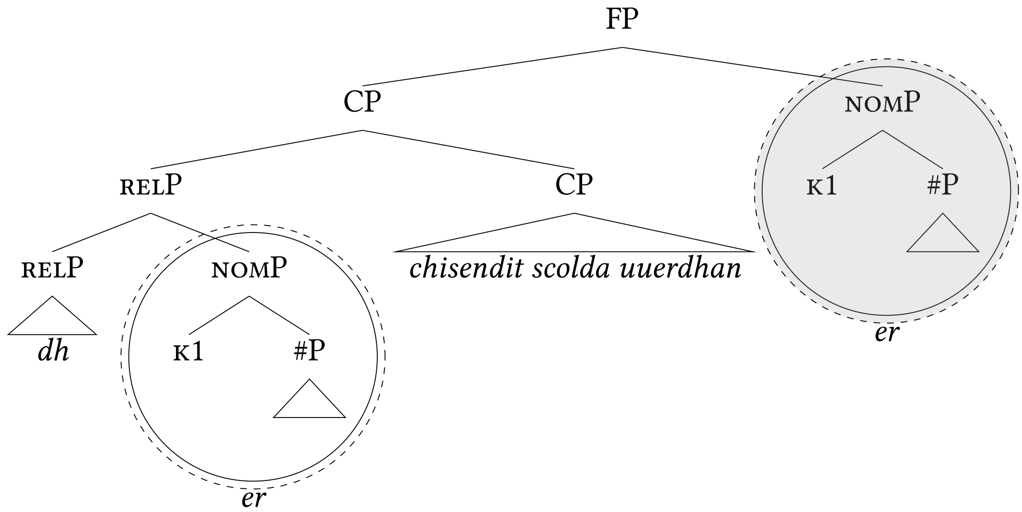
As I pointed out in Section 9.3, the relative pronoun is deleted in this situation. Notice here that the demonstrative c-commands the relative pronoun. The demP on the left c-commands the relP, as the demP is in the specifier of the FP, which dominates the relP. From there the reasoning goes as follows. The relative pronoun (the relP realized by *dher*) is formally contained in the demonstrative (the demP realized by *dher*). Therefore, the relative pronoun can be deleted, which is signaled by the gray marking of the circle. The surface element is the demonstrative that bears the external case: *dher*.

Now imagine a situation in which the light-headed relative is headed by an extra light head. Here it is not the relative pronoun that is deleted, but the extra light head. Consider such an example in (46).

(46) quham [er] **dher** **chisendit**
come.pst.3sg$_{[\text{nom}]}$ elh.sg.m.nom rp.sg.m.nom send.pst.ptcp$_{[\text{nom}]}$
scolda **uuerdhan**
should.pst.3sg become.inf
'the one, who should have been sent, came'
(Old High German, Isid. 35:5)

When c-command is a requirement for deletion, then the relative pronoun should c-command the extra light head. I suggest that the syntactic structure of the sentence in (46) looks as shown in (47).

(47)



The nomP on the right (that spells out as *er*) is the extra light head. The relP on the left (that spells out as *dher*) is the relative pronoun. It is situated in the specifier of the CP. The CP in the middle represents the relative clause without the relative pronoun. I do not show its internal structure, as it is not relevant for the discussion.

Here the relP on the left c-commands the nomP on the right, according to Kayne's (1994) definition of c-command. The relP is in the specifier of CP, which is in the specifier of FP, which dominates nomP. The relP is not contained in the CP or in the FP. From there the reasoning goes as follows. This nomP is structurally contained in the relative pronoun. Therefore, the extra light head can be deleted, which is signaled by the gray marking of the circle. The surface element is the relative pronoun that bears the internal case: *dher*.

The two syntactic structures in (45) and in (47) are all that is needed for all instances in which I compared the internal syntax of the light heads and the relative pronouns. The structure in (45) represents the situation in which the source structure contains a demonstrative. In these cases, the relative pronoun can be deleted via formal containment. This applies when the internal and external case match, as in (45), but also when the external case is more complex. In that case, the derivation also goes through the stage shown in (45) (see Section 9.3). There is no successful deletion possible when the internal case is more complex, because in that situation the demonstrative does not formally contain the relative pronoun at any point in the derivation.

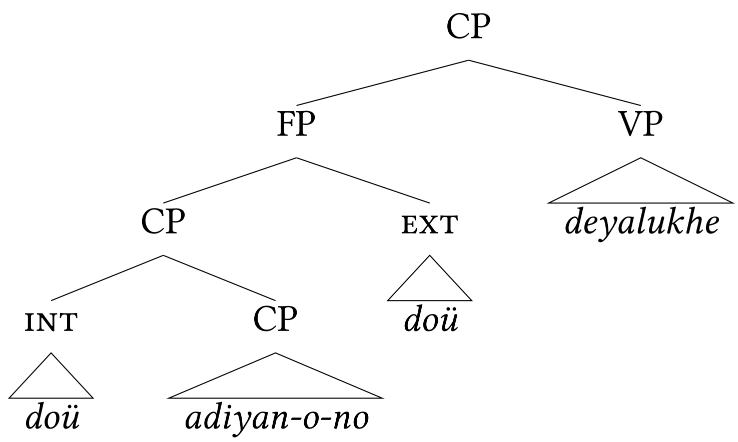
The structure in (47) represent the situation in which the source structure contains an extra light head. In these cases, the extra light head can be deleted via structural containment. This applies when the internal and external case match, as in (47), but also when the internal case is more complex. In that case, the relative pronoun that bears the more complex case still structurally contains the extra light head that bears the less complex case. There is no successful deletion possible when the external case is more complex, because in that is situation the relative pronoun does not structurally contain the extra light head at any point in the derivation.[22]

I am not the only one to place a demonstrative and an extra light head in such a way in a structure that they either c-command or are c-commanded by the relative pronoun. Cinque (forthcoming) suggests the same, but then more generally for relative clauses. He suggests every type of relative clause in every language is underlyingly double-headed. Support for this claim comes from languages that show this morphologically. An example from the Trans-New Guinea language Kombai is given in (48). The head of the relative clause is *doü* 'sago', and it appears inside the relative clause and outside of it, which make them respectively the internal and the external head.

(48) [**doü** adiyan-o-no] **doü** deyalukhe
sago give.3PL.NONFUT-tr-CONN sago finished.ADJ
'The sago that they gave is finished.' (Kombai, De Vries 1993: 78)

(49) shows the syntactic structure of the sentence in (48).

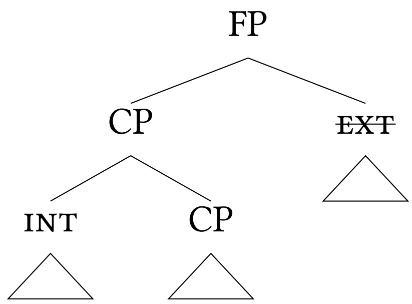
(49)



[22]The two different deletions possibly make different predictions with respect to extraposition. In (47) the surface is element is part of the relative clause, but in (45) it is not. If Old High German is a language that allows extraposition of CPs but not extraposition of DPs, the prediction is that relative clauses with a deleted relative pronoun can be extraposed, leaving the demonstrative behind. Relative clauses with a deleted extra light head can only be extraposed including the relative pronoun. I did not check this prediction for Old High German.

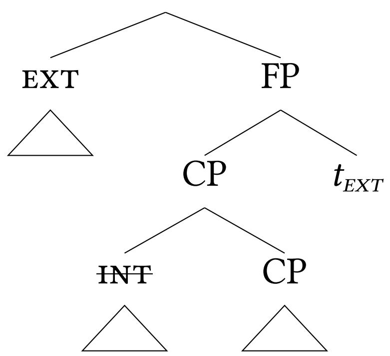
In most languages one of the two heads is deleted throughout the derivation. According to Cinque (forthcoming), the internal element can delete the external element, because the internal element c-commands the external element, as shown in (50).

(50)



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, as shown in (51).

(51)



Crucially, Cinque (forthcoming) notes that the internal and external heads are indefinite. Only after the external head has been moved over the relative clause, it has access to a definite feature. Notice that this is exactly what I described for the extra light head and the demonstrative. The extra light head is indefinite and is situated in a structurally low position, as in (50). The demonstrative is definite and is situated in a structurally high position, as in (51).[23]

[23] At this point, two questions remain. The first one is how case features end up on the extra light head, if it is low in the structure, since they are only merged after the relative clause attaches. On the surface, it looks like the case features percolate down to the extra light head. The mechanism behind

Finally, notice that the larger syntactic structures I proposed for Old High German in this section also hold for Modern German and Polish. In these languages, grammatical headless relatives are only derived from light-headed relatives headed by extra light heads. These extra light heads are indefinite and low in the structure (see (47) and (50)). From this position, the relative pronoun always c-commands these extra light heads, and the extra light heads can be deleted when they are structurally contained in the relative pronouns.

9.5 Summary and discussion

Old High German is an example of an unrestricted type of language. This means that headless relatives are grammatical in the language when the internal and external case match, when the internal case is more complex and when the external case is more complex.

I derive this from the internal syntax of two light heads and the internal syntax of the relative pronoun in Old High German. The features of the extra light head (which is the first possible 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 extra light head and the relative pronoun in Old High German is shown in Figure 9.11.

this is the same as what I described for how case features end up on the demonstrative in footnote 19: Backtracking. First, the CP and the extra light head are split up and the case feature is merged in both workspaces. If it is a language such as Modern German that has a phi and case feature portmanteau, the case feature can be spelled out with the rest of the structure. Then, the two workspaces are merged back together.

The second question that remains is what triggers the movement of the external head over the relative clause. Generally speaking, there are two options: the movement can be driven by features or by spellout. I would not know by what feature the movement could be driven. It could be that the movement is driven by spellout. It seems that the movement of the extra light head coincides with the element becoming definite. In terms of spellout, becoming definite means that a complex spec is merged to existing syntactic structure. It seems that once the complex spec is merged, it attracts the existing syntactic structure that it copied a feature from to form its complex spec (# in the case of Old High German).

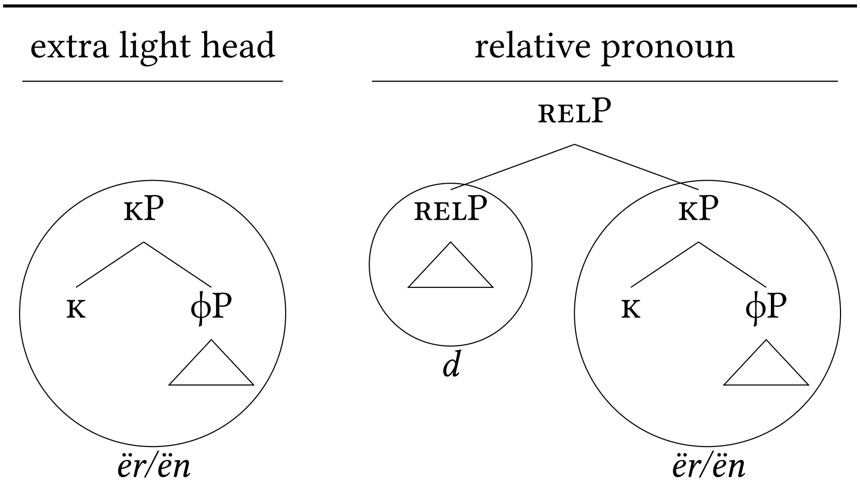


Figure 9.11: ELH and RP in Old High German (repeated)

The features of the demonstrative (which is the second possible light head) are spelled out by two lexical entries, one of which spells out phi and case features and one which spells out amongst other spells out a relative feature plus the feature DEM. The features of the relative pronoun are spelled out by the same two lexical entries as the demonstrative. The internal syntax of the demonstrative and the relative pronoun in Old High German is shown in Figure 9.12.

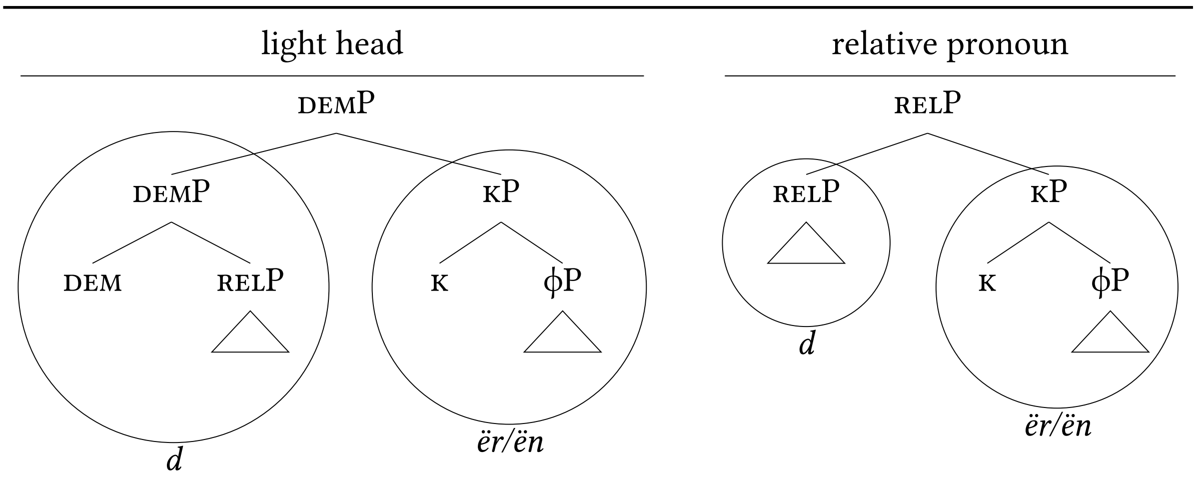


Figure 9.12: DEM and RP in Old High German (repeated)

A crucial characteristic of unrestricted languages such as Old High German is that there is a syncretism between the demonstrative and the relative pronoun. Therefore, the relative pronoun is formally contained in the demonstrative, and the relative pronoun can be deleted. This can lead to a more complex external case surfacing.[24]

The extra light head is crucial for allowing for a more internal case to surface, since for that it is required that the extra light head is structurally contained in the relative pronoun. Just as in Modern German and in Polish, this extra light head does not surface as head of a relative clause. Just as in Polish, the extra light head is not attested independently in the language.

The crucial difference between Old High German and Modern German that leads them to be of different language types is that Old High German has a syncretism between the demonstrative and the relative pronoun used in headless relatives, and Modern German does not. As I noted before (in Chapter 7 and in this chapter), Modern German does have a syncretism between the demonstrative and a second relative pronoun. Old High German does not have these two separate relative pronouns, but only the one that is syncretic with the demonstrative. Still, based on the syncretism between one of its relative pronouns and the demonstrative, I would expect Modern German to allow for the formal deletion just as Old High German does. This is not what the data shows. An possible explanation for why this is present in the data can be found when looking at how the German language has developed.

Somewhere along the way when Old High German changed to Modern German, the language changed from being of the unrestricted type to being of the internal-only type. This change coincides with the introduction of the WH-pronoun being used as a relative pronoun (see Weiß 2016 for how WH-pronouns became relative pronouns). In Middle High German, there are no longer examples in which the external case wins, and relative pronouns in headless relatives start with a *w* (Behaghel, 1923–1932). The presence of the two different relative pronouns in Modern German seems to lead to *d*-pronouns not taking part in the forming headless relatives anymore (except for examples in Fuß and Grewendorf 2014 who discuss matching headless

[24] According to Weiß (2020), relative pronouns starting with *d-* developed from the demonstrative in the main clause. This could explain why relative pronouns in these languages are able to take the external case. Gothic, another unrestricted language discussed in this dissertation, also has D-relative pronouns.

However, as shown in Chapter 4, Classial Greek is another unrestricted language, which has relative pronouns starting with *wh-*. Additionally,as shown in 5, relative pronouns in Modern Greek are able to (only) take the external case, and they are also WH-pronouns. This indicates that demonstratives developing in relative pronouns can not be the whole or the only explanation for them being able to take the external case, at least not for all languages.

relatives with the *d*-pronoun). I do not have an explanation for how this follows.

The deletion that takes place to change a light-headed relative into a headless relative occurs under containment and under c-command. The extra light head is situated low in the structure, such that the relative pronoun c-commands it and it can be deleted when it is structurally contained in the relative pronoun. The demonstrative is situated higher in the structure, such that it c-commands the relative pronoun and the relative pronoun can be deleted when it is formally contained in the demonstrative.

Chapter 10

Previous approaches

In Chapters 6 to 9 I provided an account for the different language types that exist in headless relatives. I proposed that the differences that languages show in their headless relatives stem from differences in the morphology of their relative pronouns and light heads. The current chapter discusses other approaches that account for the different language types.

What all accounts have in common is that they make reference to some kind of case hierarchy. What differs between the accounts is how they model the differences between languages. I discuss three proposals. First I discuss the account from Vogel (2002), which is an optimality theory approach. The difference between languages lies in how different languages order their constraints. According to the second account by Himmelreich (2017), variation between languages arises from differences in the operation Agree. This means that it differs across languages which elements are probes and goals. In the account in Bergsma (2019), I used external remerge (or multidominance), and the variation between languages comes from restrictions on which elements can be the target of external remerge.

The approaches are all embedded in different theoretical frameworks. I do not discuss any assumptions tied to the framework, but instead I focus on the empirical scope of the proposals, the nature of the source of the variation and how well the model fits the data. I compare the proposals to the one in this dissertation, and I point out the differences and the similarities.

10.1 Vogel 2002

The first account I discuss is Vogel 2002, which is embedded in optimality theory. In his analysis, crosslinguistic differences arise because languages order certain constraints differently.

Vogel (2002) assumes that languages have four competing constructions: a headless relative construction with the relative pronoun appearing in the internal case, a headless relative construction with the relative pronoun appearing in the external case, a correlative construction, and a headless relative construction with a resumptive pronoun. What sets the first two headless relative constructions apart is that there is only a single element (the relative pronoun) that can realize case. In the other two constructions, there are two elements that can do so: the relative pronoun and the head in the main clause or the resumptive pronoun. The ordering of certain constraints determines which construction surfaces. This can be different constructions depending on the situation, i.e. what the internal and the external case are. Which construction surfaces in which situation depends on the ordering of particular constraints. Because languages order these constraints differently, it differs per language which construction wins in which situation.

In what follows, I describe how Vogel's (2002) account captures the difference between internal-only languages such as Modern German and unrestricted languages such as Gothic. These languages only differ in situations in which the external case wins the case competition: in unrestricted languages this is grammatical, and in internal-only languages it is not. When comparing unrestricted and internal-only languages in terms of constraints, two of them differ in terms of ranking. A constraint that is ranked higher in unrestricted languages compared to internal-only languages is INTEGRITY-$\odot$-LF. This constraint says that in the meaning of headless relatives, there is only a single, and not two, representations of the relative pronoun or the relative clause as a whole, so there should also only be a single, and not two, phonological representations. Ranking this constraint high ensures ruling out correlatives and resumptives. This is what is required for an unrestricted type of language: whichever two cases compete in a case competition, the winner always surfaces in a grammatical headless relative. A constraint that is ranked lower in unrestricted languages compared to internal-only languages is IDENT(CASE)-LF-PF-$^{2}_{\text{CP}}$. This constraint is violated when the relative pronoun appears in the external case, which reflects the disadvantage of the external case winning the case competition. This is exactly the situation in which unrestricted languages differ from internal-only languages. Since the constraint is ranked highly in internal-only languages, the external case is not allowed to surface when it wins the competition and a correlative construction is used instead. On the other hand, since the constraint is ranked lower in unrestricted languages, the headless relative construction is used when the external case wins the case competition.

In addition to modeling the differences between unrestricted and internal-only languages, he also models the difference between internal-only, such as Modern German, and matching languages, such as Polish.[1] These language types differ only in situations in which the internal case wins the case competition: in internal-only languages this is grammatical, and in matching languages it is not. In matching languages, two constraints are ordered higher than they are in internal-only languages, namely the ones called MATRIX INTEGRATION and REALIZE CASE. MATRIX INTEGRATION is violated when a constituent contains no indication about how it is integrated in its clause. This is exactly what happens when the internal case is allowed to win the case competition: there is no indication of how the external case, i.e. the case from the matrix clause, is integrated in its clause. Since this constraint is ranked highly in matching languages, the headless relative with the internal case winning gets more violations than a correlative, so the latter one surfaces as the most optimal candidate. Since the constraint is ranked not as highly in internal-only languages, the headless relative with the internal case winning is the best candidate, and this construction appears. The other constraint that is ranked low in internal-only languages is the constraint REALIZE CASE. If the internal case wins in an internal-only language, the relative pronoun surfaces in the internal case, and the external case is not realized. The constraint is ranked highly in matching languages, which is why this type of language prefers a correlative in such a context.

In addition to covering the language types of this dissertation, Vogel's (2002) also covers other language types, namely (1) languages without any headless relatives, such as Hindi, (2) languages with headless relatives and resumptive pronouns, such as Modern Greek, and (3) always-external language, for which he gives Icelandic as an example. So far I do not provide

[1] Vogel (2002) actually describes different variants of Modern German. The variant that I call Modern German in this dissertation, an internal-only language, is called German B in his account.

an account for these language types: in this dissertation I do not even distinguish between languages like Modern Greek and Icelandic, which I both called always-external (see Chapter 5). Solely by ordering the constraints in his set differently, Vogel (2002) captures all of these language types.

There is one aspect of the headless relatives for which Vogel (2002) requires additional language-specific constraints, which is the case facts. He argues that case hierarchies are language-particular and that they are determined in a separate module of the grammar. In the account in this dissertation, the case part and the crosslinguistic differences part are all part of the same system: the morphosyntactic structure. Even for a language in which the case scale does not play a role, such as Polish, case is represented in the same way. Support for treating the case hierarchy as being part of a single system also comes from numerous other places where it appears in the morphosyntax, such as in syncretism patterns (Baerman, Brown, and Corbett, 2005; Caha, 2009; Zompì, 2017), formal containment (cf. Caha, 2010; Zompì, 2017; Smith et al., 2019), and implication hierarchies concerning agreement (Moravcsik, 1978; Bobaljik, 2006) and relativization (Keenan and Comrie, 1977; Caha, 2009) (see also Chapter 2). However, the empirical scope of Vogel's (2002) account is bigger, and it remains to be seen whether extending the account in this dissertation to the languages that Vogel (2002) covers, goes without modifying the case representation in any way.[2]

An empirical downside to Vogel's (2002) analysis is that it predicts the existence of language types that have not been encountered yet. The first of these languages is the external-only type of language. I have not encountered such a language yet either, and I even predict (at least if the light head is monomorphemic) that it does not exist. The two other language types that Vogel (2002) predicts to exist are: (1) the opposite of Modern Greek, in which a resumptive pronoun is inserted in the main clause when the external case is more complex than the internal case, and (2) a language in which resumptive pronouns are always used when there is a case conflict. Ideally, a theory should generate the patterns that are attested and exclude the ones that are not. Future research needs to point out whether the languages predicted by

[2] At this point I can already see two examples in which something more needs to be said about the case hierarchy as I presented it in this dissertation. In footnote (iii) in Section 4.3 I briefly mentioned Finnish as possibly also being an internal-only type of language. Finnish has cases such as partitive and elative, which the other languages discussed in this dissertation do not have. Modern Greek is another instance, since it involves the genitive.

Vogel (2002) exist. If they do not, Vogel's (2002) account needs to be modified in such a way that it excludes the unattested languages. If the languages do exist, I need a way to include these language types in my analysis.

Lastly, the constraints and their ordering in this account are proposed specifically for the comparison between headless relatives with the relative pronoun appearing in the internal or the external case, the headless relatives with resumptive pronouns and the correlatives. There is no independent evidence from the language, from for instance another construction or from the morphology of a language that indicates which constraints are relevant and how they should be ordered. In this dissertation, the grammaticality of a headless relative follows from the internal structure of relative pronouns and light heads in a particular language, which can independently be observed. Vogel's (2002) account could be made stronger if there is independent evidence from other places in the language that supports, first of all, the existence of the constraints and, secondly, the ordering of the constraints as they are proposed.

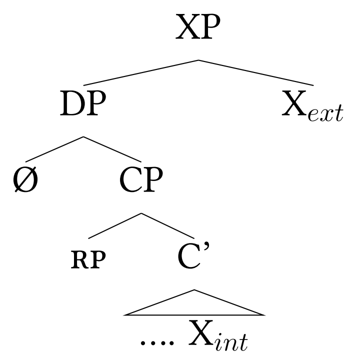
10.2 Himmelreich 2017

The second account I discuss is Himmelreich 2017. Crucial in her account is the role of the operation Agree (Chomsky, 2000; Arregi and Nevins, 2012). Crosslinguistic differences arise from differences in how languages agree.

Just as Vogel (2002) and this dissertation, Himmelreich (2017) assumes that there is some sort of case hierarchy. In Himmelreich's (2017) account, cases are represented as features that can bear sets of case feature values. Nominative case bears only {nom}, accusative bears {nom,acc}, and dative bears {nom,acc,dat}.

In terms of the larger syntactic structure of headless relatives, Himmelreich (2017) assumes that two elements are involved in case competition: the relative pronoun and a phonologically empty head in the main clause. Crucial in this account is the operation Agree. In languages, three types of elements can possibly be probes and goals: (i) the functional projections (associated with the predicate in the relative clause, i.e. X_{INT} in (1), and associated with the predicate in the main clause and the phonologically empty element, i.e. X_{EXT} in (1)), (ii) the relative pronoun, i.e. RP in (1), and (iii) the phonologically empty element, i.e. Ø in (1).

(1)



Agree consists of two operations: Agree-Link, which establishes a syntactic relation between the probe and the goal, and Agree-Copy, which copies the case values from the probe onto the goal. Agree is successful when the case value of the goal is a subset of the case value of the probe. If this is not the case, the derivation crashes and there is no grammatical headless relative. Differences between languages arise from which types of elements (the functional projections, the relative pronoun and/or the phonologically empty element) are probes in the language.

Just as Vogel (2002) and this dissertation, Himmelreich (2017) includes Polish as a matching language and Modern German as an internal-only language in her typology.[3] These languages differ in situations in which the internal case is more complex than the external case: in Modern German these headless relatives are grammatical, in Polish they are not. I give the derivations of this situation for these two languages to illustrate how the account works.

I start with the derivation in Modern German. In the example, repeated from earlier chapters, the internal case is dative and the external case is accusative, as shown in (2).

(2)

Ich	lade ein,	wem	auch	Maria
1SG.NOM	invite.PRES.1SG$_{\text{[ACC]}}$	RP.AN.DAT	also	Maria.NOM
vertraut.				
trust.PRES.3SG$_{\text{[DAT]}}$				

'I invite whoever Maria also trusts.'

(Modern German, adapted from Vogel 2001: 344)

In Modern German, the relative pronoun (RP) and the phonologically empty

[3]Himmelreich (2017) actually describes two varieties of Modern German: German 1 and German 2. German 1 is an internal-only type of language, German 2 is a matching type of language.

head (Ø) are probes. Therefore, Agree-Link establishes four Agree relations: (1) the relative pronoun (RP) links to the internal functional projection (X_{INT}), (2) the relative pronoun (RP) links to the phonologically empty head (Ø), (3) the phonologically empty head (Ø) links to the the relative pronoun (RP), and (4) the phonologically empty head (Ø) links to the external functional projection (X_{EXT}). A schematic representation of the Agree relations is shown in Table 10.1.

Table 10.1: Agree relations in Modern German for (2)

	probe	goal
1	RP	X_{INT}
2	RP	Ø
3	Ø	RP
4	Ø	X_{EXT}

Agree-Copy follows the ordering of the four links that has been established by Agree-Link. In step 1, the relative pronoun (RP) receives dative case from the internal functional projection (X_{DAT}). In step 2, the relative pronoun (now RP_{DAT}) probes for the unvalued case feature of the phonologically empty head (Ø). In step 3, the phonologically empty head (Ø) receives dative case from the relative pronoun (RP). In step 4, the phonologically empty head (now $Ø_{DAT}$) checks its case against the accusative case of the functional projection (X_{ACC}). Since the accusative case of the external functional projection is a subset of the dative case of the phonologically empty head, the derivation does not fail, making the headless relative grammatical.

In (3), I give the Polish example, repeated from earlier chapters, in which the internal case is dative and the external case is accusative, which is ungrammatical.

(3) *Jan lubi kogo/komu -kolkwiek dokucza.
Jan like.3SG$_{[ACC]}$ RP.ACC.AN.SG/RP.DAT.AN.SG ever tease.3SG$_{[DAT]}$
'Jan likes whoever he teases.'
(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

In this type of language not only the relative pronoun and the phonologically empty head are probes, but functional projections are too. Therefore, Agree-Link establishes six Agree relations: (1) the internal functional projection (X_{INT}) links to the relative pronoun (RP), (2) the relative pronoun (RP) links to the internal functional projection (X_{INT}), (3) the relative pronoun (RP) links to the phonologically empty head (Ø), (4) the phonologically empty head (Ø) links to the the relative pronoun, (5) the phonologically empty head (Ø) links to the external functional projection (X_{EXT}), and (6) the external functional head (X_{EXT}) links to the phonologically empty head (Ø). A schematic representation of the Agree relations is shown in Table 10.2.

Table 10.2: Agree relations in Polish for (3)

	probe	goal
1	X_{INT}	RP
2	RP	X_{INT}
3	RP	Ø
4	Ø	RP
5	Ø	X_{EXT}
6	X_{EXT}	Ø

Agree-Copy follows the ordering of the six links that has been established by Agree-Link. In step 1, the internal functional projection (X_{DAT}) checks its case features against the unvalued case feature of the relative pronoun (RP). In step 2, the relative pronoun (RP) receives dative case from the internal functional projection (X_{DAT}). In step 3, the relative pronoun (now RP_{DAT}) probes for the unvalued case feature of the phonologically empty head (Ø). In step 4, the phonologically empty head (Ø) receives dative case from the relative pronoun (RP). In step 5, the phonologically empty head (now $Ø_{DAT}$) checks its case against the accusative case of the functional projection (X_{ACC}). Since the accusative case of the external functional projection is a subset of the dative case of the phonologically empty head, the derivation proceeds. The derivation fails in step 6. Here the external functional projection checks its accusative case (X_{ACC}) against the dative case of the phonologically empty head ($Ø_{DAT}$). As the dative case is a superset and not a subset of the accusative case, the derivation fails, making the headless relative ungrammatical.

Himmelreich's (2017) analysis thus makes the differences between headless relatives across languages follow from how those languages' agree mechanisms differ. As illustrated above, the difference between internal-only languages such as German and matching languages such as Polish is that in Polish functional projections are probes and in Modern German they are not. In addition to internal-only languages and matching languages, Himmelreich's (2017) analysis also accounts for the pattern in Modern Greek. In the analysis of Modern Greek, the relative pronoun is a probe and the phonologically empty head is not, which, again, differs from how Modern German and Polish agree.[4] This dissertation does not provide an account of the Modern Greek pattern. A language that Himmelreich's (2017) analysis cannot account for but this dissertation does is one of the unrestricted type, such as Gothic. As far as I can see, this type of language cannot be derived from the system she set up. In a language as Gothic, case competition happens in both directions, and not only the internal case can win the competition. Since the derivation in Himmelreich's (2017) account always happens bottom-up and she has a subset requirement on matching, the external case can never win over the internal case.[5]

In sum, the source of variation in headless relatives for Himmelreich (2017) is different agree properties. Unfortunately, how a language agrees cannot be deducted independently from investigating the language itself. However, Himmelreich (2017) shows that the agree properties of a language do not only account for the languages' behavior in headless relatives: at the same time they also account for how parasitic gaps in the languages behave. The account in this dissertation lets the difference between languages follow from the internal structure of relative pronouns and light heads, which can be observed from investigating the language itself. However, it remains to be seen whether this can account for the behavior of languages in their parasitic gaps too.

[4]Functional heads may or may not be probes: it does not matter for the analysis.

[5]As I have noted before, languages of the unrestricted type stand out for a couple of reasons: (i) all languages of the unrestricted type that I have encountered so far are extinct languages, and (ii) the interpretation of headless relatives is different in unrestricted languages compared to those in internal-only and matching languages, i.e. unrestricted allow for a definite interpretation, while the other languages do not. This raises the question of whether languages of the unrestricted type should actually be included in the typology, or whether they should be left out like Himmelreich (2017) does.

10.3 Bergsma 2019

The last account I discuss is my own proposal in Bergsma 2019. Just as the account in this dissertation, the account is embedded in Nanosyntax and adopts Caha's (2009) case hierarchy: each case feature corresponds to its own head in the syntax and more complex cases syntactically contain less complex cases. The accounts differ in what they assume to be the underlying structure of headless relatives, how they model the differences between different languages and the languages they cover.

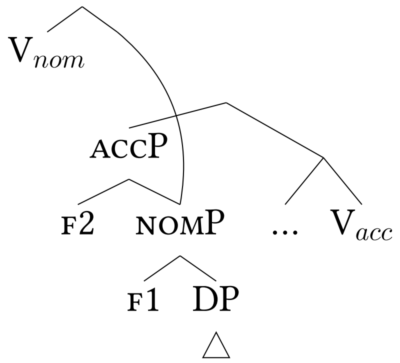
Bergsma (2019) assumes that in headless relatives there is only a single element involved in case competition, i.e. there is no head present in the main clause, but only the relative pronoun in the relative clause. The idea is that a syntactic node within the relative pronoun is available for remerge, which I illustrate below with syntactic structures.

First I discuss the situation in which the internal case is more complex than the external case, here accusative and nominative. A sentence from Old High German that illustrates this type of situation is given in (4), repeated from earlier chapters.

(4) ih bibringu fona iacobes samin endi fona
1SG.NOM create.PRES.1SG$_{[\text{ACC}]}$ of Jakob.GEN seed.SG.DAT and of
iuda dhen mina berga
Judah.DAT RP.SG.M.ACC my.ACC.M.PL mountain.ACC.PL
chisitzit
possess.PRES.3SG$_{[\text{NOM}]}$
'I create of the seed of Jacob and of Judah the one, who possess my mountains' (Old High German, Isid. 34:3)

The structure that corresponds to this sentence is given in (5). The relative clause on the right contains a predicate that takes accusative case. The accusative relative pronoun appears on the left edge of the relative clause. The predicate in the main clause takes nominative case. It is merged with the nominative case, which is a node embedded in the accusative relative pronoun.

(5)



Next I discuss the situation in which the external case is more complex than the internal case, again accusative and nominative. A sentence from Old High German that illustrates this type of situation is given in (6), again repeated from earlier chapters.

(6)

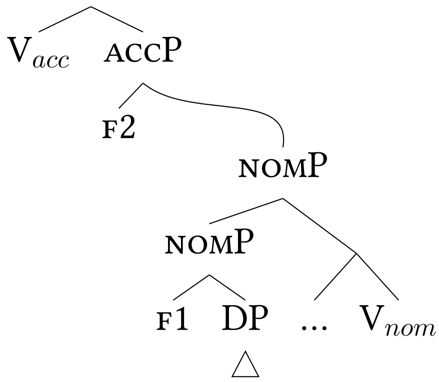
Thíz	ist	then	sie
DEM.SG.N.NOM	be.PRES.3SG$_{[\text{NOM}]}$	RP.SG.M.ACC	3PL.M.NOM
zéllent			
tell.PRES.3PL$_{[\text{ACC}]}$			

‘this is the one whom they talk about’

(Old High German, Otfrid III 16:50)

The structure that corresponds to this sentence is given in (7). The relative clause on the right contains a predicate that takes nominative case, which appears on the left edge of the relative clause. The predicate in the main clause takes accusative case. The feature that makes the nominative an accusative is remerged with the nominative relative pronoun from the relative clause. The predicate from the main clause in turn is merged with the accusative node.

(7)



In sum, the account of Bergsma (2019) can be described in three derivational steps. In step 1, the relative clause predicate merges with the required case node. In step 2, the relative pronoun moves to the left edge of the clause. In step 3, the main clause predicate merges with the required case node. When the required case node is available, as in (5), this node is remerged with the main clause predicate. When the required case node is not available, as in (7), the highest case node is remerged with additional case features following the functional sequence until the required case node is merged, and then the main clause predicate is merged with the required case node.

Variation between languages is formulated in terms of restrictions in step 3. A language without any restrictions is a language like Gothic: the relative pronoun always appears in the most complex case, no matter whether it is the internal or the external case.

A language like Modern German has a restriction that is described as *Keep spellout*: additional case features can only be merged to the relative pronoun if this does not change the spellout of the relative pronoun. As a result, when the internal case is more complex, a node within the relative pronoun can be remerged. However, when the internal case is less complex and additional case features need to be merged on top of the relative pronoun, this is prohibited. An exception is when it does not affect the spellout, which is how Bergsma (2019) accounts for syncretic forms being able to resolve a mismatch.

A language like Polish has an additional restriction on top of the restriction that German has which is described as *Only remerge highest node*: only the structurally highest node can be remerged with the main clause predicate. As a result, when the internal case is more complex, an embedded node cannot be remerged with the main clause predicate. Since Polish also has the restriction *Keep spellout*, headless relatives with more complex external cases are also not grammatical, for the same reason as in Modern German.

Bergsma (2019) describes a fourth type of language, which is a language like Modern Greek, which is not described in this dissertation. This type of language only has the restriction *Only remerge highest node* and not *Keep spellout*. This means that headless relatives with a more complex internal case in Modern Greek are not grammatical, for the same reason as described for Polish above. When the external case is more complex, however, additional case features can be remerged with the relative pronoun. For Modern Greek this works in the same way as for languages like Gothic for the nominative/accusative cases. Exceptions are cases that involve a genitive. I give an example in (8). We see the relative pronoun appearing in the case of the main clause (here nominative) and an additional resumptive pronoun in genitive appearing in the embedded clause, repeated from an earlier chapter.

(8) Me efχarístisan ópji tus íχa
CL.1SG.ACC thank.PST.3PL$_{[\text{NOM}]}$ RP.PL.M.NOM CL.3PL.GEN have.PST.1SG
ðósi leftá.
give.PTCP$_{[\text{GEN}]}$ money
'Whoever I had given money to, thanked me.'
(Modern Greek, adapted from Daskalaki 2011: 80)

In a derivation similar to the ones discussed so far, this would mean that the relative pronoun first appears in the genitive case. Then when the main clause predicate requires a less complex case, part of the relative pronoun moves away to a place lower in the structure and spells out as a resumptive. This leaves a relative pronoun of which the highest node can be remerged. The movement of the resumptive pronoun is atypical, but the restrictions *Keep spellout* and *Only remerge highest node* fit the described pattern well.

This account and the one in this dissertation have in common how they model the case hierarchy: cases are represented by different nodes in the syntax and less complex cases are syntactically embedded in more complex cases. What differs is how the two accounts model the differences between languages. This starts with the assumptions about the underlying syntactic structure of the headless relative. The account in Bergsma 2019 assumes that there is only a single element involved in case competition, which is the relative pronoun. Differences between languages follow from restrictions on whether the spellout of the relative pronoun can be changed and whether embedded features can be remerged. Unlike what is proposed in this dissertation, in which differences between languages follows from the internal structure of relative pronouns and light heads, these differences do not follow independently from properties of the language. There is no evidence from the morphology or from other constructions in a language that tells us whether the language has these restrictions, making them purely stipulative at this point. The account could be made stronger if there is evidence not from headless relatives that supports the need for the restrictions.

10.4 Summary

In this chapter I discussed three different proposals that account for different language types in headless relatives. To account for the case facts, all of them refer in some way to a case hierarchy. The accounts differ in how they model the variation between the languages. Of course there are differences in the mechanics of the proposals, but more importantly, there are differences in the empirical scope they have and the predictions they make. What stands out is that all accounts except for the one in this dissertation include the Modern Greek pattern. Future research should point out how Modern Greek fits in the typology best and how the account set up in this dissertation can also account for this pattern.

Chapter 11

Summary

This dissertation discussed two aspects of case competition in headless relatives. The first aspect was introduced in Chapter 2 and concerns which case wins the case competition. In all languages with case competition that I discussed, this is determined by the case scale in (1).

(1) NOM < ACC < DAT

A case more to the right on the scale wins over a case more to the left on the scale. This scale is not specific to case competition in headless relatives, but it can also be observed in syncretism patterns and morphological case containment.

Chapter 3 showed that the case scale can be derived from assuming the cumulative case decomposition shown in Table 11.1.

Table 11.1: Cumulative case decomposition (repeated)

case	features
NOM	K1
ACC	K1, K2
DAT	K1, K2, K3

A case wins over another case when it contains all features that the other case contains. The dative (with its K1, K2 and K3) wins over the accusative (with its K1 and K2) and over the nominative (with its K1). In turn, the accusative (with its K1 and K2) wins over the nominative (with its K1).

The second aspect of case competition in headless relatives is introduced in Chapter 4. This concerns whether or not the winner of the case competition is allowed to surface when it wins the case competition. It differs from language to language whether they allow the internal and the external case to surface. Table 11.2 gives an overview of the possible language types and whether they are attested.

Table 11.2: Possible language types and languages

language type	$K_{INT} = K_{EXT}$	$K_{INT} > K_{EXT}$	$K_{EXT} > K_{INT}$	language
unrestricted	INT/EXT	INT	EXT	e.g. Old High German
internal-only	INT/EXT	INT	*	Modern German
external-only	INT/EXT	*	EXT	not attested
matching	INT/EXT	*	*	Polish

The first column lists the types of languages. The second column shows the situation in which the internal and the external case match. The surfacing case is the internal or external case. The third column shows the situation in which the internal case is the most complex. Due to the case scale, the potential surfacing case is the internal case. The fourth column shows the situation in which the external case is the most complex. Due to the case scale, the potential surfacing case is the external case. The asterix (*) indicates that there is no grammatical form for the surface element. The fifth column gives examples of languages that are of this type.

All language types allow for a headless relative when the internal and the external case match. The unrestricted type of language allows both the internal case and the external case to surface when either of them wins the case competition. Examples of this language type are Old High German, Gothic and Ancient Greek. The internal-only type of language allows only the internal case to surface when it wins the case competition, and it does not allow the external case to do so. An example of this language type is Modern German. The external-only type of language allows only the external case to surface when it wins the case competition, and it does not allow the internal case to do so. To my knowledge, there is no language that behaves like this. The matching type of language allows neither the internal nor the external case to surface when either of them wins the case competition. An example of this language type is Polish.

Chapter 5 took a small detour to discuss languages without case competition. These types of languages would show either always the internal case or always the external case. To my knowledge, there is no language in which it is always the internal case that surfaces. Two examples in which the external case always surfaces are Modern Greek and Old English.

The diagram in Figure 11.1 generates the four possible language types that I discussed in this dissertation.

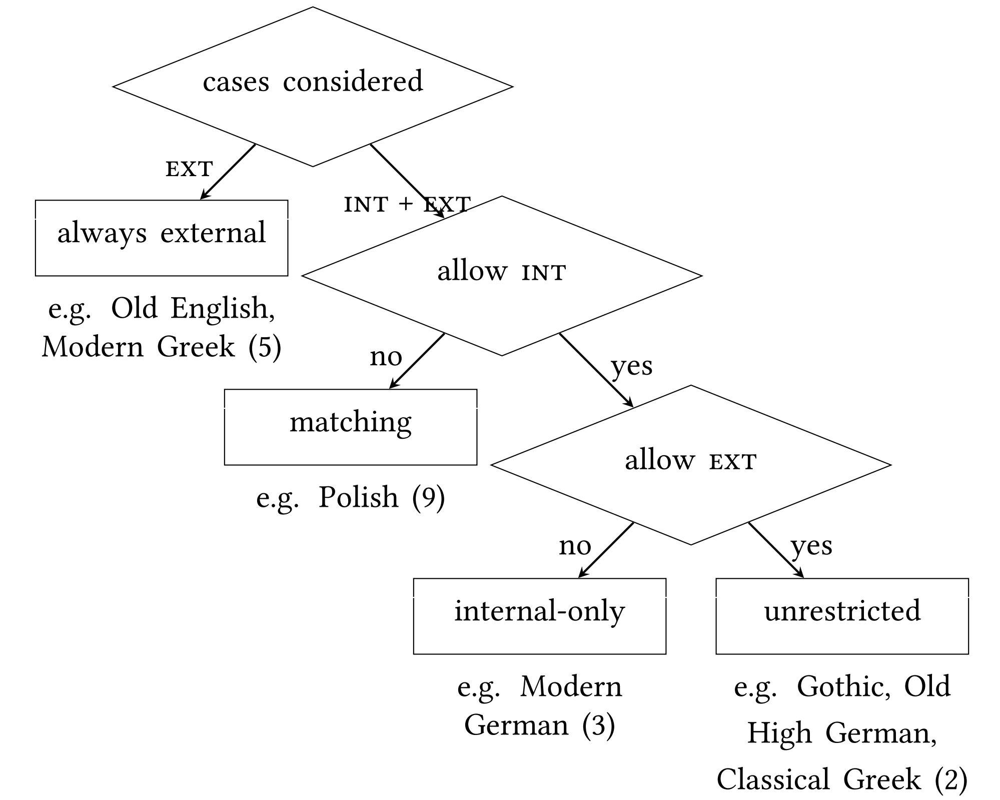


Figure 11.1: Three descriptive parameters generate four language types (repeated)

A language can either only consider the external case or it considers both the internal and the external case. If it only considers the external case, the always-external type of language is generated. If a language considers both the internal and external case, it can allow the internal case to surface when it wins the case competition or it cannot. If it does not, the matching type of language is generated. If a language allows the internal case to surface when it wins the case competition, it can allow the external case to surface when it wins the case competition or it cannot. If it does not, the internal-only type of language is generated. If a language allows the external case to surface when it wins the competition, the unrestricted type of language is generated.

The goal of Part III of the dissertation was to derive the crosslinguistic differences from something that can be independently observed within a language. I proposed to investigate the morphology of the languages. By doing so, I could suggest differences between the lexical entries in the different languages. These different lexical entries would then ultimately lead languages to be of different types. Within this dissertation, I translated two of the three descriptive parameters to something that can independently observed in morphology, namely 'allow INT' and 'allow EXT' and not cases considered. In other words, the system can differentiate between different languages with case competition, but not between languages with and without case competition.

Chapter 6 put in place the assumptions needed for the proposal to work. First, I assume that headless relatives 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 necessary requirement for deletion is that the deleted element (either the light head or relative pronoun) is structurally or formally contained in the other element. All languages have two possible light heads, which partly overlap in feature content with the relative pronoun.

In Chapter 7, I motivated the analysis for the internal-only type of language Modern German. I first identified the morphemes that Modern German light heads and relative pronouns consist of. Then I showed to which features each of the morphemes correspond. The Modern German lexical entries are such that the light heads is contained in the relative pronoun when the cases match and when the internal case is more complex. In these cases there is a grammatical headless relative. When the external case is more complex, neither the light head nor the relative pronoun is contained in the other element, so there is no grammatical headless relative.

In Chapter 8, I motivated the analysis for the matching type of language Polish. Again, I identified the morphemes that the light heads and relative pronouns consist of. The crucial difference between the internal-only type of language Modern German and the matching type of language Polish is how the phi and case features are spelled out. In Modern German they are spelled out by a phi and case feature portmanteau, which is a single lexical entry. In Polish, the same features are spelled out by two lexical entries: a phi feature (minus number feature) morpheme and a case feature (plus number feature) morpheme. This difference causes a difference in containment when the internal case is more complex. In Modern German the light head is contained in the relative pronoun, but in Polish the light head is not contained in the relative pronoun. This is the crucial difference between a language of the matching type and a language of the internal-only type.

Finally, in chapter 9, I motivated the analysis for the unrestricted type of language Old High German. Also here I identified the morphemes that the light heads and relative pronouns consist of. I showed that Old High German differs from the other two languages in that it has light heads and relative pronouns that are syncretic. That point is crucial for the unrestricted type of language, because it allows making use of formal containment: an element can be absent if it is formally contained within the other element. This is the only way in which the relative pronoun can be contained in the light head and the relative pronoun can be deleted even though the relative pronoun contains one feature more than the light head. Towards the end of the chapter I briefly sketched what I assume to be the larger syntactic structure of a headless relative.

In sum, I reformulated two of the descriptive parameters from Figure 11.1 into parameters that can be observed within a language. I show the result in Figure 11.2.

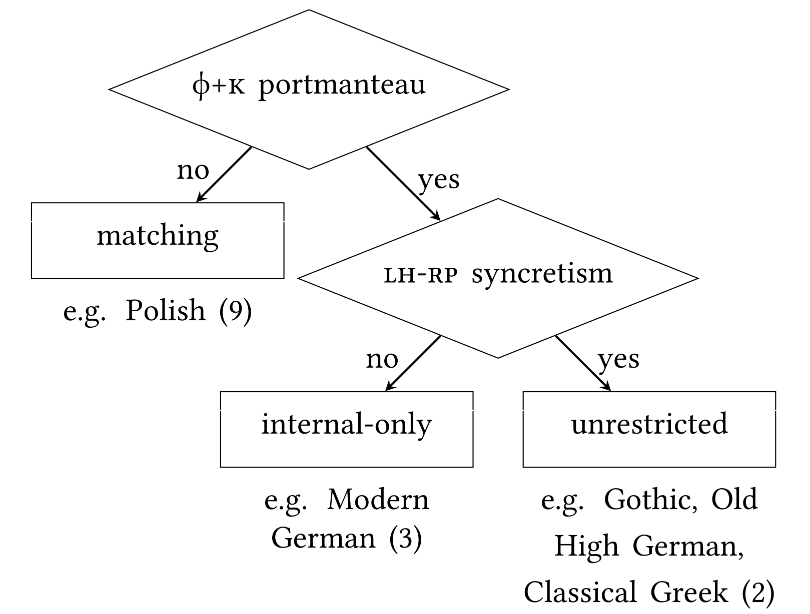


Figure 11.2: Different lexical entries generate three language types (repeated)

A language can either have a portmanteau for phi and case features, or it does not and multiple lexical entries spell out these features. If there is not a phi and case feature portmanteau, the matching type of language is generated. If a language has a phi and case feature portmanteau, it can either have a syncretism between relative pronouns (used in headless relatives) and demonstratives, or there is no such syncretism. If there is no such syncretism, the internal-only type of language is generated. If there is such a syncretism, the unrestricted type of language is generated.

Chapter 10 placed my account in a broader perspective. It discussed three different proposals that account for different language types in headless relatives and compared them to the approach put forward in this dissertation. All of the proposals account for the case facts using some kind of case hierarchy. The proposals differ in how they model the variation, both in the technical details of the proposal, but more importantly, also in empirical scope and predictions they make.

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
Otfrid	Otfrid’s Evangelienbuch
Pl. Men.	Plato, Menexenus
Rom.	Romans, New Testament
Tatian	Tatian

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