

CASE COMPETITION IN HEADLESS RELATIVES

Inauguraldissertation

zur Erlangung des Grades eines Doktors der Philosophie

im Fachbereich Neuere Philologien

der Johann Wolfgang Goethe-Universität

zu Frankfurt am Main

vorgelegt von

Fenna Bergsma

aus

Boarnsterhim, Niederlande

202..

Acknowledgements

thanks

Contents

Contents	ii
List of tables	v
List of figures	viii
List of abbreviations	xii
1 Introduction	1
1.1 Decomposing the title	1
1.2 The content of this dissertation	5
1.2.1 Case attraction	8
1.2.2 The genitive	9
I Case competition	11
2 A recurring pattern	13
2.1 In headless relatives	13
2.2 In syntax	21
2.2.1 Agreement	21
2.2.2 Relativization	28
2.3 In morphology	35
2.3.1 Syncretism	36
2.3.2 Morphological case containment	36
2.4 Summary	38
3 Case decomposition	39
3.1 The basic idea	40
3.2 Deriving syncretism	40
3.3 Deriving morphological case containment	57
3.4 The intuition for headless relatives	62

3.5	Summary	64
II	The typology	67
4	Languages with case competition	69
4.1	Four possible patterns	70
4.2	Internal and external case allowed	74
4.3	Only internal case allowed	81
4.4	Only external case allowed	89
4.5	Only matching allowed	92
4.6	Summary	96
5	Aside: languages without case competition	101
5.1	Always external case	102
5.2	A typology of headless relatives	109
III	Deriving the typology	115
6	The source of variation	117
6.1	Underlying assumptions	118
6.2	The three language types	123
6.2.1	The internal-only type	124
6.2.2	The matching type	126
6.2.3	The unrestricted type	132
6.3	Summary	141
7	Deriving the internal-only type	145
7.1	The Modern German relative pronoun	147
7.2	Combining morphemes in Nanosyntax	155
7.3	The Modern German (extra) light head	167
7.4	Comparing light heads and relative pronouns	175
7.5	Summary	180
8	Deriving the matching type	183
8.1	The Polish relative pronoun	186
8.2	The Polish extra light head	202
8.3	Comparing light heads and relative pronouns	208
8.4	Summary	213
9	Deriving the unrestricted type	217
9.1	The Old High German German relative pronoun	222

9.2	The Old High German light heads	231
9.2.1	The extra light head	232
9.2.2	The light head	236
9.3	Comparing light heads and relative pronouns	241
9.4	Coming back to the light heads	254
9.4.1	The interpretation of Old High German headless relatives . .	254
9.4.2	The larger syntactic structure and deletion operation	257
9.5	Summary	261
10	Conclusion	265
	Primary texts	269
	Bibliography	271

List of tables

1.1	The winner of case competition	6
2.1	Gothic headless relatives (matching)	15
2.2	Gothic headless relatives (NOM — ACC)	17
2.3	Gothic headless relatives (NOM — DAT)	18
2.4	Gothic headless relatives (ACC — DAT)	20
2.5	Summary of Gothic headless relatives	21
2.6	Typology for agreement hierarchy	24
2.7	Syncretism patterns	37
2.8	Morphological case containment in Khanty	37
3.1	Case decomposed	40
3.2	Syncretism patterns (repeated)	41
3.3	Morphological case containment of 3sg in Khanty	58
3.4	Summary of Gothic headless relative (repeated)	63
4.1	Internal and external case allowed	71
4.2	Only internal case allowed	72
4.3	Only external case allowed	73
4.4	Only matching allowed	73
4.5	Internal and external case allowed (repeated)	74
4.6	Summary of Gothic headless relatives (repeated)	75
4.7	Old High German headless relatives (matching)	76
4.8	Old High German headless relatives (NOM — ACC)	78
4.9	Old High German headless relatives (NOM — DAT)	79
4.10	Old High German headless relatives (ACC — DAT)	80
4.11	Only internal case allowed (repeated)	81
4.12	Modern German headless relatives (matching)	83
4.13	Modern German headless relatives (NOM — ACC)	85
4.14	Modern German headless relatives (NOM — DAT)	87
4.15	Modern German headless relatives (ACC — DAT)	89
4.16	Only external case allowed (repeated)	90

4.17	Classical Greek headless relatives possibility 1	91
4.18	Classical Greek headless relatives possibility 2	91
4.19	Summary of Classical Greek headless relatives	92
4.20	The matching type (repeated)	93
4.21	Polish headless relatives (matching)	94
4.22	Polish headless relatives (ACC — DAT)	96
4.23	Relative pronoun follows case competition	96
4.24	Relative pronoun follows case competition	97
5.1	Always internal case	102
5.2	Always external case	102
5.3	Always external case (repeated)	103
5.4	Old English headless relatives possibility 1	103
5.5	Old English headless relatives possibility 2	104
5.6	Old English headless relatives possibility 3	104
5.7	Summary of Old English headless relatives	105
5.8	Modern Greek headless relatives possibility 1	106
5.9	Modern Greek headless relatives possibility 2	106
5.10	Modern Greek headless relatives possibility 3	107
5.11	Summary of Modern Greek headless relatives	108
5.12	Relative pronoun follows case competition	110
5.13	Relative pronoun in internal case	110
5.14	Relative pronoun in external case	110
5.15	Possible patterns for headless relatives	112
6.1	Overview situations	123
6.2	Grammaticality in the internal-only type	126
6.3	Grammaticality in the matching type	132
6.4	Grammaticality in the unrestricted type with LH-1	140
6.5	Grammaticality in the unrestricted type with LH-2	140
7.1	Grammaticality in the internal-only type	146
7.2	Modern German relative pronouns (Durrell 2011: 5.3.3)	149
7.3	Modern German demonstrative <i>dieser</i> ‘this’ (Durrell 2011: Table 5.2)	149
7.4	Modern German demonstrative pronouns (Durrell 2011: 5.4.1)	152
7.5	Modern German relative pronouns (Durrell 2011: 5.3.3)	152
7.6	Interpretations of <i>wen</i> and <i>den-wen</i> relatives	169
8.1	Grammaticality in the matching type	183
8.2	Syncretic N/M dative forms (Swan, 2002)	187
8.3	Polish (in)animate relative pronouns (Swan 2002: 160)	191

8.4	Polish (in)animate relative pronouns (underlying forms) (Swan 2002: 160)	192
8.5	Polish inanimate relative pronouns (underlying + surface forms) (Swan 2002: 160)	193
8.6	Polish nouns (Swan 2002: 47,57)	193
8.7	Polish inanimate relative pronouns (after change 1 + surface forms) (Swan 2002: 160)	194
8.8	Polish inanimate relative pronouns (after change 1 + surface forms) (Swan 2002: 160)	194
8.9	Polish nouns (Swan 2002: 116,117)	195
8.10	Polish dative pronouns (underlying and surface)	196
9.1	Grammaticality in the unrestricted type (part 1)	218
9.2	Grammaticality in the unrestricted type (part 2)	220
9.3	Relative pronouns in Old High German (Braune 2018: 339)	225
9.4	Adjectives on <i>-a/-ō-</i> in Old High German Braune 2018: 300	225
9.5	Grammaticality in Old High German with <i>ELH</i>	255
9.6	Grammaticality in Old High German with <i>LH</i>	255
10.1	The surface pronoun with differing cases per language	265

List of figures

2.1	Agreement hierarchy	22
2.2	Agreement hierarchy with languages	24
2.3	Nominative-accusative alignment	26
2.4	Ergative-absolutive alignment	26
2.5	Agreement hierarchy (case)	27
2.6	Agreement hierarchy (NOM/ACC/DAT)	27
2.7	Relativization hierarchy	28
2.8	Relativization hierarchy with languages	33
2.9	Relativization hierarchy (case)	34
2.10	Relativization hierarchy (NOM/ACC/DAT)	35
4.1	Attested patterns in headless relatives with case competition	98
5.1	Attested patterns in headless relatives	111
6.1	Two descriptive parameters generate three language types	117
6.2	LH and RP	120
6.3	LH and RP in the internal-only type	124
6.4	EXT _{NOM} vs. INT _{NOM} in the internal-only type	124
6.5	EXT _{NOM} vs. INT _{ACC} in the internal-only type	125
6.6	EXT _{ACC} vs. INT _{NOM} in the internal-only type	126
6.7	LH and RP in the matching type	127
6.8	EXT _{NOM} vs. INT _{NOM} in the matching type	127
6.9	EXT _{NOM} vs. INT _{ACC} in the matching type	128
6.10	EXT _{NOM} vs. INT _{ACC} in the internal-only type (repeated)	129
6.11	Nominal ellipsis in Dutch	130
6.12	Nominal ellipsis in Kipsigis	131
6.13	LH-1 and RP in the unrestricted type	133
6.14	EXT _{ACC} vs. INT _{NOM} with case syncretism	135
6.15	A syncretic light head and relative pronoun	136
6.16	LH-2 and RP in the unrestricted type	137
6.17	EXT _{NOM} vs. INT _{NOM} in the unrestricted type	138

6.18	EXT _{ACC} vs. INT _{NOM} in the unrestricted type	139
6.19	Different lexical entries generate three language types	142
6.20	A syncretic light head and relative pronoun	143
7.1	ELH and RP in the internal-only type	145
7.2	LH and RP in Modern German	146
7.3	Modern German EXT _{ACC} vs. INT _{ACC} → <i>wen</i>	176
7.4	Modern German EXT _{ACC} vs. INT _{DAT} → <i>wem</i>	178
7.5	Modern German EXT _{DAT} vs. INT _{ACC} ↗ <i>m/wen</i>	179
7.6	ELH and RP in Modern German (repeated)	180
8.1	LH and RP in the matching type	183
8.2	LH and RP in Polish	185
8.3	Polish EXT _{ACC} vs. INT _{ACC} → <i>kogo</i>	209
8.4	Polish EXT _{ACC} vs. INT _{DAT} ↗ <i>ogo/komu</i>	211
8.5	Polish EXT _{DAT} vs. INT _{ACC} ↗ <i>omu/kogo</i>	214
8.6	LH and RP in Polish (repeat ed)	215
9.1	LH-1 and RP in the unrestricted type	217
9.2	LH-1 and RP in Old High German	219
9.3	LH-2 and RP in the unrestricted type	219
9.4	LH-2 and RP in Old High German	221
9.5	Old High German EXT _{NOM} vs. INT _{NOM} → <i>dher</i> (ELH)	243
9.6	Old High German EXT _{NOM} vs. INT _{NOM} → <i>dher</i> (LH)	244
9.7	Old High German EXT _{ACC} vs. INT _{NOM} ↗ <i>en/dher</i> (ELH)	246
9.8	Old High German EXT _{ACC} vs. INT _{NOM} ↗ <i>dhën/dhër</i> (LH)	247
9.9	Old High German EXT _{NOM} vs. INT _{ACC} → <i>then</i> (ELH)	252
9.10	Old High German EXT _{NOM} vs. INT _{ACC} ↗ <i>ther/then</i> (LH)	253
9.11	ELH and RP in Old High German (repeated)	262
9.12	LH and RP in Old High German (repeated)	262
10.1	Different lexical entries generate three language types (repeated)	267

List of abbreviations

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

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

Chapter 1

Introduction

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

I will show in this dissertation that case competition has a few properties that hold for all languages and few that differ across languages. If you look from a distance, you can't make much sense of it. However, if you look more closely and zoom in on the morphology of the language, then it can all be explained. It turns out that everything needed to account for the phenomenon can independently motivated: there is a case hierarchy deeply ingrained in syntax and there is deletion under c-command under containment (structural and formal).

Before I discuss what this dissertation is about, I first introduce what I mean exactly with case competition in headless relatives. Then I discuss the content of the dissertation, going step by step through the different aspects of case competition in headless relatives. This chapter ends with a section on what this dissertation does not discuss.

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

‘the teacher’ appears in accusative case, because it is the descriptive object of *mögen* ‘to like’.

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

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

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

- (2) a. Der Lehrer mag den Schüler, der nach draußen
 the.NOM teacher likes the.ACC student RP.SG.M.NOM to outside
 guckt.
 looks
 ‘The teacher likes the pupil that is looking outside.’
 b. Der Lehrer mag den Schüler, den er beim
 the.NOM teacher likes the.ACC student RP.SG.M.ACC he at the
 Verstecktspiel sucht.
 hide-and-seek game searches
 ‘The teacher likes the pupil that he is searching for playing hide-and-seek.’

Compare the two sentences in (2). In both sentences the head is marked as accusative because it is the descriptive object in the main clause. The case of the relative pro-

noun in (2b) is also accusative, because it is the descriptive object in the relative clause. The case of the relative pronoun in (2a) is nominative, because it is the descriptive subject in the relative clause. So, the case of the relative pronoun in (2a) differs from the case of the head.

The focus of this dissertation lies on headless relatives. As the name suggests, this type of relative clause lacks a head.¹ Even though Modern German also has case competition in headless relatives, I turn to Gothic now. The patterns among the two languages differ slightly, and the first part of the dissertation can be illustrated best with Gothic.

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

- (3) *gaarma* *þan* *-ei* *arma*
 pity.PRES.1SG_[ACC] RP.SG.M.ACC -COMP pity.PRES.1SG_[ACC]
 ‘I pity him whom I pity’ (Gothic, Rom. 9:15, adapted from Harbert 1978: 339)

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

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

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

¹This ‘missing noun’ has been interpreted in two different ways. Some researchers argue that the noun is truly missing, it is absent, cf. Citko 2005; Van Riemsdijk 2006. Others claim that there is actually a head, but it is phonologically zero, 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 Chapter III.

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

The predicate *gaarman* ‘to pity’ takes accusative objects. In (3), the external case is accusative.

Now I return to the question where *þan(a)* ‘RP.SG.M.ACC’ in (3) got its case from. In the remainder of this section I show evidence for the claim that the relative pronoun is sensitive to both the internal and the external case. This is easy to imagine for the internal case: the internal case reflects the grammatical role of the relative clause. It is a bit more complicated for the external case. The external case is associated with the grammatical role of the missing head in the main clause. The idea is going to be that the external case cannot be reflected on a non-existing head. Indirectly, it appears on the relative pronoun.³ This means that the internal and external case come together on the relative pronoun. In other words, there is case competition going on in headless relatives. (3) is indeed the first example I gave of case competition in a headless relative. It is an uninteresting one, because the two competing cases are identical.

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

- (4) **þan** -ei frijos siuks ist
 RP.SG.M.ACC -COMP love.PRES.2SG._[ACC] sick be.PRES.3SG_[NOM]
 ‘the one whom you love is sick’
 (Gothic, John 11:3, adapted from Harbert 1978: 342)

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

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

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

(5) jah þo -ei ist us Laudeikaion jus
and RP.SG.N.ACC -COMP be.PRES.3SG_[NOM] from Laodicea 2PL.NOM
ussiggwaid
read._[ACC]
'and you read the one which is from Laodicea'
(Gothic, Col. 4:16, adapted from Harbert 1978: 357)

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

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

1.2 The content of this dissertation

In the previous section I introduced the notion of case competition, and I illustrated how it appears in headless relatives. This dissertation discusses two aspects of this phenomenon: who wins the competition and whether the winner is allowed to sur-

face.

Part I of this dissertation discusses the first aspect that concerns which case wins the case competition. It is a crosslinguistically stable fact that this is determined by the case scale: $NOM < ACC < DAT$ (cf. Grosu, 2003b). A case more to the right on the scale wins over a case more to the left on the scale.

This generates the pattern shown in Table 1.1. The left column shows the internal case (the case assigned in the relative clause) between square brackets. The top row shows the external case (the case assigned in the main clause) 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 wins over the nominative, the relative pronoun appears in the accusative case; (2) when the dative wins over the nominative, the relative pronoun appears in the dative case; and (3) when the dative wins over the accusative, the relative pronoun appears in the dative case.

Table 1.1: The winner of case competition

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

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 other syntactic and morphological phenomena. I discuss two implicational hierarchies concerning agreement and relativization, and I show that the case scale is reflected in patterns of syncretism and in morphological containment. 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 I of this dissertation introduces the second aspect that plays a role in headless relatives. This aspect concerns whether the internal and the external case are allowed to surface when either of them wins the case competition. In Table 1.1, 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 these possible language types are attested in natural languages. Old High German is an example of the *non-matching 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. At the end I present an overview of all logically patterns in headless relatives across language, and I show which ones are attested.

In Part III I derive the possible patterns of languages with case competition. I make a few assumptions that hold for all languages and are necessary to derive the patterns. Headless relatives are derived from light-headed relatives. Light-headed relatives contain a light head and a relative pronoun. The relative pronoun consists of the features of the light head (which are *phi* and case features) plus at least one additional feature (here *REL*). 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 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. These different lexical entries ultimately lead to different languages types, according to the following chain. The different lexical entries lead to differences in the internal syntax of the light head and the relative pronoun. Differences in the internal syntax of the light head and the relative pronoun lead to differences in whether or not one of them is contained in the other. Whether or not one of them is contained in the

other determines whether or not the light head or relative pronoun can be recovered and, therefore, deleted. Whether or not the light head or relative pronoun can be deleted determines whether or not there is a single surface pronoun and, with that, a grammatical headless relative. I describe this 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. The 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 motivate the analysis for the matching type of language Polish. Again I identify 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 a phi feature morpheme and a case feature morpheme, which are two lexical entries. 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 do the same for the unrestricted type of language Old High German. Also here I identify the morphemes that the light heads and relative pronouns consist of. I show 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. Toward the end of the chapter I briefly sketch what I assume the larger syntactic structure of a headless relative looks like.

1.2.1 Case attraction

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

- (6) unde ne wolden nîet besên den mort den dô was geschên
 and not wanted not see the murder.ACC that.ACC there had happened
 ‘and they didn’t want to see the murder that had happened.’
 (MHG, Nib. 1391,14, Behaghel 1923-1932: 756, after Pittner 1995: 198)
- (7) Den schilt den er vür bôt der wart schiere zeslagen
 the.ACC shield.ACC which.ACC he held_{ACC}, that.NOM was quickly shattered_{NOM}
 ‘The shield he held was quickly shattered’ Iwein 6722f., Lenerz 1984: 116)

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

1.2.2 The genitive

In Gothic headless relatives, there is data available of the genitive in case competition with the accusative. The genitive wins in this competition. I give an example in which the internal case is accusative and the external case is genitive in (8). The relative clause is marked in bold, the relative pronoun is not. The internal case is accusative. The predicate *gasehvun* ‘saw’ takes accusative objects. The external case is genitive. The noun *waiht* ‘thing’ combines with a genitive. The relative pronoun *piz(e)* ‘what.GEN’ appears in the external case: the genitive.

- (8) ni waiht **piz -ei gasehvun**
 not thing_[GEN] what.GEN -COMP saw_[ACC]
 ‘not any of (that) which they saw’
 (Gothic, Luke 9:36, adapted from Harbert 1978: 340)

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

The same holds for the two other main languages discussed in this thesis: Modern German and Old High German. In Modern German, case competitions have been reported between all possible case combinations, so also between genitives and nominatives, between genitives and accusatives, and between genitives and datives (cf. Vogel, 2001). The genitive wins over the nominative and the accusative. In a competition between the genitive and the dative neither of them gives a grammatical result. Old High German might show some examples of case competition between genitives and accusatives and genitives and nominative. In these cases, the genitive always wins. No examples of datives against genitives are attested (Behaghel, 1923-1932). In sum, the genitive does not appear in all possible case competition combinations in all three languages, and is therefore excluded.

What do I predict for the genitive? Starke: S-acc — S-dat — gen — B-acc — B-dat hierarchies for each language individually. Gothic syncretisms: acc-dat, acc-nom, nom-gen(!). Modern German: nom-acc-dat-gen? Old High German: ? then the predictions would be..

The genitive differs from the other cases in a particular way. That is, nominative, accusative and dative are dependents of the verb (or prepositions). Genitives can be dependents of verbs, or they can be dependents of nouns, as possessors or partitives. Consider the example in (8). The genitive relative pronoun *þiz(e)* ‘what.GEN’ is a dependent of the noun *waiht* ‘thing’. Most of the examples in headless relatives contain genitives that depend on nouns and not those that depend on verbs. The (genitive) possessor is also placed far away from the other three cases in Keenan and Comrie’s (1977) relativization hierarchy.

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

I leave it for future research..

Part I

Case competition

Chapter 2

A recurring pattern

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

(1) NOM < ACC < DAT

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

2.1 In headless relatives

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

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

The description of Gothic is mostly based on (Harbert, 1978). The spelling of the examples follows the Wulfila Project website.¹ The glossing comes from the detailed tagging on that same website. The translations are my own.

¹<<http://www.wulfila.be>>

(2) ei sa -ei þis matjai, ni gadaupnai
 COMP RP.SG.M.NOM -COMP DEM.SG.M.GEN eat.OPT.3SG_[NOM] not die.OPT.3SG_[NOM]
 ‘that the one, who eats of this may not die’
 (Gothic, John 6:50, after Harbert 1978: 337)

(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)

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

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

Table 2.1: Gothic headless relatives (matching)

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

In Table 2.1, six cells remain empty. These are the cases in which the internal and the external case differ. It has been argued in the literature that the two competing cases always adhere to a particular case scale (cf. Harbert, 1978; Pittner, 1995; Vogel, 2001; Grosu, 2003a; Bergsma, 2019; Caha, 2019). This is the scale I gave in the introduction of this chapter, repeated here in (5). Elements more to the right on this scale win over elements more to the left on this scale.²

$$(5) \quad \text{NOM} < \text{ACC} < \text{DAT}$$

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

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

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

²In 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. The reason is that I restrict myself to cases that appear in all possible case competition combinations. As the genitive does not fulfill that requirement, it is therefore excluded. I discussed the genitive briefly in Section 1.2.2.

(6) **þan** **-ei** **frijos** siuks ist
RP.SG.M.ACC -COMP love.PRES.2SG._[ACC] sick be.PRES.3SG_[NOM]
'the one whom you love is sick'
(Gothic, John 11:3, adapted from Harbert 1978: 342)

(7) jah þo -ei ist us Laudeikaion jus
and RP.SG.N.ACC -COMP be.PRES.3SG_[NOM] from Laodicea 2.PL.NOM
ussiggwaid
read._[ACC]
'and you read the one which is from Laodicea'
(Gothic, Col. 4:16, adapted from Harbert 1978: 357)

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

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

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

Table 2.2: Gothic headless relatives (NOM – ACC)

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

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

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

- (8) *ip þamm -ei leiti fraletada leiti frijod*
 but RP.SG.M.DAT -COMP little forgive.PASS.PRES.3SG_[DAT] little love_[NOM]
 ‘but the one whom little is forgiven loves little’
 (Gothic, Luke 7:47, adapted from Harbert 1978: 342)

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

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

- (9) þaim -ei iupa sind fraþjaiþ
 RP.PL.N.DAT -COMP above be.PRES.3PL_[NOM] think about.OPT.PRES.2PL_[DAT]
 ‘think about those which are above’
 (Gothic, Col. 3:2, adapted from Harbert 1978: 339)

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

Table 2.3: Gothic headless relatives (NOM — DAT)

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 (5), the relative pronoun appears in the dative case and never in the accusative.

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

(10) ushafjands ana þamm -ei lag
pick up.PRES.PTCP_[ACC] on_[DAT] RP.SG.N.DAT -COMP lie.PRET.3SG
'picking up that what he lay on'
(Gothic, Luke 5:25, adapted from Harbert 1978: 343)

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

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

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

jains

DEM.SG.M.NOM

‘that you believe in him whom he sent’

(Gothic, John 6:29)

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

Table 2.4: Gothic headless relatives (ACC – DAT)

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

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

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

Table 2.5: Summary of Gothic headless relatives

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

(12) $\text{NOM} < \text{ACC} < \text{DAT}$

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

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

2.2 In syntax

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

2.2.1 Agreement

Agreement can be seen as “a systematic covariance between a semantic or formal property of one element and a formal property of another” (Steel, 1978). 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: $\text{NOM} < \text{ACC} < \text{DAT}$. First I formulate the implicational hierarchy in terms of grammatical

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

function (following 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.

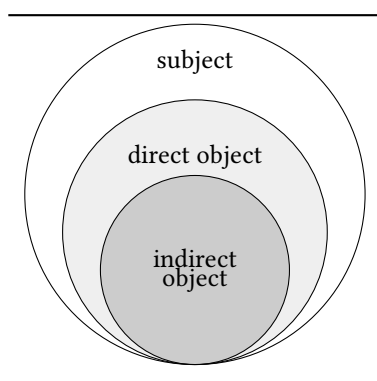


Figure 2.1: Agreement hierarchy

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’.

⁷Moravcsik (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) Taro-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 portmanteau 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.

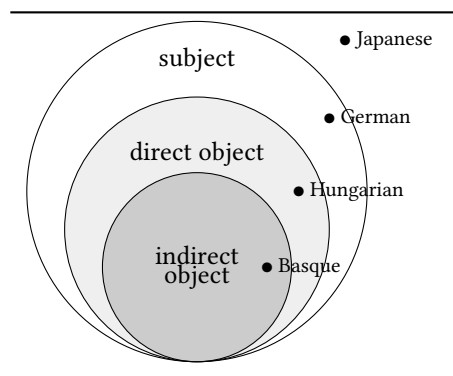


Figure 2.2: Agreement hierarchy with languages

Gilligan (1987) performed a typological study among 100 genetically and areally diverse languages, which confirms the picture. The results are shown in Table 2.6. There are 23 languages that do not show any agreement, like Japanese. There are 31 languages that show agreement only with the subject and not with the direct and indirect object, like German. There are 25 languages that show agreement with the subject and direct object but not with the indirect object, like Hungarian. There are 23 languages that show agreement with the subject, the direct object and the indirect object, like Basque.

Table 2.6: Typology for agreement hierarchy

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

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

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

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 ac-

cusative. This is schematically shown in 2.3.

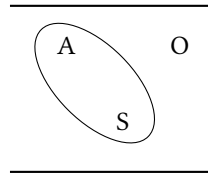


Figure 2.3: Nominative-accusative alignment

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.

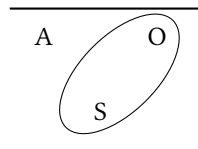


Figure 2.4: Ergative-absolutive alignment

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 absolutes and ergatives behave with respect to whether they show agreement. There are languages that show agreement with both absolutes and ergatives. There are also languages that show only agreement with absolutes. Crucially, there is no language that shows only agreement with ergatives. Absolutes are a heterogeneous 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 absolutes 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.

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

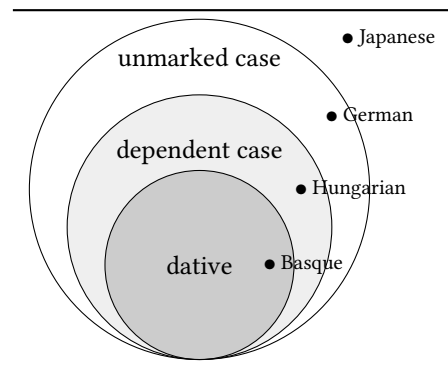


Figure 2.5: Agreement hierarchy (case)

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.

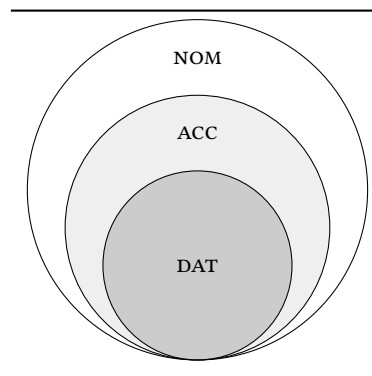


Figure 2.6: Agreement hierarchy (NOM/ACC/DAT)

In sum, this section has shown that agreement follows the same implicational

hierarchy as the case scale in headless relatives: NOM < ACC < DAT.

2.2.2 Relativization

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

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

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

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. The languages in the figure give examples of the circles they are in.

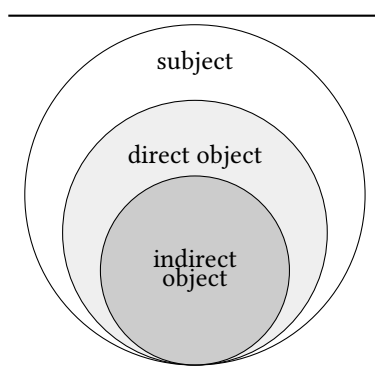


Figure 2.7: Relativization hierarchy

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

⁸Keenan 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.

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

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

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

- 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. (23) is an example of a declarative

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

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

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

- (28) a. ***perempuan** yang Ali beri ubi kentang itu kapada
 woman that Ali give potato the to
 b. ***perempuan kapada** yang Ali beri ubi kentang itu
 woman to who Ali give potato that
 (Malay, 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 preminally, does not use a relativization marker, and puts the predicate in the relative clause in the non-finite form (Keenan and Comrie, 1977).

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

- (29) a. Pöydällä tanssinut **poika** oli sairas.
 on-table having-danced boy was sick
 ‘The boy who had danced on the table was sick.’
 b. Näkemäni **poika** tanssi pöydällä.
 I-having-seen boy danced on-table
 ‘The boy that I saw danced on the table.’
 (Finnish, 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. (30) is an example of a declarative ditransitive sentence in Basque. The sentence contains the subject *gizonak* ‘the man’, the direct object *liburua* ‘the book’ and the indirect object *emakumeari* ‘the woman’.

- (30) Gizon-a-k emakume-a-ri liburu-a eman dio.
 man-DEF-ERG woman-DEF-DAT book-DEF.ABS give has
 ‘The man has given the book to the woman.’
 (Basque, 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 (31a) shows the three relativizations that are derived from (30). In (31a), the ergative subject *gizonak* ‘the man’ from (30) is relativized. The head *gizona* ‘the man’, marked in bold, has lost its ergative marker *-k*, and follows the relative clause *emakumeari liburua eman dio* ‘who has given the book to the woman’. The suffix *-n* is attached to the relative clause. In (31b), the absolutive direct object *liburua* ‘the book’ from (30) is relativized. The head *liburua* ‘the book’, marked in bold, follows the relative clause *gizonak emakumeari eman dion* ‘that the man has given to the woman’.¹⁰ The suffix *-n* is attached to the relative clause. In (31c), the dative indirect object *emakumeari* ‘the woman’ from (30) is relativized. The head *emakumea* ‘the woman’, marked in bold, has lost its dative marker *-ri*, and follows the relative clause *gizonak liburua eman dion* ‘that the man has given the book to’. The suffix *-n* is attached to the relative clause.

- (31) a. emakume-a-ri liburu-a eman dio-n **gizon-a**
 woman-DEF-DAT book-DEF.ABS give has-REL man-DEF
 ‘the man who has given the book to the woman’

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

¹⁰The absolutive direct object *liburua* ‘the book’ does not have an additional overt absolutive marker, so this difference cannot be observed when it is relativized.

- 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)

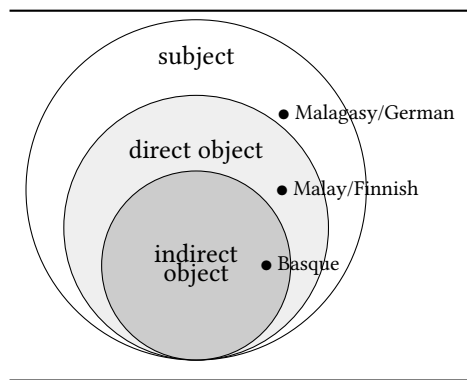


Figure 2.8: Relativization hierarchy with languages

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).

(32) shows an intransitive and transitive sentence in Dyirbal. In the intransitive sentence in (32a), the subject *balan ðugumbil* ‘the woman’ is marked absolutive. In the transitive sentence in (32b), the subject *ŋaɖa* ‘I’ is marked ergative, and the object *balan ðugumbil* ‘the woman’ is marked absolutive.

- (32) a. balan ðugumbil pina-ju
 DET.ABS woman.ABS sit-PASS
 ‘The woman is sitting down.’

- b. *ɲaɖa balan ɖugumbil buɾa-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 *-ɲu*. In (33a), the absolutive subject *ɖugumbil* ‘woman’ from (32a) is relativized. The head *ɖugumbil* ‘woman’, marked in bold, precedes the relative clause *ɲina-ɲu* ‘who is sitting down’. The predicate in the relative clause *ɲina* ‘sit’ is followed by the relative suffix *-ɲu*. In (33b), the absolutive object *ɖugumbil* ‘woman’ from (32b) is relativized. The head *ɖugumbil* ‘woman’, marked in bold, precedes the relative clause *ɲaɖa buɾa-ɲu* ‘whom I am watching’. The predicate in the relative clause *buɾa* ‘see’ is followed by the relative suffix *-ɲu*.

- (33) a. *ɲaɖa balan **ɖugumbil** ɲina-ɲu buɾa-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 **ɖugumbil** ɲaɖa buɾa-ɲu 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 *ɲaɖa* ‘I’ in (32b)) cannot be directly relativized. They have to be promoted to absolutives first, creating a passive-like structure. In other words, only relativization of absolutives is possible, ergatives cannot be relativized.

In conclusion, just like the agreement hierarchy, the relativization hierarchy is formalized best in terms of morphological case (cf. Caha, 2009). Reformulating Figure 2.2 in terms of case instead of grammatical function gives the schema in Figure 2.6.

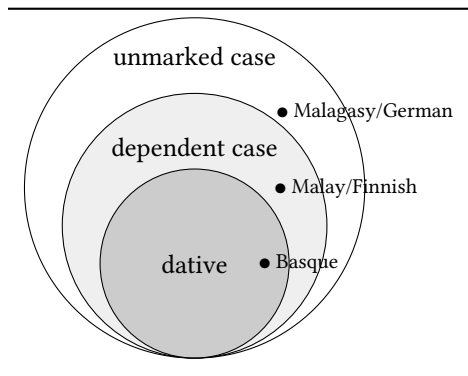


Figure 2.9: Relativization hierarchy (case)

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

First, German is a language that has a particular relativization strategy for the unmarked case, as shown in (24). The unmarked nominative case can be relativized with a reduced relative clause, but the dependent accusative case and the dative case cannot. Second, Finnish is a language that has a particular relativization strategy for unmarked and dependent case, as shown in (29). The unmarked nominative case and the dependent accusative case can be relativized with a reduced relative clause, but the dative case cannot. Last, Basque is a language that has a particular relativization strategy for unmarked, dependent and dative case, as shown in (31). The unmarked ergative, dependent absolutive and dative case can be relativized by extraposing the head, and marking it with the invariable marker *-n*.

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

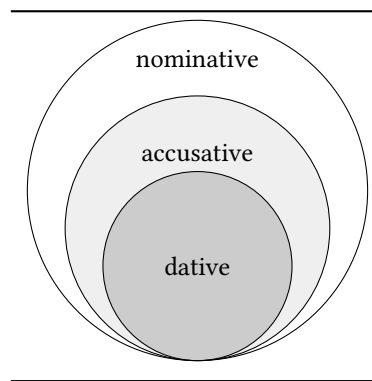


Figure 2.10: Relativization hierarchy (NOM/ACC/DAT)

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

2.3 In morphology

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

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

2.3.1 Syncretism

Syncretism refers to the phenomenon whereby two or more different functions are fulfilled by a single form (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 $\text{NOM} < \text{ACC} < \text{DAT}$.

It has widely been observed that syncretism is restricted by the linear sequence $\text{NOM} - \text{ACC} - \text{DAT}$ (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 2.7 shows examples for each of these possible patterns. I give an example of three distinct forms from Faroese. The second person singular is *tú* ‘you’ for nominative, *teg* ‘you’ for accusative and *tær* ‘you’ for dative (Lockwood 1977: 70). I give an example of a complete syncretism for nominative, accusative and dative from Dutch. The second person plural pronoun is *jullie* ‘you.PL’ is syncretic between all three cases. I give an example of a syncretism between accusative and dative but not nominative from Icelandic. The first person singular plural is *okkur* ‘us’ is syncretic between accusative and dative. The nominative has a separate form: *við* ‘we’ (Einarsson 1949: 68). I give an example of a syncretism between nominative and accusative but not dative from German. The third person singular feminine *sie* ‘she/her’ is syncretic between nominative and accusative. The dative has a separate form: *ihr* ‘her’. Crucially, to the best of my knowledge, there is no language in which the nominative and the dative are syncretic but the accusative is not.

In sum, case syncretism follows the ordering of the case scale in headless relatives: $\text{NOM} < \text{ACC} < \text{DAT}$.

2.3.2 Morphological case containment

This section shows a second way in which $\text{NOM} < \text{ACC} < \text{DAT}$ 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

Table 2.7: Syncretism patterns

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

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

Khanty (or Ostyak) shows morphological case containment in some of its pronouns (Nikolaeva 1999: 16 after Smith et al. 2019). Three examples are given in Table 2.8.

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

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

Table 2.8: Morphological case containment in Khanty

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

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

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

2.4 Summary

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

(34) $\text{NOM} < \text{ACC} < \text{DAT}$

This case scale is not only found in case competition in headless relatives. Implicational hierarchies regarding two syntactic phenomena appear across languages. The first one concerns agreement. If a language shows agreement with datives, it also shows agreement with accusatives and nominatives. If a language shows agreement with accusatives, it also shows agreement with nominatives. The second implicational hierarchy concerns relativization. If a dative in a language can be relativized with a particular strategy, an accusative and a nominative can be too using the same strategy. If an accusative can be relativized with a particular strategy, so can a nominative with this strategy.

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

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

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

Chapter 3

Case decomposition

At the beginning of the previous chapter I showed that the case scale $\text{NOM} < \text{ACC} < \text{DAT}$ appears in headless relatives. In most accounts for 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 simply obey to that hierarchy. Pittner (1995: 201:fn.4) makes this explicit: “One of the reviewers notes that an explanation in terms of a Case hierarchy is rather stipulative. However, as far as I know, nobody has suggested a nonstipulative explanation for these facts.”

What I showed as well in the previous chapter is that the case scale $\text{NOM} < \text{ACC} < \text{DAT}$ is a wide-spread phenomenon: it recurs in several phenomena across different languages. The scale can be observed in at least two more syntactic phenomena: agreement and relativization.¹ The case scale also appears within morphology in syncretism patterns and morphological case containment. 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.”

I am not after a theory in which the case hierarchy is something construction specific, and syntax and morphology both have their own case hierarchy. I argue that there is a single trigger that is responsible for the case scales in different subparts of language (cf. Caha, 2019, on numeral constructions). Specifically, I show that the observed case scale naturally follows on the assumption that the case hierarchy is deeply anchored in syntax. The case scales in morphology and syntax are merely reflexes of how case is organized in language.²

This chapter is structured as follows. First, I introduce a specific case decomposition (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 the

¹In 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.

²Himmelreich (2017) works this intuition out in a different way.

previous chapter. I make this concrete in the framework Nanosyntax (Starke, 2009). Finally, I show how the case decomposition translates to the case scale observed 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 F1) plus one extra (here F2). Dative has all the features accusative has (F1 and F2) plus one extra (F3).

Table 3.1: Case decomposed

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

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

- (1) NOM < ACC < DAT

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

3.2 Deriving syncretism

Case syncretism follows the ordering of the case scale NOM < ACC < DAT. Along this scale, only contiguous regions in the sequence are syncretic. In this section I show how case syncretism patterns can be derived from the case decomposition in

Table 3.1. In Table 3.2 I repeat from Table 2.7 examples that shows the possible and impossible syncretism patterns.

Table 3.2: Syncretism patterns (repeated)

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

Table 3.2 shows that if one orders cases in the linear sequence NOM — ACC — DAT, only contiguous regions in the sequence turn out to be syncretic. First, all three cases can be non-syncretic, as in Faroese. Second, all three cases can be syncretic, as in Dutch. Third, the accusative and the dative can be syncretic and the nominative not, as in Icelandic. Fourth, nominative and accusative can be syncretic and the dative not, as in German. The pattern that is not attested crosslinguistically is the one that targets non-contiguous regions in the table, the ABA pattern (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’.³ A lexical entry can be applied if it contains all features, as long as there is no more specific one. This system can generate the patterns ABC, AAA, ABB and AAB, but not ABA.

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

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

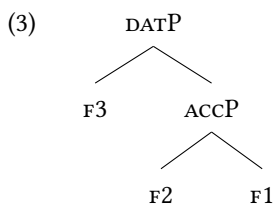
In Nanosyntax, syntax starts with atomic features, and it builds complex syntactic trees. Specifically, there are no ‘feature bundles’ (from a pre-syntactic lexicon) that enter the syntax. The only way complex feature structures come to exist is as a result of merge. After syntax (actually, each instance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

In Nanosyntax, the lexicon contains lexical entries, which are links between lexical trees, phonological representations and conceptual representations (Starke, 2014).⁵ I leave the conceptual representation out of discussion for now, as it is not relevant for the discussion here. The fact that only syntax can create complex feature structures also has a consequence for lexical 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) [F1, F2, F3]

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



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

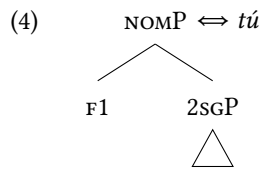
⁴Throughout the dissertation I call the syntactic representations in the lexicon ‘lexical trees’ in order to distinguish them from syntactic structures in the syntax.

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

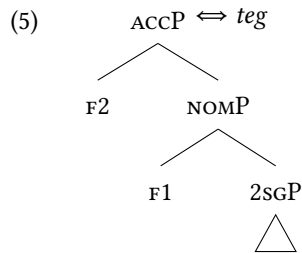
morpheme). Applying this to (3), not the terminals F1, F2 and F3 receive a realization, but ACCP and DATP are spelled out. A necessary requirement is that these multiple syntactic heads form a constituent. That means that DATP cannot be spelled out without ACCP.

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

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

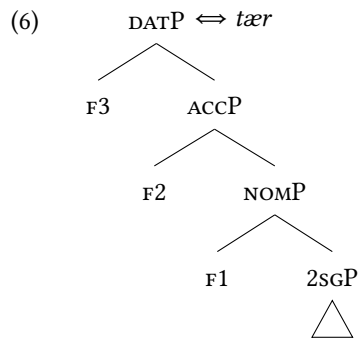


The lexical entry for *teg* is given in (5). The lexical tree consists of all the features of the lexical tree in (4), plus F2, making it an ACCP. The linked phonological representation is *teg*.



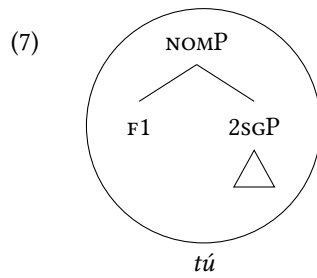
The lexical entry for *tær* is given in (6). The lexical tree consists of all the features of the lexical tree in (5), plus F3, making it a DATP. The linked phonological representation is *tær*.

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

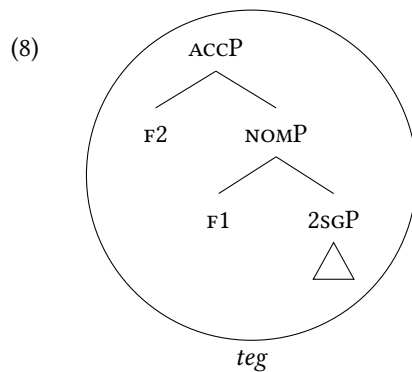


The lexical trees and their phonological counterparts I gave in (4) to (6) are lexical entries. These lexical entries are used to spell out syntactic structures. I give examples of syntactic structures in (7) to (9).

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

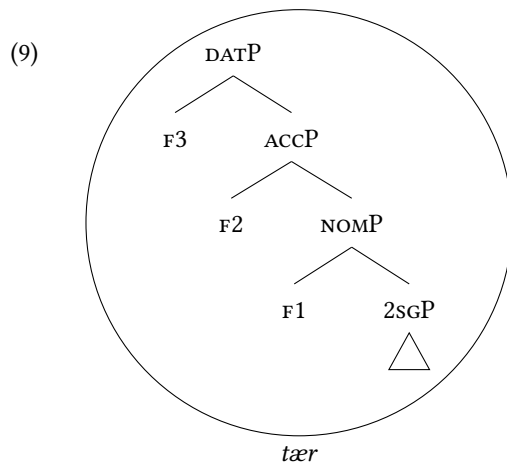


The lexical tree in (5) is identical to the syntactic structure in (8), and it is spelled out as *teg*.



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

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

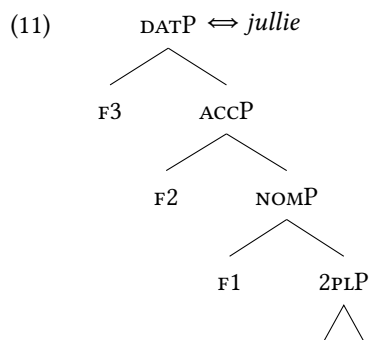


In the Faroese examples above, the syntactic structures are all identical to the lexical trees. However, Nanosyntax assumes that to be a successful match, identity is not a necessary requirement. Instead, matching relies on a containment relation. A lexical entry applies when it contains all features.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

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

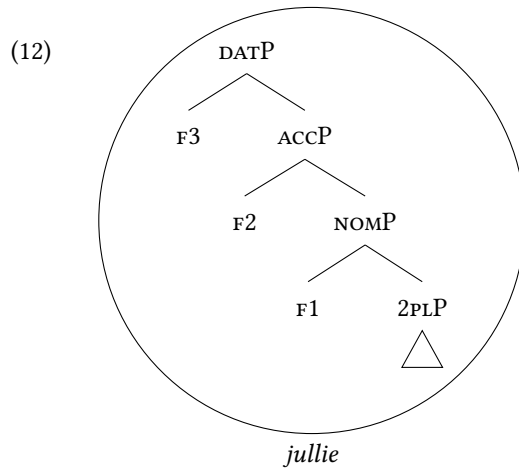
A lexically stored tree matches a syntactic node iff the lexically stored tree contains the syntactic node.

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

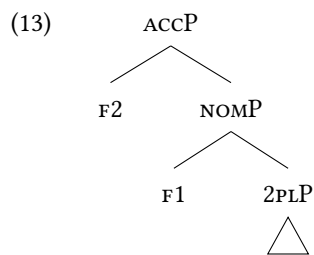


The syntactic structure of the dative, given in (12), is the least exciting of the three.

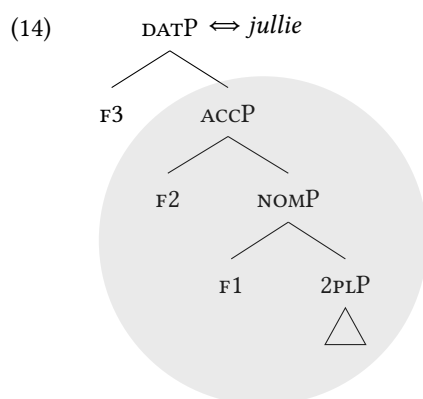
It is identical to the lexical tree (11), and therefore, spelled out as *jullie*.



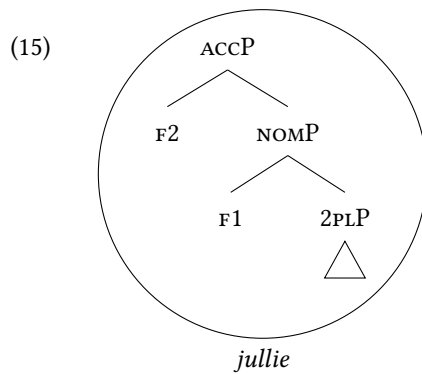
The syntactic structure of the accusative is given in (13).



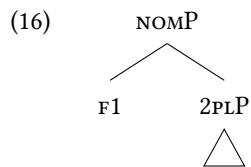
The lexical entry in (11) is not identical to this syntactic structure. However, the lexical tree contains the syntactic structure of the accusative. I repeat the lexical entry for *jullie* in (14), marking the subpart of the tree that matches the syntactic structure in gray.



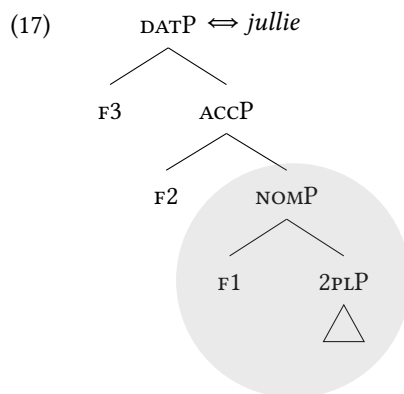
As a result, the accusative is spelled out as *jullie*, shown in (15).



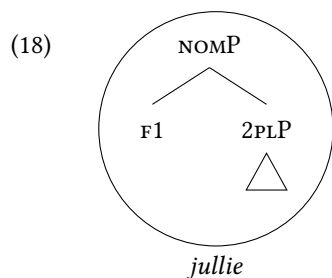
The same holds for the nominative. The syntactic structure is given in (16).



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.



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

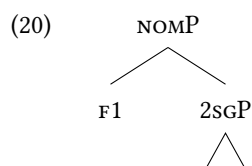


A question arises at this point. Why are the accusative and nominative in Faroese not spelled out by the lexical entry for the dative (and why is the nominative not spelled out by the lexical entry for the accusative)? These syntactic structures are namely contained in the lexical tree for the dative (and the accusative). The reason for that comes from how competition between lexical entries is regulated in Nanosyntax. When two lexical entries compete, the best fit wins. The best fit is the lexical tree with the least features that are not used. This is formalized as in (19).

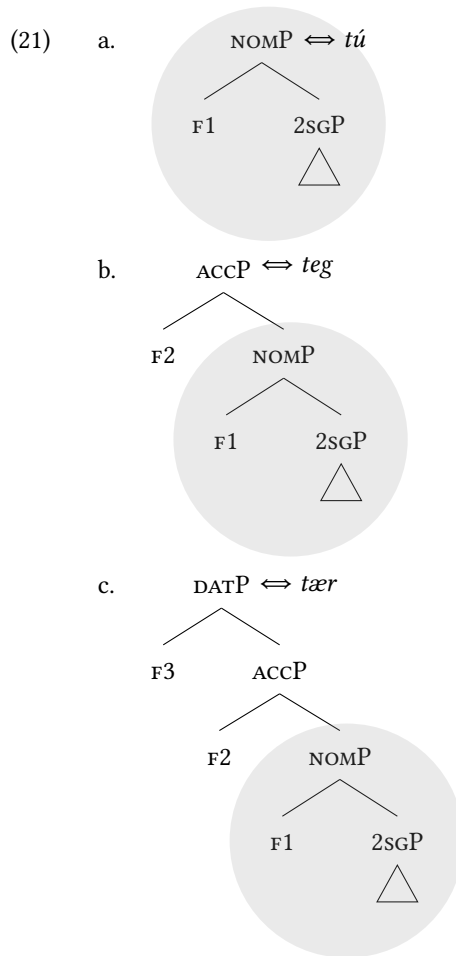
- (19) **The Elsewhere Condition** (Kiparsky 1973, formulated as in Caha 2020b):
 When two entries can spell out a given node, the more specific entry wins.
 Under the Superset Principle governed insertion, the more specific entry is the one which has fewer unused features.

I show how the Superset Principle and the Elsewhere Condition interact in a competition with the Faroese lexical entries. I only discuss the nominative *tú* and the accusative *teg*, because for the dative *tær* there is only a single candidate that contains all features: the lexical entry *tær*.

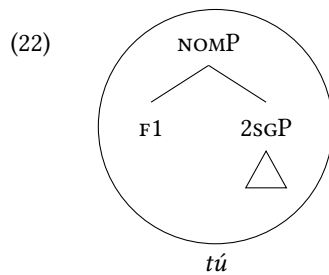
Consider first again the syntactic structure for the nominative in (20), repeated from (7).



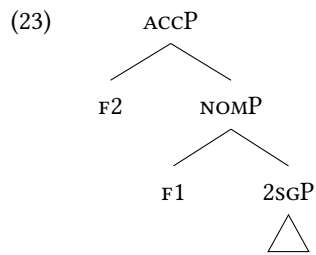
The three lexical entries for *tú* in (4), *teg* in (5) and *tær* in (6) are candidates for this syntactic structure. I repeat the lexical entries for *tú*, *teg* and *tær* in (21), marking the subpart of the tree that matches the syntactic structure in gray.



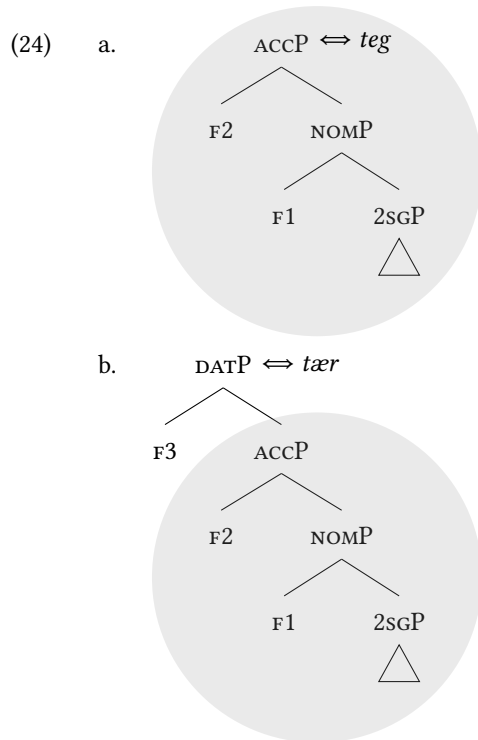
The first, (21a), has no unused features. The second, (21b), has one unused feature: $\mathbf{f2}$. The third, (21c), has two unused features: $\mathbf{f2}$ and $\mathbf{f3}$. Because (21a) has the least amount of unused features, it wins the competition, and the syntactic structure is spelled out as *tú*. This is shown in (22).



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



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



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

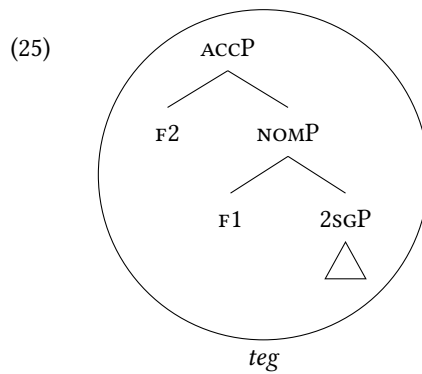
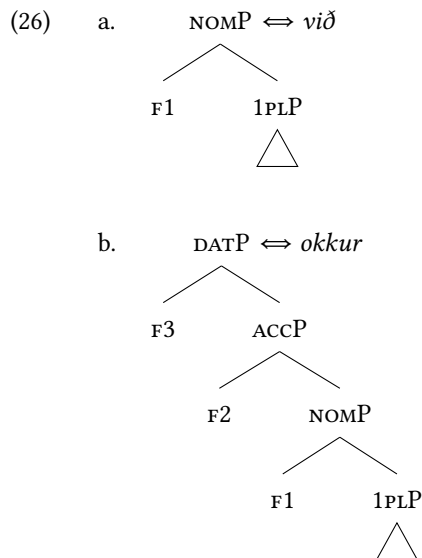


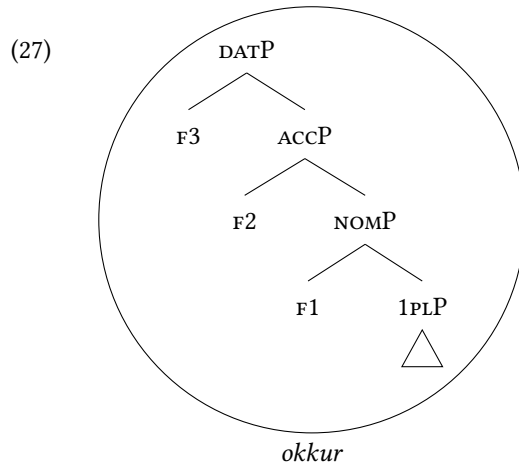
Table 3.2 contains two more attested patterns: the ABB in Icelandic and the AAB in German. In the remainder of this section I show how these two patterns are derived, and that the unattested one cannot be derived. I also show how the system is unable to derive an ABA pattern, which is crosslinguistically unattested (Baerman, Brown, and Corbett, 2005; Caha, 2009; Zoppi, 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 that. The first one in (26a) contains pronominal features and F1, and corresponds to the phonology *við*. The second one is given in (26b). It contains in addition to (26a) also the feature F2 and F3. The phonological representation that is linked to it is *okkur*.

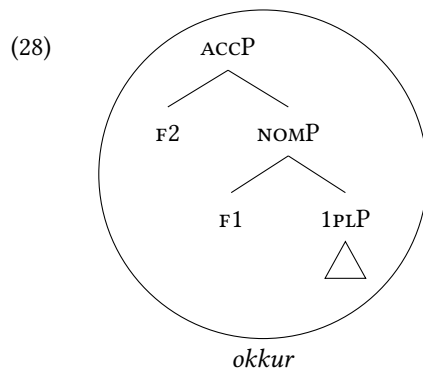


The syntactic structure for the dative is given in (27). It is contained in the lexical tree in (26b), and therefore, spelled out as *okkur*. The lexical entry in (26a) is not

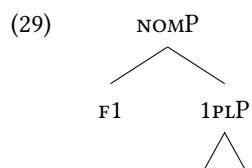
considered, because it does not contain F2 and F3.



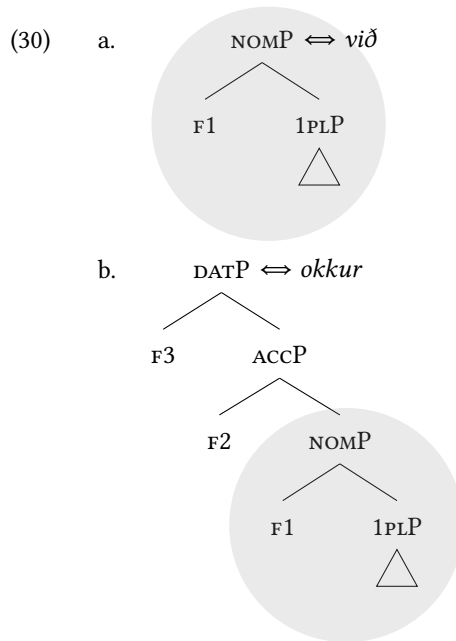
The syntactic structure for the accusative is given in (28). It is contained in the lexical tree in (26b), and therefore, spelled out as *okkur*. The lexical entry in (26a) is not considered, because it does not contain F2.



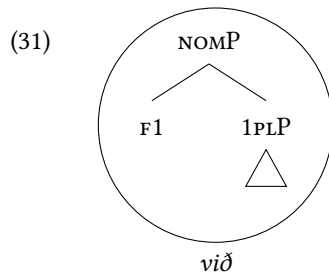
The syntactic structure for the nominative is given in (29).



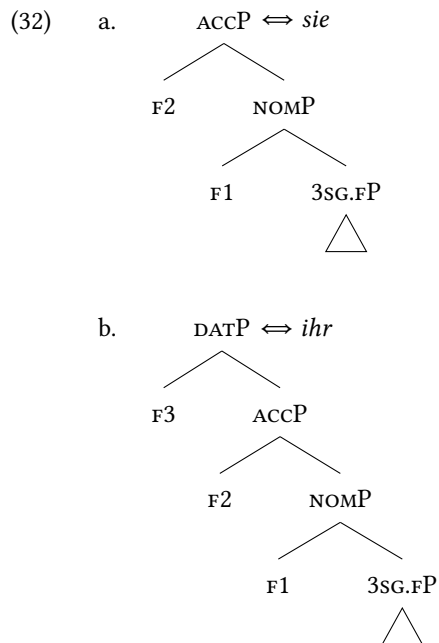
It is contained in the lexical tree for *við* in (26a) and in the one for *okkur* in (26b). I repeat the lexical entries for *við* and *okkur* in (30), marking the subparts of the trees that match the syntactic structure in (29).



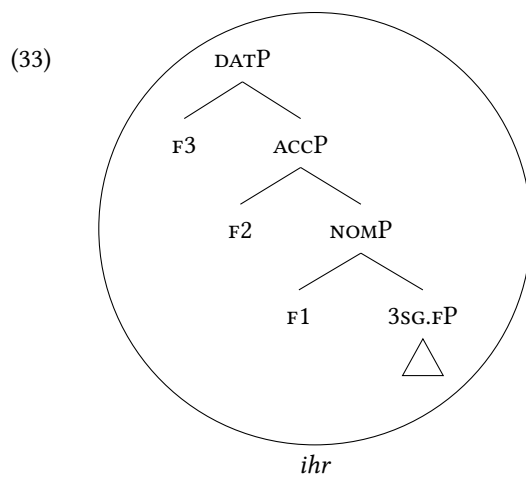
The former, (30a), has no unused features. The latter, (30b), has two unused features: f_2 and f_3 . Because (30a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *við*. This is shown in (31).



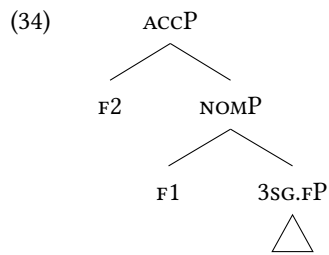
For the third person singular feminine, German uses *sie* as nominative and accusative, and *ihr* as dative. Two lexical entries are needed for that. The first one in (32a) contains pronominal features, f_1 and f_2 . It corresponds to the phonology *sie*. The second one is given in (32b). It contains in addition to *sie* in (32a) also the feature f_3 . It corresponds to the phonology *ihr*.



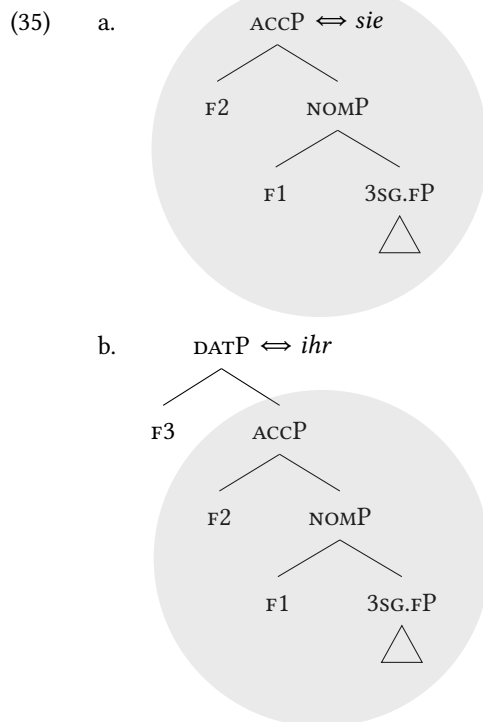
The syntactic structure for the dative is given in (33). It is contained in the lexical tree in (32b), and therefore, spelled out as *ih*. The lexical entry in (32a) is not considered, because it does not contain F3.



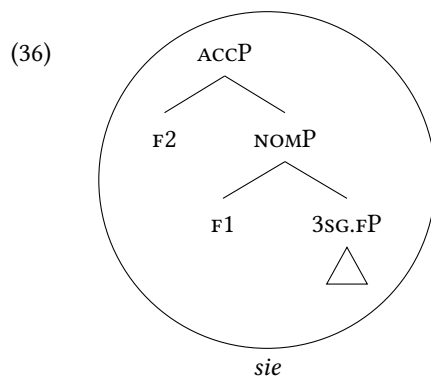
The syntactic structure for the accusative is given in (34).



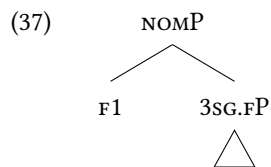
It is contained in the lexical tree for *sie* in (32a) and in the one for *ihr* in (32b). I repeat the lexical entries for *sie* and *ihr* in (35), marking the subparts of the trees that match the syntactic structure in gray.



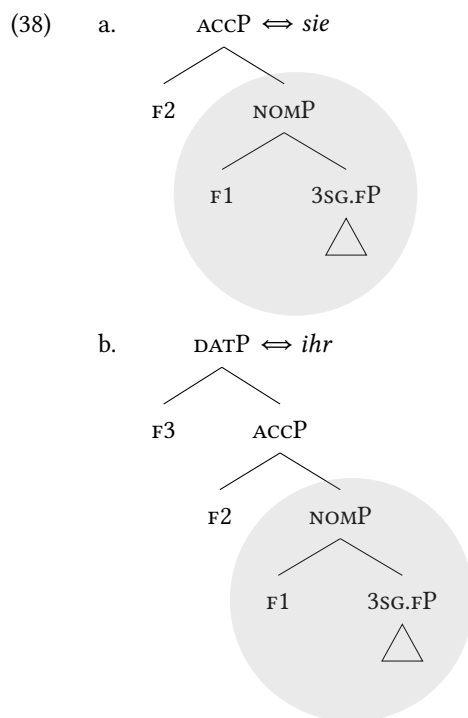
The former, (35a), has one no unused features. The latter, (35b), has one unused feature: *r3*. Because (35a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *sie*. This is shown in (36)



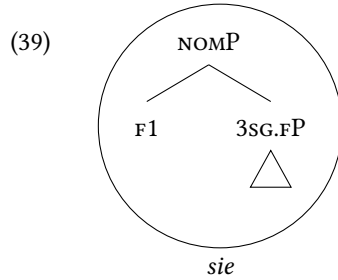
The syntactic structure for the nominative is given in (37).



It is contained in the lexical tree for *sie* in (32a) and in the one *ihr* in (32b). I repeat the lexical entries for *sie* and *ihr* in (38), marking the subparts of the trees that match the syntactic structure in gray.



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



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

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

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

3.3 Deriving morphological case containment

Some languages morphologically reflect the case scale $\text{NOM} < \text{ACC} < \text{DAT}$. 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).

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

Table 3.3: Morphological case containment of 3SG in Khanty

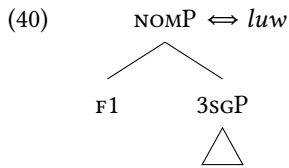
	3SG
NOM	luw
ACC	luw- e:l
DAT	luw- e:l-na

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

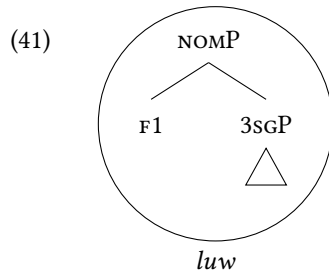
Before I show how languages with morphological case containment can be derived, I need to discuss how variation between languages is modeled in Nanosyntax. Crosslinguistic variation is namely explained in terms of differences in the lexicon. In other words, the syntactic structure is identical across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

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

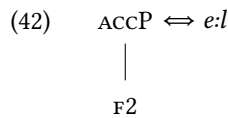
Let me illustrate this by deriving the 3SG paradigm in Khanty. First, I give the lexical entry for the nominative third person singular. It contains pronominal features and the feature F1. The phonological form associated with the structure is *luw*. The lexical entry is given in (40).



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*.

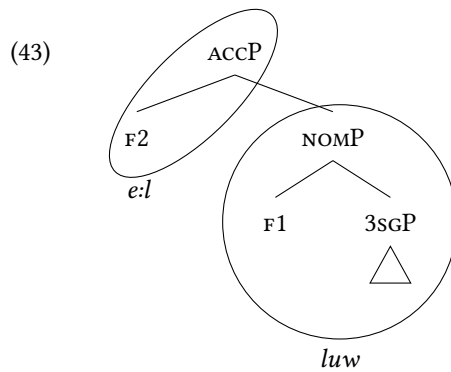


As shown in Table 3.3, the morphological form of the accusative contains the morphological form of the nominative (*luw*) plus an extra morpheme (*e:l*). As shown in Table 3.1, the syntactic features of the accusative contain the syntactic features of the nominative (F1) plus an extra feature (F2). Accordingly,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



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

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



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

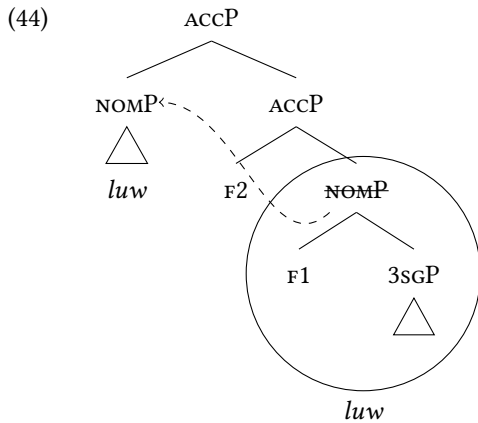
⁸Note that it is crucial here to have a theory in which the features that form an accusative contain the features that form a nominative. If not, it would be a surprise that the nominative form is contained in the accusative form. The same holds for the accusative and dative.

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

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

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

This is exactly the type of movement I described as necessary for the Khanty pronoun. The movement is displayed in (44). The complement of F2, the NOMP, moves to the specifier of ACCP.¹³



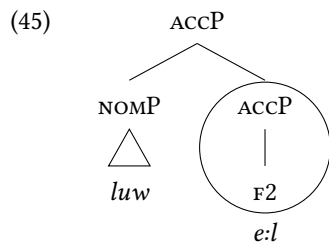
The result of the movement is given in (45). The lexical tree in (42) matches the syntactic structure, and ACCP is spelled out as *e:l*.

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

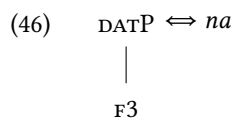
¹¹The two types of movement are cyclic movement and snowball movement, also used to derive the possible orders in DEM > NUM > Adj > N (Cinque, 2005).

¹²This 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). In Chapter III I return to ‘regular’ syntactic movement in Nanosyntax.

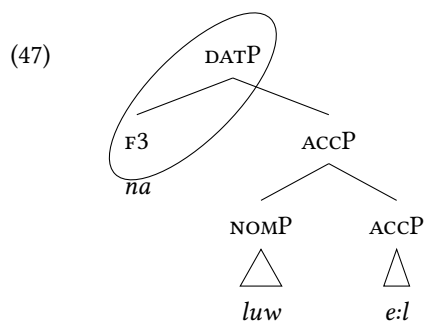
¹³In its landing position the internal structure of the NOMP is no longer shown (to save some space), and its phonological form is placed under the triangle. The strikethrough of the lower NOMP indicates that the complement of F2 disappears.



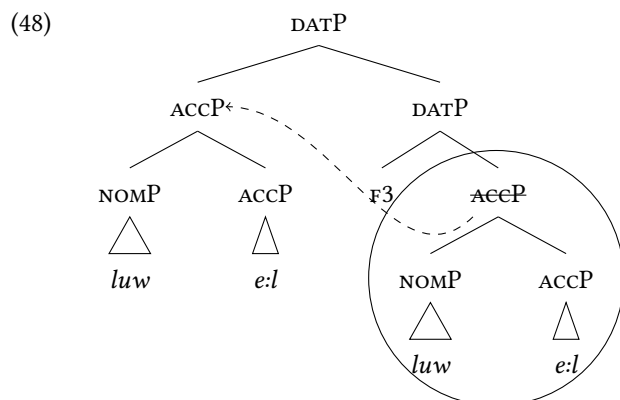
Just as Khanty has an additional morpheme that shows up in the accusative, it also has a morpheme that shows up in the dative. Similarly, just as the accusative has one more feature than the nominative (F1, F2 vs. F1), the dative has one more feature than the accusative (F1, F2, F3 vs. F1, F2). This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



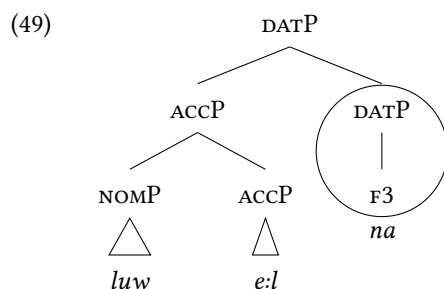
Again, because spellout only targets constituents, F3 cannot be spelled out right after it has been merged, as shown in (47).



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



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*.



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 $\text{NOM} < \text{ACC} < \text{DAT}$, in which cases more to the right always win over cases more to the left. In this section I show how case competition in headless relatives can be derived from the case decomposition in Table 3.1.

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

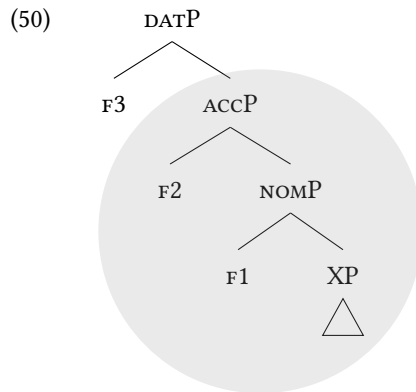
The intuition is the following. The headless relatives reflect the cumulative feature decomposition given in Table 3.1. A case wins the competition if it contains

Table 3.4: Summary of Gothic headless relative (repeated)

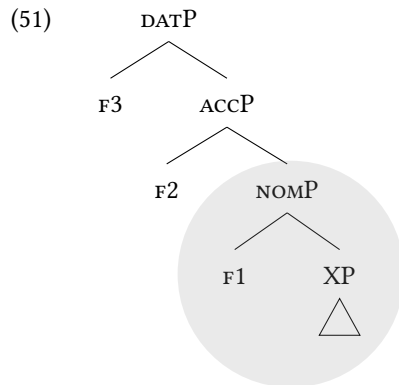
^{INT} _{EXT}	[NOM]	[ACC]	[DAT]
[NOM]		ACC	DAT
[ACC]	ACC		DAT
[DAT]	DAT	DAT	

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

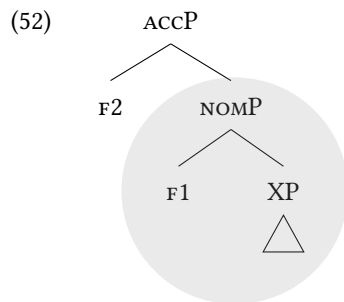
I start with the competition between dative and accusative, in which dative wins. The corresponding cells are marked dark gray in Table 3.4. In (50) I show the syntactic structure of a dative relative pronoun. For now I let syntactic structure that has to do with being a relative pronoun correspond to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



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



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



In sum, the cumulative case decomposition from Table 3.1 can derive the case scale observed for case competition in headless relatives.

3.5 Summary

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

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

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

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

Part II

The typology

Chapter 4

Languages with case competition

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

- (1) NOM < ACC < DAT

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

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

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

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

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

4.1 Four possible patterns

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

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

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

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

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

The first possible pattern is that of a language that allows the internal case and the external case to surface when either of them wins the case competition. I call this the unrestricted type of language (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.

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

Table 4.1: Internal and external case allowed

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

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

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

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

Table 4.2: Only internal case allowed

$\begin{smallmatrix} \text{INT} & \text{EXT} \end{smallmatrix}$	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	*
[ACC]	ACC	ACC	*
[DAT]	DAT	DAT	DAT

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

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

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

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

Table 4.3: Only external case allowed

$\begin{smallmatrix} \text{INT} & \text{EXT} \end{smallmatrix}$	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	*	ACC	DAT
[DAT]	*	*	DAT

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

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

Table 4.4: Only matching allowed

$\begin{smallmatrix} \text{INT} & \text{EXT} \end{smallmatrix}$	[NOM]	[ACC]	[DAT]
[NOM]	NOM	*	*
[ACC]	*	ACC	*
[DAT]	*	*	DAT

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

4.2 Internal and external case allowed

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

Table 4.5: Internal and external case allowed (repeated)

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

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

In Chapter 2, I discussed case competition in Gothic headless relatives, based on the work of Harbert (1978). I repeat the results from Section 2.1 in Table 4.6. In Gothic, the relative pronoun is allowed to surface in the internal case and the external case. The top-left to bottom-right diagonal corresponds to the examples in which the internal and external case match. The three cells in the bottom-left corner, marked in light gray, are the situations in which the internal case surfaces when it wins the competition. The three cells in the top-right corner, marked in dark gray, are the situations in which the external case surfaces when it wins the competition. All these instances are grammatical. The examples corresponding to the cells in Table 4.6 can be found in Section 2.1.

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

Table 4.6: Summary of Gothic headless relatives (repeated)

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

follows from my own research of the texts ‘Der althochdeutsche Isidor’, ‘The Monsee fragments’, ‘Otfrid’s Evangelienbuch’ and ‘Tatian’ in ANNIS (Krause and Zeldes, 2016).² The examples follow the spelling and the detailed glosses in ANNIS. The translations are my own.

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

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

- (2) *quham* *dher* *chisendit* *scolda*
 come.PST.3SG_[NOM] RP.SG.M.NOM send.PST.PTCP_[NOM] should.PST.3SG
 uuerdhan
 become.INF
 ‘the one, who should have been sent, came’ (Old High German, Isid. 35:5)

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

²Old 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 (see Section 1.2.1 for why attraction is not further discussed in this dissertation). A common observation is that case attraction in headed relatives in Old High German adheres to the case scale. The same is claimed for headless relatives. What, to my knowledge, has not been studied systematically is whether Old High German headless relatives allow the internal case and the external case to surface when either of them wins the case competition. This is what I investigated in my work.

(3) gihortut ir **thiu** ih iu quad
listen.PST.2PL_[ACC] 2PL.NOM RP.PL.N.NOM 1SG.NOM 2PL.DAT speak.PST.1SG_[ACC]
'you listened to those things, that I said to you'
(Old High German, Tatian 165:6)

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

Table 4.7: Old High German headless relatives (matching)

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

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

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

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

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

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

- (6) ih bibringu fona iacobes samin endi fona
 1SG.NOM create.PRES.1SG_[ACC] of Jakob.GEN seed.SG.DAT and of
 iuda dhen **mina** **berga** **chisitzit**
 Judah.DAT RP.SG.M.ACC my.ACC.M.PL mountain.ACC.PL possess.PRES.3SG_[NOM]
 ‘I create of the seed of Jacob and of Judah the one, who possess my mountains’
 (Old High German, Isid. 34:3)

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

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

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

^{INT} _{EXT}	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	
[ACC]	ACC	ACC	
[DAT]			(DAT)

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

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

- (7) **themo** **min** **uuir**dit **forlazan**, min minnot
 RP.SG.M.DAT less become.PRES.3SG read.INF_[DAT] less love.PRES.3SG_[NOM]
 ‘to whom less is read, loves less’ (Old High German, Tatian 138:13)

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

- (8) enti aer ant uurta demo **zaimo**
 and 3SG.M.NOM reply.PST.3SG_[DAT] RP.SG.M.DAT to 3SG.M.DAT
sprah
 speak.PST.3SG_[NOM]
 ‘and he replied to the one who spoke to him’
 (Old High German, Mons. 7:24, adapted from Pittner 1995: 199)

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

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

^{INT} _{EXT}	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	
[DAT]	DAT		(DAT)

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

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

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

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

- (10) bis -tú nu zi wáre furira Ábrahame? ouh
 be.PRES.2SG -2SG.NOM now truly great.CMPR_[DAT] Abraham.DAT and
 thén **man** **hiar nu zálta**
 RP.PL.M.DAT one.NOM.M.SG here now tell.PST.3SG_[ACC]
 ‘are you now truly greater than Abraham? and than those, who one talked
 about here now’ (Old High German, Otfrid III 18:33)

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

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

_{INT} ^{EXT}	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	(DAT)

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

- (11) Tház si uns bérán scolti **thér**
 that 3SG.F.NOM 1PL.DAT bear.INF_[ACC] should.SUBJ.PST.3SG RP.SG.M.NOM
unsih gihéilti
 1PL.ACC save.SBJV.PST.3SG_[NOM]
 ‘that she should have beared for us the one, who had saved us’
 (Old High German, Otfrid I 3:38)

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

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

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

4.3 Only internal case allowed

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

Table 4.11: Only internal case allowed (repeated)

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

An example of a language that shows this pattern is Modern German. In this section I discuss the Modern German data, based on the research of 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 (12), in which the internal nominative case competes against the external nominative case. The internal case is nominative, as the predicate *mögen* ‘to like’ takes nominative subjects. The external case is nominative as well, as the predicate *besuchen* ‘to visit’ also takes nominative subjects. The relative pronoun *wer* ‘RP.AN.NOM’ appears in the internal and external case: the nominative.

- (12) Uns besucht, **wer** **Maria** **mag**.
 2PL.ACC visit.PRES.3SG_[NOM] RP.AN.NOM Maria.ACC like.PRES.3SG_[NOM]
 ‘Who visits us likes Maria.’
 (Modern German, adapted from Vogel 2001: 343)

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

- (13) Ich lade ein, **wen** **auch** **Maria** **mag**.
 1SG.NOM invite.PRES.1SG_[ACC] RP.AN.ACC Maria.NOM like.PRES.3SG_[ACC]
 ‘I invite who Maria also likes.’
 (Modern German, adapted from Vogel 2001: 344)

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

- (14) Ich folge, **wem** **immer ich**
 1SG.NOM follow.PRES.1SG_[DAT] RP.AN.DAT ever 1SG.NOM
vertraue.
 vertraue.PRES.3SG_[DAT]
 ‘I follow whoever I trust.’ (Modern German, adapted from Vogel 2001: 342)

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

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

Table 4.12: Modern German headless relatives (matching)

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

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

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

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

- (15) Uns besucht, **wen** Maria mag.
 2PL.ACC visit.PRES.3SG_[NOM] RP.AN.ACC Maria.NOM like.PRES.3SG_[ACC]
 ‘Who visits us, Maria likes.’

(Modern German, adapted from Vogel 2001: 343)

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

- (16) *Uns besucht, wer **Maria mag.**
 2PL.ACC visit.PRES.3SG_[NOM] RP.AN.NOM Maria.NOM like.PRES.3SG_[ACC]
 ‘Who visits us, Maria likes.’
 (Modern German, adapted from Vogel 2001: 343)

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

- (17) *Ich lade ein, wen **mir sympathisch**
 1SG.NOM invite.PRES.1SG_[ACC] RP.AN.ACC 1SG.DAT nice
ist.
 be.PRES.3SG_[NOM]
 ‘I invite who I like.’ (Modern German, adapted from Vogel 2001: 344)

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

⁵Not every speaker or Modern German agrees with the ungrammaticality of (18). A sentence for which also has been claimed that speakers accept it is given in (i). This example was originally marked as ungrammatical by Groos and van Riemsdijk (1981: 206).

- (i) Ich liebe **wer gutes tut,** und hasse, **wer mich**
 1SG.NOM love.1SG_[ACC] RP.AN.NOM good.NMLZ do.3SG_[NOM] and hate.1SG_[ACC] RP.AN.NOM 1SG.ACC
verletzt.
 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 (18) and (i) is unexpected because the relative pronoun appears in the least complex case (the nominative) and not in the more complex case (the accusative). However, the more complex case would also not be grammatical, because it is the external case, and Modern German only allows the relative pronoun to surface in the internal case. My hypothesis is that, because there is no way

- (18) *Ich lade ein, **wer mir sympathisch**
 1SG.NOM invite.PRES.1SG_[ACC] RP.AN.NOM 1SG.DAT nice
ist.
 be.PRES.3SG_[NOM]
 ‘I invite who I like.’ (Modern German, adapted from Vogel 2001: 344)

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

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

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

I continue with the competition between the dative and the nominative. 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 (19). In this example, the internal dative case competes against the external nominative case. The internal case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The external case is nominative, as the predicate *besuchen* ‘to visit’ takes nominative subjects. The relative pronoun *wem* ‘RP.AN.DAT’ appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause.

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 (11). In the Old High German situation, there was a grammatical possibility which was not used, and in the Modern German situation, there is no grammatical way to make a headless relative.

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

- (19) Uns besucht, **wem** **Maria** **vertraut**.
 2PL.ACC visit.PRES.3SG_[NOM] RP.AN.DAT Maria.NOM trust.PRES.3SG_[DAT]
 ‘Who visits us, Maria trusts.’
 (Modern German, adapted from Vogel 2001: 343)

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

- (20) *Uns besucht, wer **Maria** **vertraut**.
 2PL.ACC visit.PRES.3SG_[NOM] RP.AN.NOM Maria.NOM trust.PRES.3SG_[DAT]
 ‘Who visits us, Maria trusts.’
 (Modern German, adapted from Vogel 2001: 343)

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

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

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

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

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

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

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

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

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

- (23) Ich lade ein, **wem** **auch Maria** vertraut.
 1SG.NOM invite.PRES.1SG_[ACC] RP.AN.DAT also Maria.NOM trust.PRES.3SG_[DAT]
 ‘I invite whoever Maria also trusts.’
 (Modern German, adapted from Vogel 2001: 344)

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

- (24) *Ich lade ein, wen **auch Maria vertraut.**
 1SG.NOM invite.PRES.1SG_[ACC] RP.AN.ACC also Maria.NOM trust.PRES.3SG_[DAT]
 ‘I invite whoever Maria also trusts.’
 (Modern German, adapted from Vogel 2001: 344)

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

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

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

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

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

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

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

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

In sum, Modern German is an instance of a language that only allows the internal case to surface. The relative pronoun surfaces in the most complex case, but only when this more complex case is the internal case.⁶

4.4 Only external case allowed

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

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 2020, p. 120, who actually classifies Gothic also 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

⁶Another language of the internal-only type seems to be Finnish. *valita* ‘choose’ takes a partitive object

- (i) Valitsen mista sina piddt. choose-I.el what-el you like-you.part ‘I choose what you like.’

pitää ‘like’ takes elative objects

- (ii) *Pidan mista sind valitset.
like-I.part what-el you choose-you.el
‘I like what you choose.’
- (iii) *Pidan mita sind valitset.
like-I.part what-el you choose-you.el
‘I like what you choose.’

Table 4.16: Only external case allowed (repeated)

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

and Old High German.⁷ 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 (27). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *tíktō* ‘to give birth to’ takes accusative objects. The external case is dative, as the predicate *ékhō* ‘to provide’ takes dative indirect objects. The relative pronoun *hō* ‘RP.SG.M.DAT’ appears in the internal case: the dative. The relative pronoun is not marked in bold, unlike as the relative clause, showing that the relative pronoun patterns with the main clause.

- (27) *pān tò tekòn* *trophēn* *ékhei* *hō* ***án***
 any parent.SG.NOM food.SG.ACC provide.PRES.3SG_[DAT] RP.SG.M.DAT MOD
 tékē
 gives birth.AOR.3SG_[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 (27) in gray.

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

⁷It 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.

Table 4.17: Classical Greek headless relatives possibility 1

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

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 it has to be of the type shown in Table 4.18. In other words, it is not of the type that only allows the external case to surface when it wins the case competition.

Consider the example in (28). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *philēō* ‘to love’ takes accusative objects. The external case is nominative, as the predicate *apothnēiskō* ‘to die’ takes nominative subjects. The relative pronoun *hòn* ‘RP.SG.M.ACC’ appears in the internal case: the accusative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause.⁸

- (28) **hòn** **hoi theoi philōusin** apothnēskei néos
 RP.SG.M.ACC the god.PL love.3PL_[ACC] die.3SG_[NOM] young
 ‘He, whom the gods love, dies young.’ (Classical Greek, Men. DD., 125)

⁸The sentence in (28) can also be analyzed as a headed relative, in which the relative clause modifies the phonologically empty subject of *apothnēiskō* ‘to die’. Then, however, more needs to be said about how it is possible for a relative clause to modify a phonologically empty element.

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.

Table 4.19: Summary of Classical Greek headless relatives

$\begin{smallmatrix} \text{INT} & \text{EXT} \end{smallmatrix}$	[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 it allows the internal and the external case to surface.

4.5 Only matching allowed

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

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 only go through the case competition between accusative and dative, as only this data is discussed. This does not change anything about the point I am making here: the only kind of system that is compatible with the examples given is the one in which the case is allowed to surface in neither the internal case nor in the exter-

Table 4.20: The matching type (repeated)

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

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

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

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

- (29) Jan lubi kogo **-kolkwiek Maria lubi.**
 Jan like.3SG_[ACC] RP.ACC.AN ever Maria like.3SG_[ACC]
 ‘Jan likes whoever Maria likes.’
 (Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

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

- (30) Jan pomaga komu **-kolkwiek ufa.**
 Jan help.3SG_[DAT] RP.DAT.AN ever trust.3SG_[DAT]
 ‘Jan helps whomever he trusts.’
 (Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

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

relative pronoun surfaces in the accusative case. The dative marked in dark gray corresponds to (30), in which the internal dative case competes against the external dative case, and the relative pronoun surfaces in the dative case.

Table 4.21: Polish headless relatives (matching)

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

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 (23). In this example, the internal dative case competes against the external accusative case. The internal case is dative, as the predicate *dokuczać* 'to tease' takes dative objects. The external case is accusative, as the predicate *lubić* 'to like' takes accusative objects. The relative pronoun *komu* 'RP.AN.DAT' appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. The example adheres to the case scale, but the internal case is not allowed to surface when it wins the case competition. Therefore, the example is ungrammatical.

- (31) *Jan lubi **komu** **-kolkwiek dokucza**.
 Jan like.3SG_[ACC] RP.DAT.AN ever tease.3SG_[DAT]
 ‘Jan likes whoever he teases.’
 (Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

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

- (32) *Jan lubi kogo **-kolwiek dokucza.**
 Jan like.3SG_[ACC] RP.ACC.AN 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 (33). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *wpuścić* ‘to let’ takes accusative objects. The external case is dative, as the predicate *ufać* ‘to trust’ takes dative objects. The relative pronoun *komu* ‘RP.AN.DAT’ appears in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. The example adheres to the case scale, but the external case is (as the internal case) not allowed to surface when it wins the case competition. Therefore, the example is ungrammatical.

- (33) *Jan ufa komu **-kolwiek wpuścił do domu.**
 Jan trust.3SG_[DAT] RP.DAT.AN ever let.3SG_[ACC] to home
 ‘Jan trusts whoever he let into the house.’

(Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

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

- (34) *Jan ufa **kogo** **-kolwiek wpuścił do domu.**
 Jan trust.3SG_[DAT] RP.ACC.AN ever let.3SG_[ACC] to home
 ‘Jan trusts whoever he let into the house.’

(Polish, adapted from 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 (31), in which the internal dative wins over the external accusative, but the relative pronoun is not allowed to surface in the dative case (or in the losing accusative case as in (32)). The dark gray marking corresponds to (33), in which the external dative wins over the internal accusative, but the relative pronoun is not allowed to surface in the dative case (or in the losing accusative case as in (34)).

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

Table 4.22: Polish headless relatives (ACC – DAT)

$\begin{smallmatrix} \text{INT} & \text{EXT} \end{smallmatrix}$	[ACC]	[DAT]
[ACC]	ACC	*
[DAT]	*	DAT

grammatical headless relative construction.

4.6 Summary

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

(35) $\text{NOM} < \text{ACC} < \text{DAT}$

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

Table 4.23: Relative pronoun follows case competition

$\begin{smallmatrix} \text{INT} & \text{EXT} \end{smallmatrix}$	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

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

(36) Logically possible 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 differ gray-marking in Table 4.24. The cells marked in light gray are the ones in which the internal case wins the case competition, the cells marked in dark gray are the ones in which the external case wins the case competition, and the unmarked cells are the ones in which the internal and external case match.

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

Table 4.24: Relative pronoun follows case competition

<small>INT</small> <small>EXT</small>	[NOM]	[ACC]	[DAT]
[NOM]	NOM	ACC	DAT
[ACC]	ACC	ACC	DAT
[DAT]	DAT	DAT	DAT

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

The first parameter is whether or not a language allows for a mismatch between the internal and external case. If a language does not allow for a mismatch, the

matching type of language (36iv) is generated. If a language allows for a mismatch between the internal and external case, the second parameter comes into play. This one is concerned with the case the relative pronoun is allowed to surface when it wins the case competition. Here I give two options: (1) it is allowed to surface in only the internal case or (2) it is allowed to surface in the internal and the external case.⁹ If a language allows the internal case to surface when it wins the case competition, the ‘unrestricted – internal-only’ type is generated. If a language allows the internal and the external case to surface, the unrestricted type is generated.¹⁰

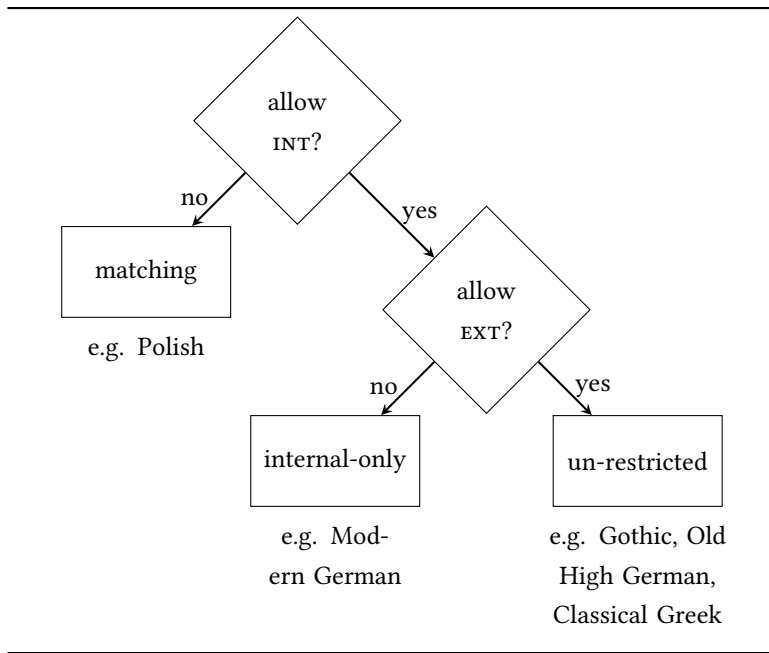


Figure 4.1: Attested patterns in headless relatives with case competition

The main focus of Chapter III is the linguistic counterpart of the second parameter. I show with general properties of relative clauses how the difference between the unrestricted and the ‘unrestricted – internal-only’ type can be modeled, and how the exclusion of the ‘unrestricted – external-only’ type follows from these particu-

⁹I do not introduce the option of allowing the relative pronoun to surface only in the external case. The reason for this is that this pattern is not attested crosslinguistically. If a language like this appears, this option could in principle be added. However, I predict that it will not appear. In Chapter III, I show how it follows from general properties of relative clauses that this type of language is excluded.

¹⁰The matching type could also have been generated with the second parameter. The text along the arrow would have been *none*. I choose to not do this, because in Chapter III I propose separate mechanisms for each of the parameters in Figure 4.1. The first one distinguishes matching languages from unrestricted (i.e. unrestricted and internal-only) languages, and the second one distinguishes unrestricted from internal-only languages.

lar properties. I also introduce a linguistic counterpart for the first parameter, which distinguishes matching from unrestricted languages.

Chapter 5

Aside: languages without case competition

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

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

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

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

Table 5.1: Always internal case

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

the dative.

Table 5.2: Always external case

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

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

5.1 Always external case

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

Two example of languages that shows this pattern are Old English and Modern Greek. In this section I discuss the Old English data with examples from 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

Table 5.3: Always external case (repeated)

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

external case.

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

- (1) *ðæt* is, *ðæt* man for-gife, *ðam* ***ðe*** ***wið*** ***hine***
 that is that one forgive.SUBJ.SG_[DAT] RP.DAT.PL COMP against 3SG.M.ACC
gegylte
 sin.3SG_[NOM]
 ‘that is, that one₂ forgive him₁, who sins against him₂’
 (Old English, adapted from Harbert 1983: 549)

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

Table 5.4: Old English headless relatives possibility 1

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

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

Table 5.5: Old English headless relatives possibility 2

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

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

Table 5.6: Old English headless relatives possibility 3

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

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

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

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

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

- (2) he tobryst ðone **ðe** **he onuppan fylð**
 it pulverizes_[ACC] RP.SG.ACC COMP it upon_[DAT] falls
 ‘It pulverizes him whom it falls upon.’

(Old English, adapted from 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 5.7, the language does not have any case competition. The relative pronoun appears in the external case: the external case can be the most complex case, illustrated by the example in (1), marked here in light gray, or it can be the least complex case, illustrated by the example in (2), marked here in dark gray.

Table 5.7: Summary of Old English headless relatives

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

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

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

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

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

- (3) Εfχαρίstisa όpjus **me** **voίθisan.**
 thank.PST.3PL_[ACC] RP.PL.M.ACC CL.1SG.ACC help.PST.3PL_[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 that only allows the external case to surface. I repeat Table 4.16 from Section 4.4 as Table 5.8, and I mark the cell that corresponds to example (3) in gray.

Table 5.8: Modern Greek headless relatives possibility 1

_{INT} ^{EXT}	[NOM]	[ACC]	[GEN]
[NOM]	NOM	ACC	GEN
[ACC]	*	ACC	GEN
[GEN]	*	*	GEN

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

Table 5.9: Modern Greek headless relatives possibility 2

_{INT} ^{EXT}	[NOM]	[ACC]	[GEN]
[NOM]	NOM	ACC	GEN
[ACC]	ACC	ACC	GEN
[GEN]	GEN	GEN	GEN

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

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

Table 5.10: Modern Greek headless relatives possibility 3

^{INT} _{EXT}	[NOM]	[ACC]	[GEN]
[NOM]	NOM	ACC	GEN
[ACC]	NOM	ACC	GEN
[GEN]	NOM	ACC	GEN

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

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

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

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

(Modern Greek, adapted from Daskalaki 2011: 80)

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

- (5) *Irθan **ópjus** **káleses.**
 come.PST.3PL_[NOM] RP.PL.M.ACC invite.PST.2SG_[ACC]
 ‘Whoever you invited came.’

(Modern Greek, adapted from 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 5.11, the language does not have any case competition. The relative pronoun appears in the external case: the external case can be the most complex case, illustrated by the example in (3), marked here in light gray, or it can be the least complex case, illustrated by the example in (4), marked here in dark gray.

Table 5.11: Summary of Modern Greek headless relatives

_{INT} ^{EXT}	[NOM]	[ACC]	[GEN]
[NOM]	NOM	ACC	GEN
[ACC]	NOM	ACC	GEN
[GEN]	NOM	ACC	GEN

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

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

- (6) Me efxarístisan ópji **tus** **íxa**
 CL.1SG.ACC thank.PST.3PL_[NOM] RP.PL.M.NOM CL.3PL.GEN have.PST.1SG

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

ðósi leftá.

give.PTCP_[GEN] money

‘Whoever I had given money to, thanked me.’

(Modern Greek, adapted from 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.

5.2 A typology of headless relatives

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

²When 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. Spyropoulos (2011) argues that in these left-dislocated structure, there is a silent *pro* or a clitic (*ton* in (ib)) that satisfies the external case. This allows the relative pronoun to take the internal case. This makes this construction more of a correlative.

- (i) a. ópjós/ ópjon epiléksúme tha 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. ópjós/ ópjon me ayapá ton ayapó
 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.’

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

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

Table 5.12: Relative pronoun follows case competition

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

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

Table 5.13: Relative pronoun in internal case

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

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

Table 5.14: Relative pronoun in external case

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

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

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

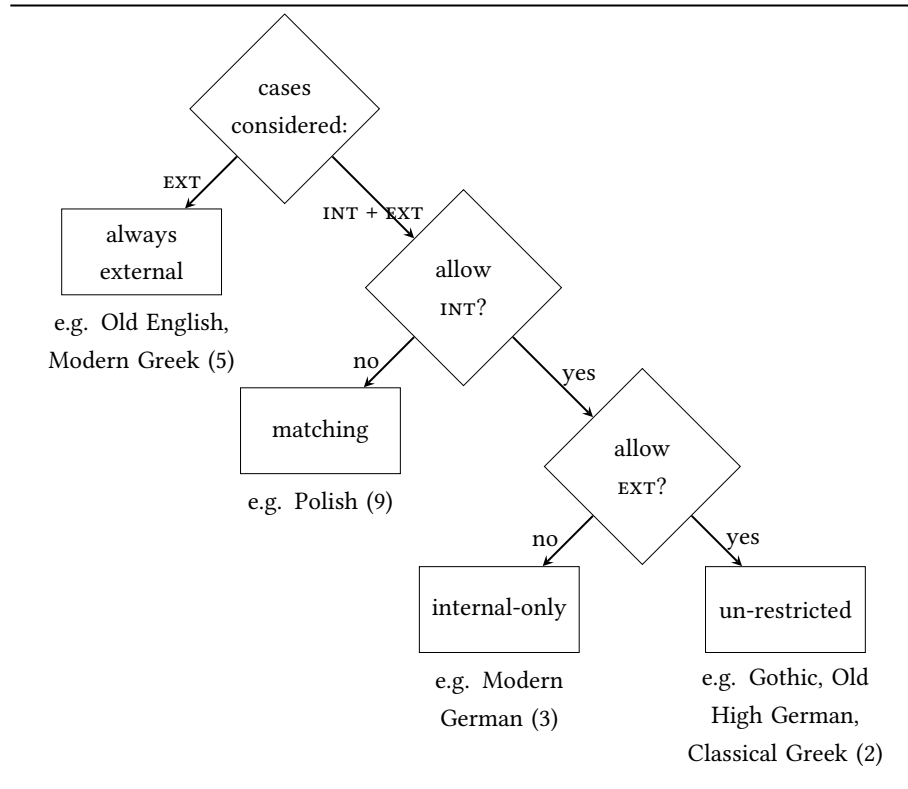


Figure 5.1: Attested patterns in headless relatives

In Table 5.15, I give all logically possible patterns for headless relatives. The top row sketches two different situations: one in which the internal case is the most complex ([INT]>[EXT]) and one in which the external case is the most com-

⁴In 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.

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

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

Table 5.15: Possible patterns for headless relatives

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

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

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

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

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

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

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

Part III

Deriving the typology

Chapter 6

The source of variation

In Chapter 4, I introduced two descriptive parameters that describe the differences between the attested languages. I repeat the overview in Figure 6.1.

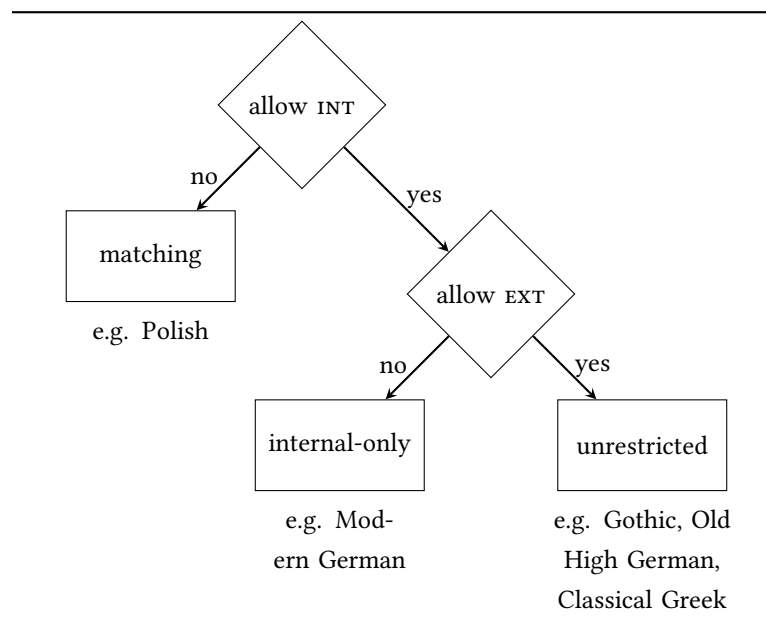


Figure 6.1: Two descriptive parameters generate three language types

The first parameter, *allow 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 lan-

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

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

6.1 Underlying assumptions

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

- (1) light head_{EXT} [relative pronoun_{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.

¹Exactly 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 the morphology richness of morphology and the willingness for a language to show headless relatives. He found a certain tendency, but no absolute rule.

²The 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).

- (2) eno nist thiz thér **then** **ir**
 now not be.3SG_[NOM] DEM.SG.N.NOM LH.SG.M.NOM RP.SG.M.ACC 2PL.NOM
suochet zi arslahanne?
 seek.2PL_[ACC] to kill.INF.SG.DAT
 ‘Isn’t this now the one, who you seek to kill?’
 (Old High German, Tatian 349:20)

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

This brings me to my second assumption, which concerns the circumstances under which the light head or the relative pronoun can be deleted. A light head or a relative pronoun can be deleted when their content can be recovered. The content can be recovered when there is an antecedent which contains the deleted element. More specifically, the deleted element needs to be contained as a whole within the antecedent.³

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

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

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

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

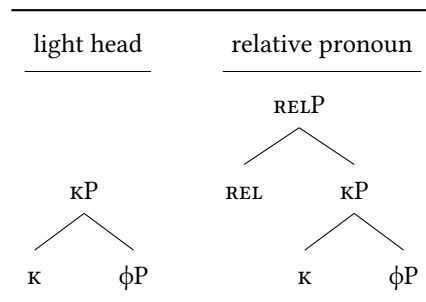
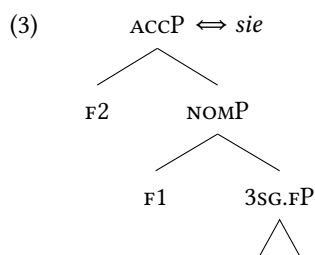


Figure 6.2: LH and RP

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

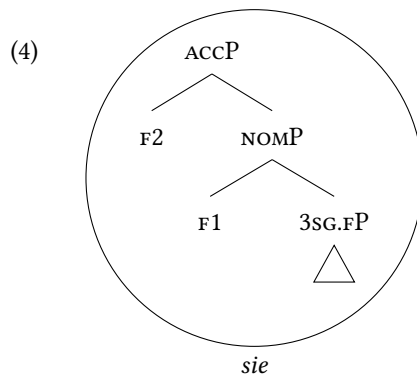
The three assumptions I just introduced hold for all language types I discuss. In all language types, headless relatives are derived from light-headed relatives. For all language types, the deletion operation requires containment. And in all language types, the relative pronoun consists of the features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

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



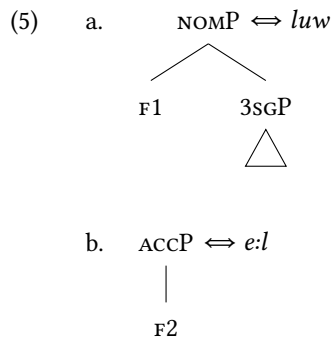
The lexical entry corresponds to the pronominal features, $F1$ and $F2$ and the phonological form *sie*.

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



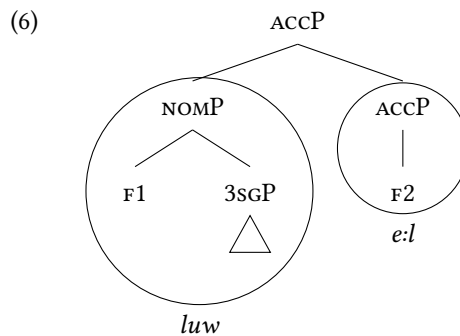
This syntactic structure is contained in the lexical tree in (3), so is spelled out as *sie*. This means that the accusative pronoun in German is spelled out by a single lexical entry.

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).



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

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



Nanosyntax only allows constituents to be spelled out, which means that in order to spell out the ACCP, the NOMP needs to be moved out of the way first.⁵ Now compare the syntactic structures of the German accusative pronoun in (4) and the Khanty one in (6). The feature content is the same (except for the feminine feature, which does not play a role here), but the internal syntax looks different. This change in internal syntax is a direct consequence of the lexical entries that are available within the language.

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

- (7) lexical entries \rightarrow internal syntax \rightarrow containment \rightarrow deletion \rightarrow surface pronoun

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

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

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

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

Table 6.1: Overview situations

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

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

6.2 The three language types

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

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

6.2.1 The internal-only type

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

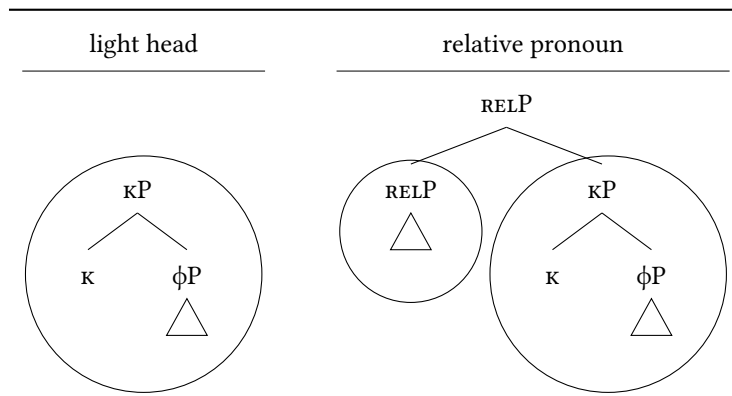


Figure 6.3: LH and RP in the internal-only type

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

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

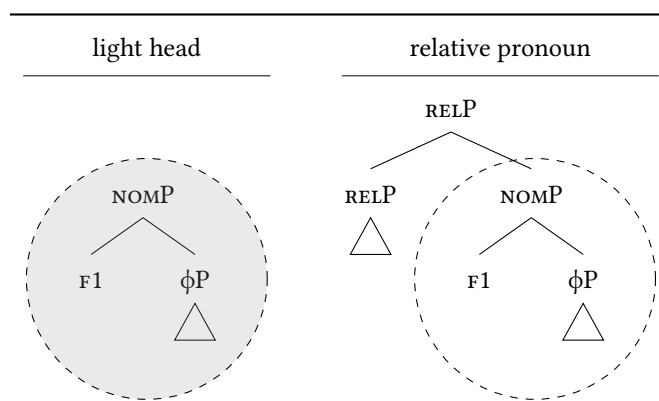


Figure 6.4: EXT_{NOM} vs. INT_{NOM} in the internal-only type

I draw a dashed circle around the biggest possible element that is structurally

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

In Figure 6.5, I give an example in which the relative pronoun bears a more complex case than the light head.

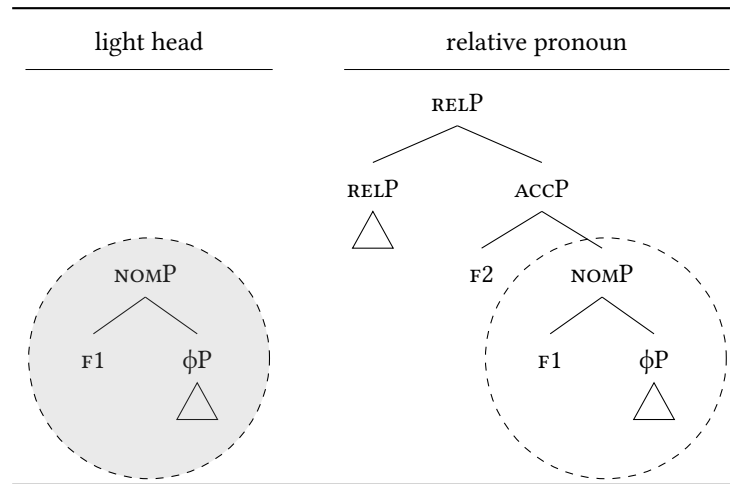
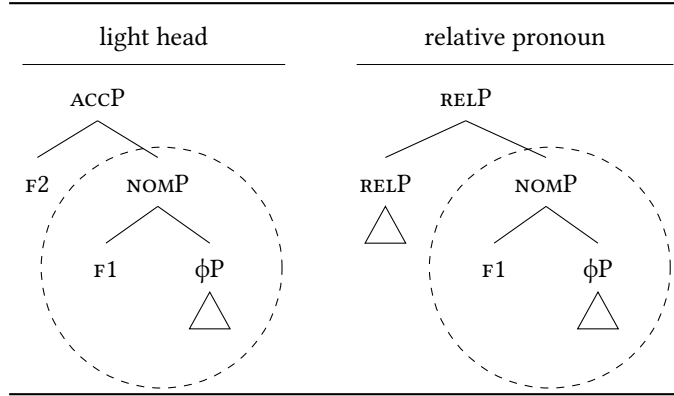


Figure 6.5: *EXT_{NOM}* vs. *INT_{ACC}* in the internal-only type

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

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

I draw a dashed circle around the biggest possible element that is structurally contained in both the light head and the relative pronoun. Different from the examples in Figure 6.4 and 6.6, the light head is not contained within the relative pronoun. The *NOMP* of the light head is structurally contained within the relative pronoun, but the relative pronoun does not contain the feature *F2* that forms an *ACCP*. The *NOMP* of the relative pronoun is structurally contained within the relative pronoun, but the light head does not contain the feature *REL* that forms a *REL*P. 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.

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

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

Table 6.2: Grammaticality in the internal-only type

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$K_{\text{INT}} = K_{\text{EXT}}$	$[K_1[\phi]]$	$[\text{REL}], [K_1[\phi]]$	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 structurally contained within the relative pronoun, the light head is deleted, and the relative pronoun is the surface pronoun. Headless relatives are ungrammatical when the external case is more complex than the internal case, because then the light head no longer is structurally contained within the relative pronoun, and none of the elements is deleted.

6.2.2 The matching type

I continue with the matching type of language. I suggest that the light head and the relative pronoun in this type of language have the internal syntax as shown in Figure 6.7.

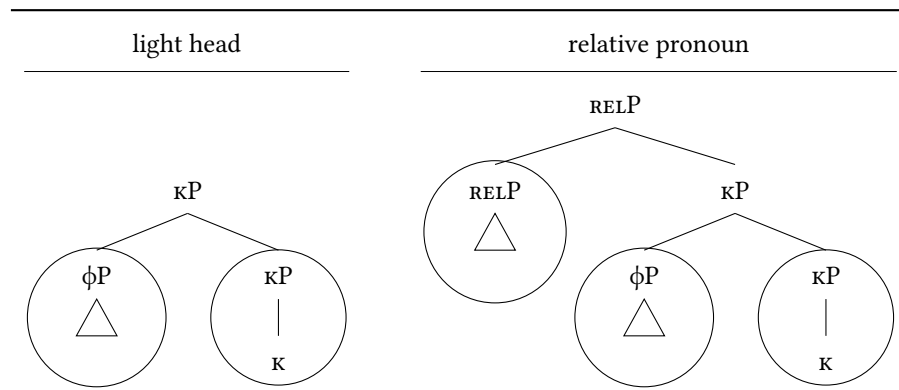
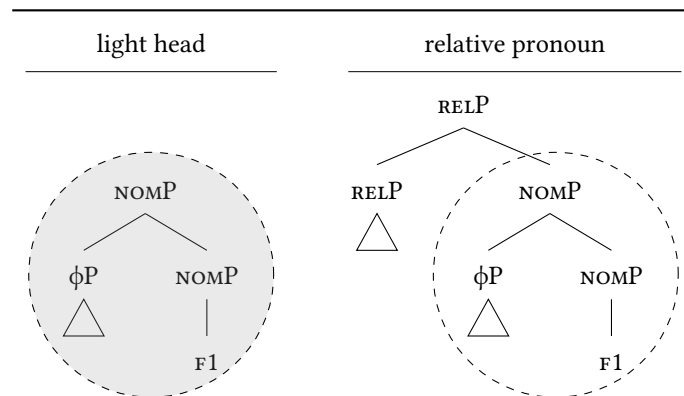


Figure 6.7: LH and RP in the matching type

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

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

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

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

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

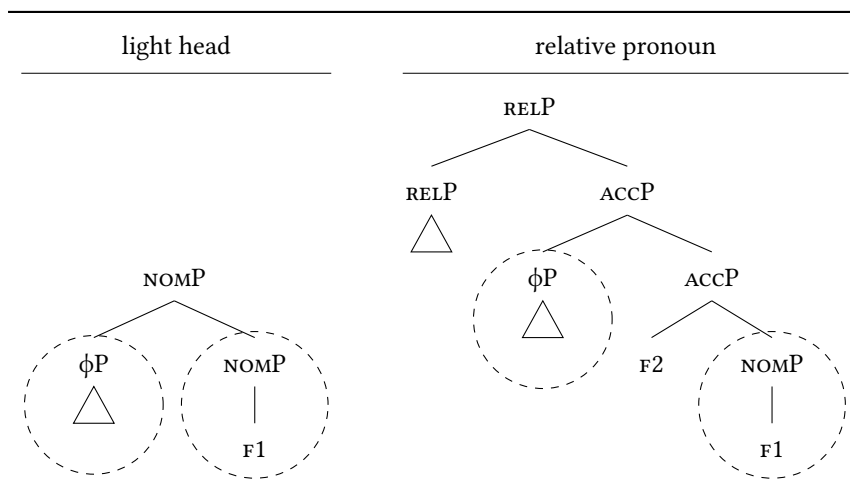
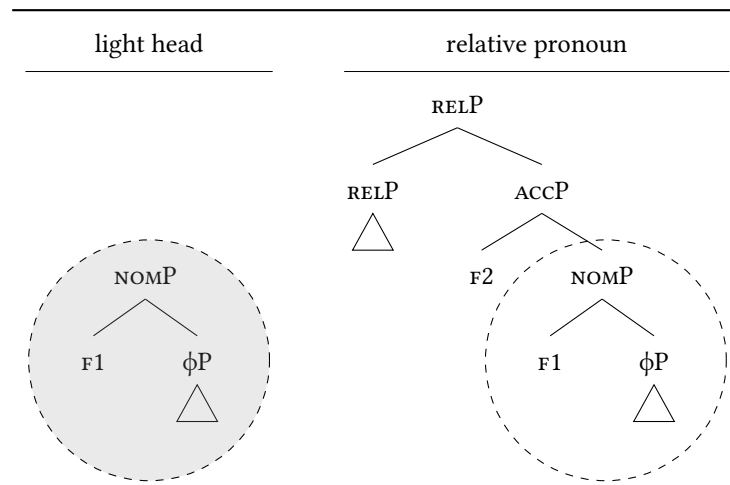


Figure 6.9: EXT_{NOM} vs. INT_{ACC} in the matching type

I draw a dashed circle around the biggest possible element that is structurally contained in both the light head and the relative pronoun. The light head (the NOMP) no longer is structurally contained within the relative pronoun (the RELP). Therefore, the light head cannot be deleted, which I illustrate by leaving the content of both dashed circles unfilled. As none of the items is deleted, there is no grammatical headless relative possible. Figure 6.9 shows that in this instance it is a problem the ϕ P 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 6.10 from Figure 6.5.

In Figure 6.10, 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 ϕ P and F1) is also a feature within the relative pronoun. Therefore, the relative pronoun contains the light head. With structural containment, the NOMP is structurally contained within the RELP. Therefore, the relative pronoun

Figure 6.10: EXT_{NOM} vs. INT_{ACC} in the internal-only type (repeated)

contains contains the light head.

Consider Figure 6.9 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 6.10, so also here each feature of the light head (i.e. features contained in ϕP and $F1$) is also a feature within the relative pronoun. However, the features form a different syntactic structure, in such a way that the light head no longer forms a single constituent within the relative pronoun.

In sum, structural 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 (2020) argues that nominal modifiers can only be absent if they form a constituent with the NP. If they do not, they can not be deleted while still being interpreted, meaning that ellipsis is ungrammatical. In what follows, I present his argument.

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

- (8) *deze witte huizen en die*
 these white houses and those
 ‘these white houses and those white houses’ (Dutch)

In Figure 6.11, I schematically show the first and second conjunct of (8).

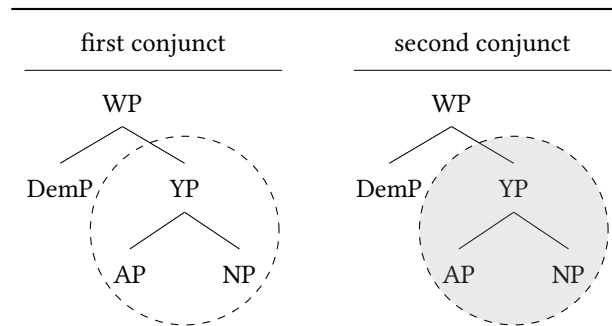


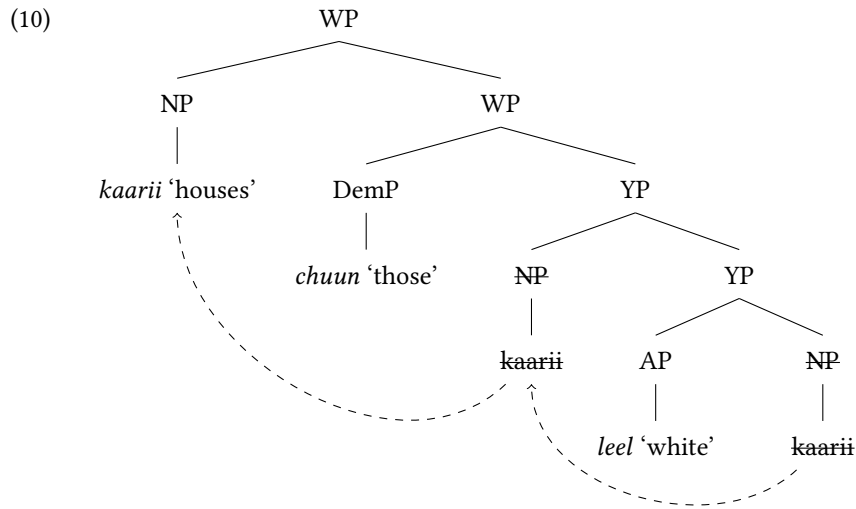
Figure 6.11: Nominal ellipsis in Dutch

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

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

- (9) kaarii-chuun leel-ach ak chu
 houses-those white-PL and these
 ‘those white houses and these houses’
 not: ‘those white houses and these white houses’ (Kipsigis, Cinque 2020: 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).



In Figure 6.12, I schematically show the first and second conjunct of (9).

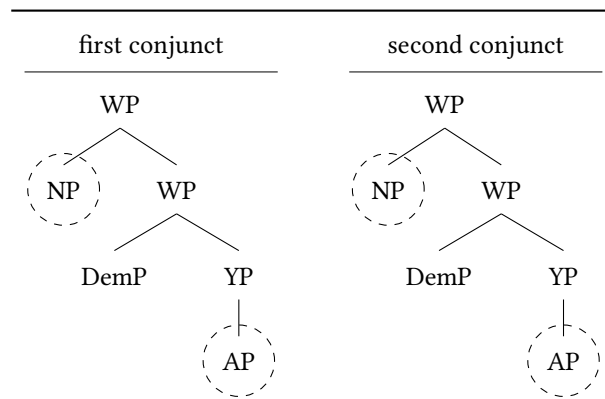


Figure 6.12: Nominal ellipsis in Kipsigis

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

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

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

the weaker requirement of feature containment is not met, the stronger requirement of structural 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 within the relative pronoun, the light head is deleted, and the relative pronoun is the surface pronoun. When one of the cases is more complex than the other one, there is no longer a grammatical outcome possible. This follows from the fact that in the matching type of language ϕP and κP are both spelled out by their own lexical entry, which means that they both form separate constituents. As a result, the light head no longer is structurally contained within the relative pronoun, and none of the elements is deleted.

6.2.3 The unrestricted type

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

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

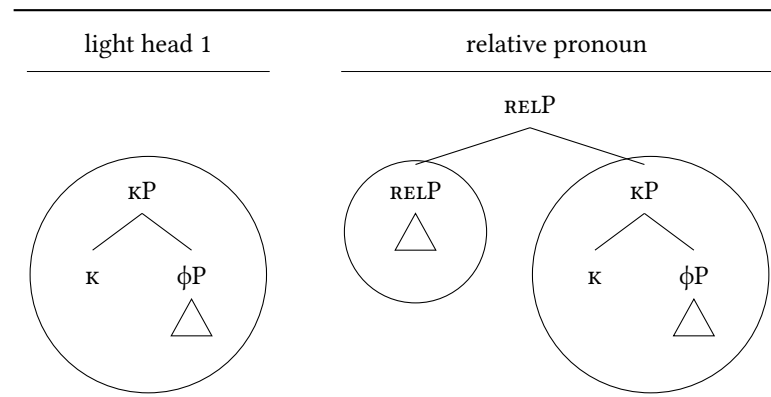


Figure 6.13: LH-1 and RP in the unrestricted type

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

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

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

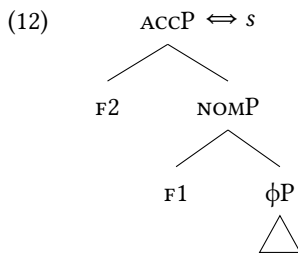
Before I give the second possible light head in the unrestricted type of language, I zoom in on the situation in which the external case is more complex. At first sight, it is unexpected that the light head bearing the external case surfaces to begin with. Recall that the feature content of light head is that of the relative pronoun minus the feature REL. So far, I proposed that the light head can be deleted when all of its features are structurally contained within 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 defies this rule: syncretism. In what follows I show a situation similar to the missing REL feature: a syncretism between nominative and accusative case in Modern German. This situation leads me to propose a second type of 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 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* ‘REL.INAN.NOM/ACC’ is syncretic between the nominative and the accusative.

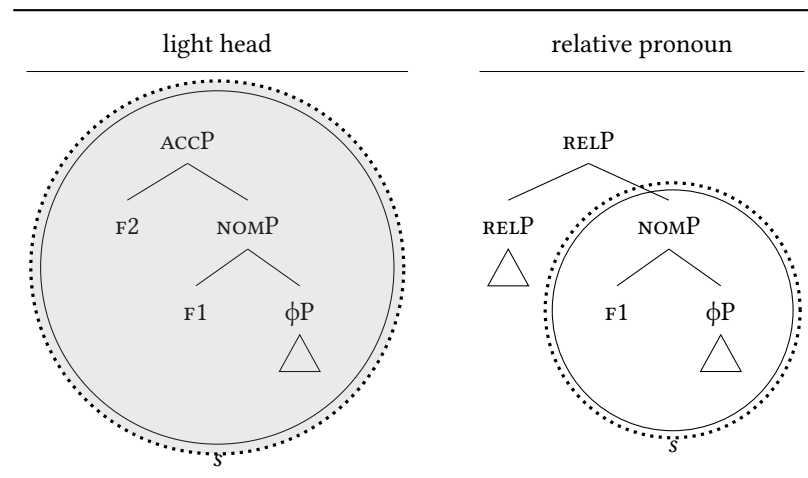
- (11) Ich erzähle **was** immer mir
 1SG.NOM tell.PRES.1SG_[ACC] RP.INAN.NOM/ACC ever 1SG.DAT
gefällt.
 pleases.PRES.3SG_[NOM]
 ‘I tell whatever pleases me.’
 (Modern German, adapted from Vogel 2001: 344)

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 is not allowed to surface. However, the example in (11) is grammatical, because there is a syncretism between the nominative and the accusative in the inanimate gender.

This leads me to distinguish a second type of containment: formal containment. This type of containment holds when an element is formally (i.e. with its phonological form) contained within 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 F2 and the NOMP, but not a more specific one that spells out only the NOMP. In (12), I give such a lexical entry, which spells out as *s*.



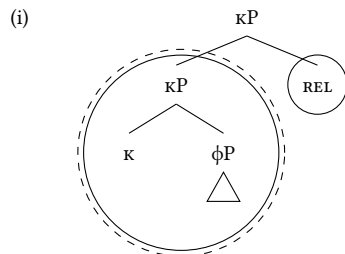
In Figure 6.14, I give the example in which the light head bears a more complex case than the relative pronoun and there is a syncretism between the nominative and the accusative case.

Figure 6.14: EXT_{ACC} vs. INT_{NOM} with case syncretism

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

In sum, a more complex case can be deleted when it is syncretic with the less complex case, even though the more complex case contains a case feature more. If that is the case, then a relative pronoun can also be deleted when it is syncretic with the light head, even though the relative pronoun contains at least one feature more. Consider such a situation in 6.15.⁷

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



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 within the light head, and the relative pronoun is deleted.

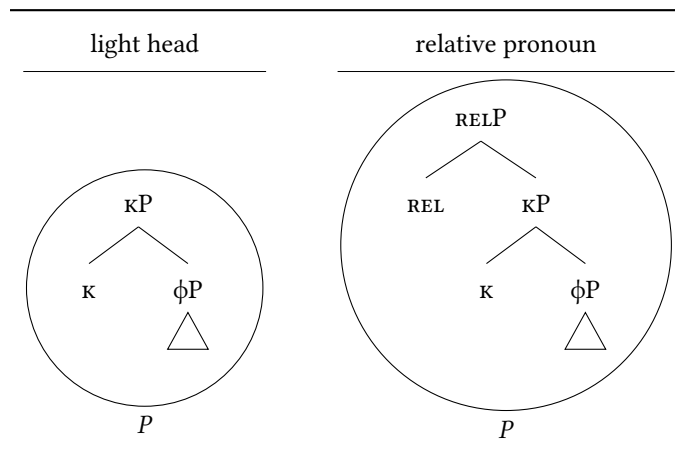


Figure 6.15: A syncretic light head and relative pronoun

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

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

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

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

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

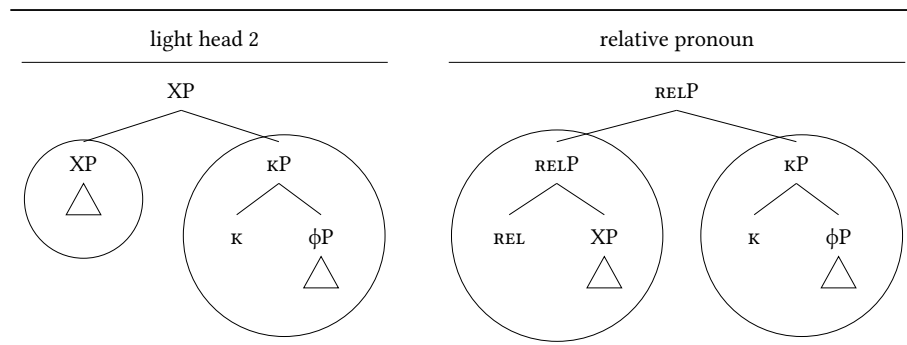
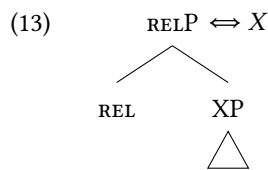


Figure 6.16: LH-2 and RP in the unrestricted type

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

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



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

I now return to the problem at hand, being that in the unrestricted type of language a relative pronoun can be deleted. In Figure 6.17, I give an example in which

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

this can happen. It contains the second possible light head and the relative pronoun, which both elements bear the same case.

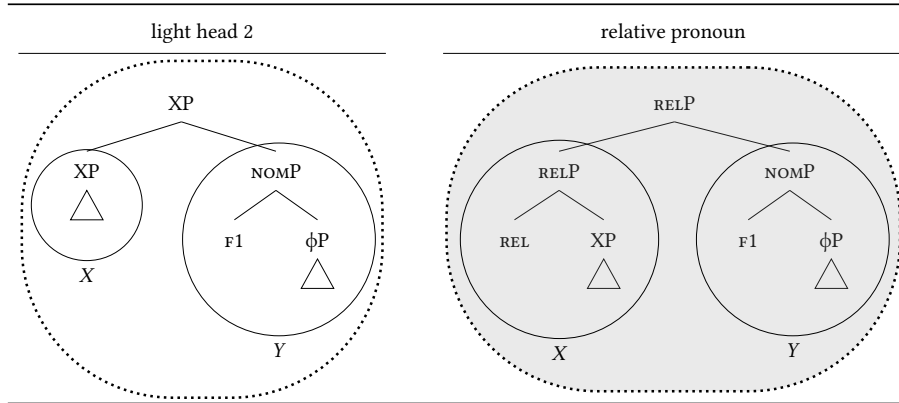


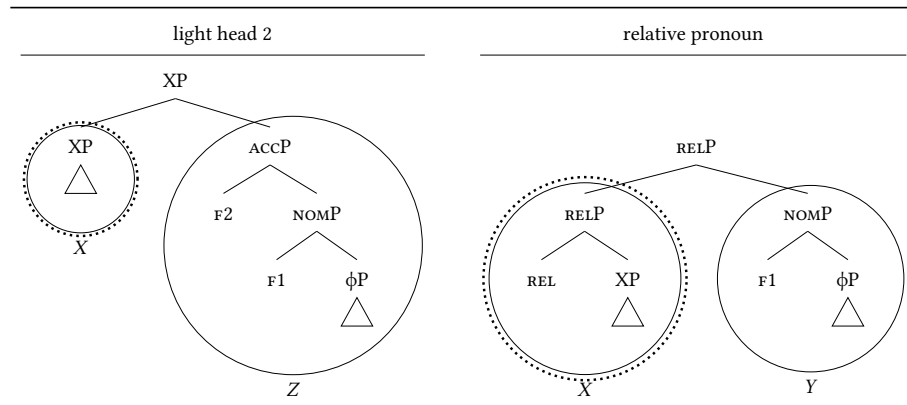
Figure 6.17: EXT_{NOM} vs. INT_{NOM} in the unrestricted type

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

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

The light head corresponds to XZ , illustrated by the circle around the XP and the X below it and the circle around the $ACCP$ and the Z below it. The relative pronoun corresponds to XY , illustrated by the circle around the $RELP$ and the X below it and the circle around the $NOMP$ and the Y below it. I draw a dotted circle around 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 within the light head. Therefore, the relative pronoun cannot be deleted, which I illustrate by

¹¹The same holds the other way around: the light head (the XP realized by XY) is formally contained within the relative pronoun (the $RELP$ realized by XY). Therefore, either the light head or the relative pronoun can be deleted. I delete the relative pronoun here, as I discuss how it is possible for the relative pronoun to be deleted even though it has a feature less than the light head.

Figure 6.18: EXT_{ACC} vs. INT_{NOM} in the unrestricted type

leaving the content of both dotted circles unfilled. As none of the items is deleted, it is expected that there is no grammatical headless relative possible.

However, this is not what is observed in the unrestricted type of language. For this type of language I need to make an assumption explicit that concerns the larger syntactic structure of headless relatives. I assume that the relative clause is built first, which includes the relative pronoun that bears its case. At a later stage in the derivation, the light head is built. The last features of the light head that are merged are the case features. This means that there is a stage in the derivation in which the light head bears the nominative case (as in Figure 6.17). At that point, the relative pronoun is deleted. The light head remains as the surface pronoun. Subsequently the feature $r2$ is merged to the light head to make it a $AccP$.

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

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

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

Focusing on the first possible light head, languages of the unrestricted type have

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	*

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 within the relative pronoun, the light head is deleted, and the relative pronoun is the surface pronoun. In the last situation, the light head no longer is structurally contained within the relative pronoun, and none of the elements is deleted.

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

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

situation	lexical entries		containment	deleted	surfacing
	LH-2	RP			
$K_{INT} = K_{EXT}$	/X/, /Y/	/X/, /Y/	form	RP	LH_{EXT}
$K_{INT} > K_{EXT}$	/X/, /Y/	/X/, /Z/	no	none	*
$K_{INT} < K_{EXT}$	/X/, /Y/	/X/, /Y/	form	RP	LH_{EXT}

Focusing on the second possible light head, languages of the unrestricted type have a lexical entry that spells out phi and case features and a lexical entry that spells out the features X and REL and crucially not a lexical entry that only spells out the feature X. Headless relatives in this language are grammatical in all situations: when the internal and the external case match, when the internal case is more complex and when the external case is more complex. The second possible light head only derives the correct result for the first and the last situation but not for the second one. In the first and last situation, the relative pronoun is (at some point of the derivation)

formally contained within the light head, the relative pronoun is deleted, and the light head is the surface pronoun. In the second situation, the relative pronoun is at no point in the derivation formally contained within the light head, and none of the elements is deleted.

6.3 Summary

In summing up this chapter, I return to the metaphor with the committee that I introduced in Chapter 4. I wrote that first case competition takes place, in which a more complex case wins over a less complex case. This case competition can now be reformulated into a more general mechanism, namely containment. A more complex case corresponds to a constituent that contains the constituent of a less complex case.

Subsequently, I noted that there is a committee that can either approve the winning case or not approve it. In Chapter 4 I wrote that the approval happens based on where the winning case comes from: from inside of the relative clause (internal) or from outside of the relative clause (external). I argued in this chapter that headless relatives are derived from light-headed relatives. The light head bears that external case and the relative pronoun bears the internal case. The ‘approval’ of an internal or external case relies on the same mechanism as case competition, namely containment. If the light head is (structurally) contained within the relative pronoun, the light head can be deleted. Then the light head with its external case is absent, and the relative pronoun with its internal case surfaces. This is what corresponds to the the internal case ‘being allowed to surface’. If the relative pronoun is (formally) contained within the light head, the relative pronoun can be deleted. Then the relative pronoun with its internal case is absent, and the light head with its external case surfaces. This is what corresponds to the the external case ‘being allowed to surface’.

In other words, the grammaticality of a headless relative depends on containment. The constituents that are compared are those of the light head and the relative pronoun, which both bear their own case. Case is special in that it can differ from sentence to sentence within a language. Therefore, the grammaticality of a sentence can differ within a language depending on the internal and external case. The part of the light head and relative pronoun that does not involve case features is stable within a language. Therefore, whether the internal or external case is ‘allowed to surface’ does not differ within a language.

The source of variation between languages is the different lexical entries that languages have. The parameters introduced in Chapter 4 and repeated in the introduction of the chapter can be reformulated as in Figure 6.19.

The first parameter distinguishes the matching type of language from the internal-only and the unrestricted type of languages. The internal-only and unre-

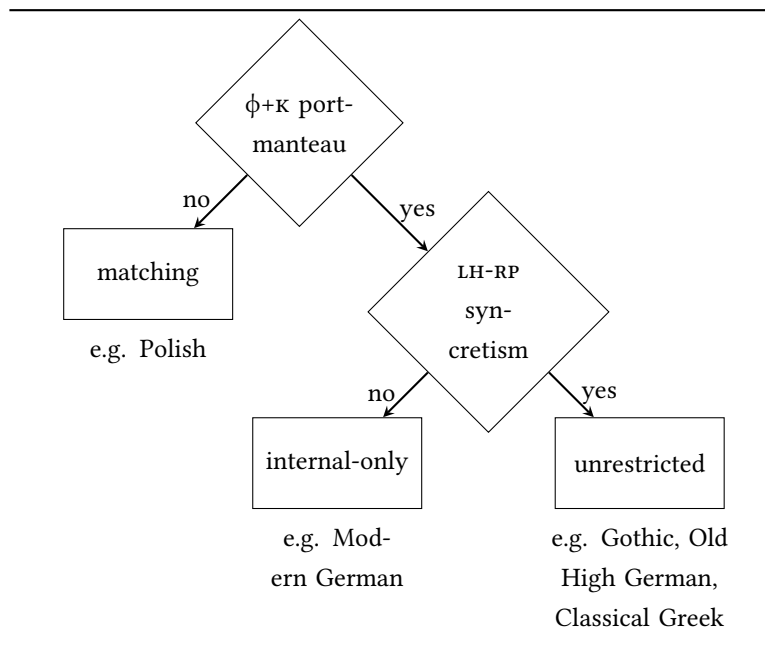


Figure 6.19: Different lexical entries generate three language types

stricted 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 within the other element. First consider only structural containment, leaving formal containment aside for now. The relative pronoun contains at least one feature more than the light head: the feature REL. The relative pronoun can not be deleted, because it is not structurally contained within the light head. In other words, a relative pronoun can never be deleted using structural containment. This is also the point that I made before I introduced formal containment in Section 6.2.3.

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 6.15, I showed a situation in which the light head is syncretic with the relative pronoun, which I repeat here in Figure 6.20.

In Figure 6.20, the relative pronoun is formally contained within the light head, and the relative pronoun can be deleted. Note here that the internal and external case

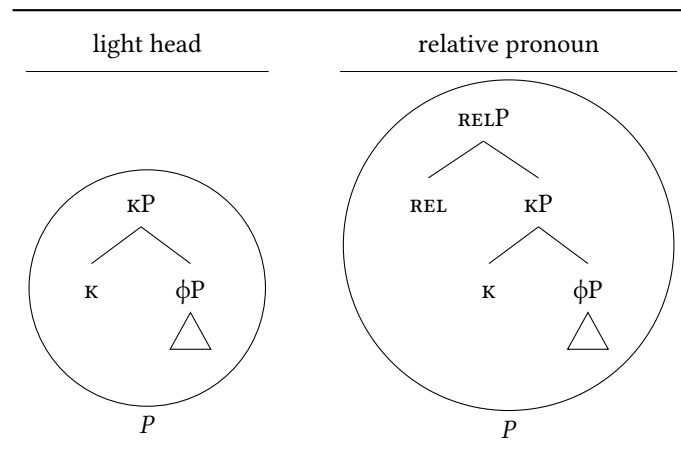


Figure 6.20: A syncretic light head and relative pronoun

need to be identical too. Only then the two forms are fully syncretic, and deletion can take place. As I explained at the of Section 6.2.3, this is a situation that appears when the internal and external cases match, but also when the external case is more complex. In a derivation with a more complex external case, there is namely always a stage in which the internal and external case match, since the external case features are the last features to be merged with the light head. When the internal case is more complex, the light head cannot be deleted by formal containment. There is namely no stage in the derivation in which the internal and external case match and the light head and the relative pronoun are fully syncretic. However, consider Figure 6.20 again. Although the light head cannot be deleted by formal containment, it can be deleted by structural containment. The light head is namely still formally contained within the relative pronoun.¹²

In this dissertation I describe different language types in case competition in headless relatives. In my account, the different language types are a result of a comparison of the light head and the relative pronoun in the language. The larger syntactic context in which this takes place should be kept stable across languages. The operation that deletes the light head or the relative pronoun is the same for all language types. Therefore, the larger syntactic structure and the deletion operator do not play a central role in the account. At the end of Chapter 9 I discuss 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.

To conclude, in this chapter I introduced the assumptions that headless relatives

¹²This reasoning holds for monomorphemic light heads and relative pronouns. I discuss the possibility of an external-only type of language with bimorphemic light head and relative pronouns in Chapter 9.

are derived from light-headed relatives and that relative pronouns contain at least one more feature than light heads. A headless relative is grammatical when either the light head or the relative pronoun is structurally or formally contained within the other element. This set of assumptions derives that only the most complex case can surface and that there is no language of the external-only type.

Chapter 7

Deriving the internal-only type

In Chapter 6, I suggested that languages of the internal-only type have two lexical entries that spell out light heads and relative pronouns in the language: a portmanteau for phi and case features and a separate lexical entry that spells out the feature REL. This means that the internal syntax of light heads and relative pronouns looks as shown in Figure 7.1.

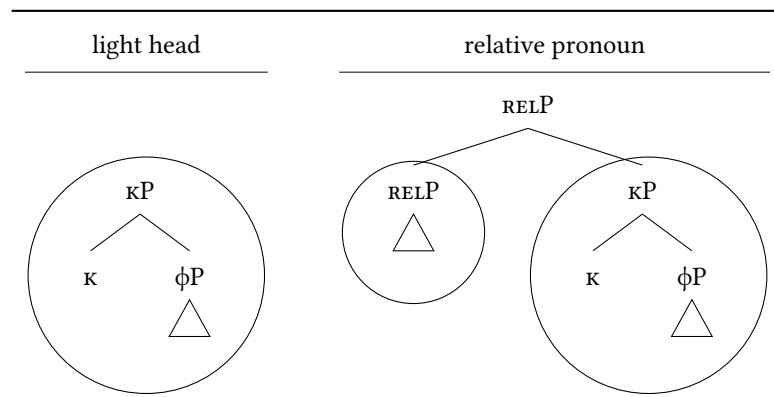


Figure 7.1: ELH and RP in the internal-only type

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

Consider the first situation in which the internal and the external case match. The light head consists of a phi and case feature portmanteau. The relative pronoun consists of the same morpheme plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is 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 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

Table 7.1: Grammaticality in the internal-only type

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

feature than the light head (κ_2 in Figure 7.1) plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is 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 wins the case competition. The relative pronoun consists of a phi and case feature portmanteau and an additional morpheme that spells out the feature REL. Compared to the relative pronoun, the light head lacks the morpheme that spells out REL, and it contains at least one more case feature (κ_2 in Figure 7.1). The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is 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.

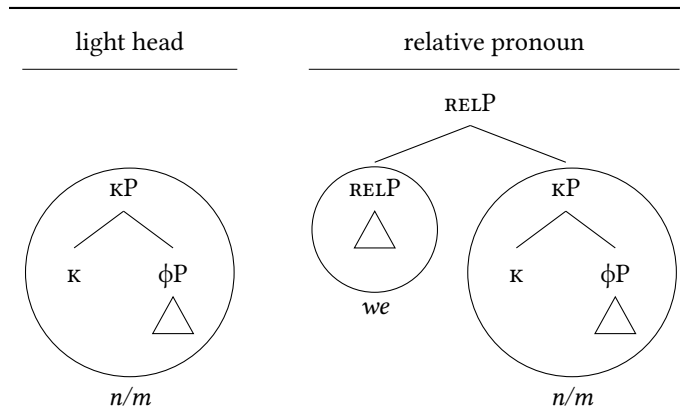


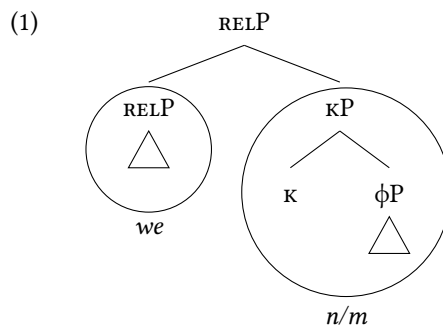
Figure 7.2: LH and RP in Modern German

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 *n* or *m*, depending on which case they realize. Consider the relative pronoun in Figure 7.2. Relative pronouns in Modern German consist of two morphemes: the constituent that forms the light head (i.e. phi and case features) and the RELP, again indicated by the circles. The constituent that forms the light head has the same spellout as in the light head (*n* or *m*), and the RELP is spelled out as *we*. Throughout this chapter, I discuss the exact feature content of light heads and relative pronouns, I give lexical entries for them, and I show how these lexical entries lead to the internal syntax 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 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 κ P 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.

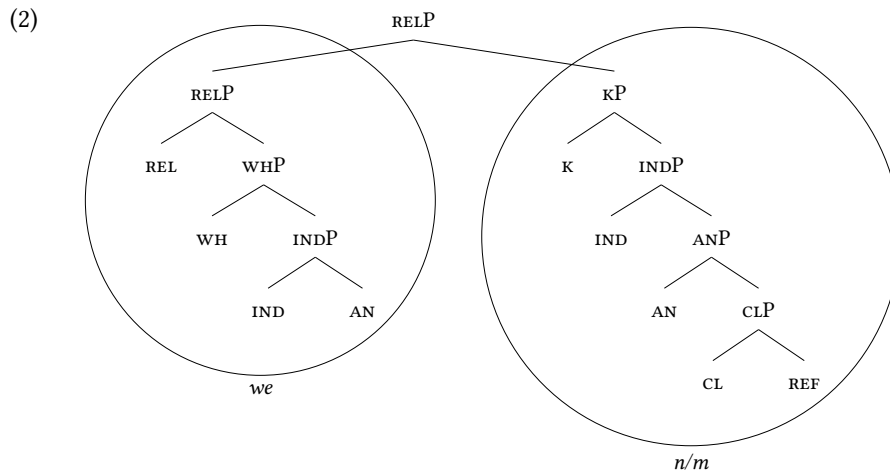
7.1 The Modern German relative pronoun

In the introduction of this chapter, I suggested that the internal syntax of relative pronouns in Modern German looks as shown in (1).



In Chapter 6, I suggested that relative pronouns consist of at least three features: REL, ϕ and κ . In this section, I show that relative pronoun consists of more features than that. Still, the crucial claim I made in Chapter 6 remains unchanged: internal-

only languages (of which Modern German is an example) have a portmanteau for the features that correspond to phi and case features and a morpheme that spells out the features the light head does not contain. I show the complete structure that I work towards in this section in (2).¹



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 7.4. I show them in (3).

- (3) a. we-n
 ‘RP.AN.ACC’
 b. we-m
 ‘RP.AN.DAT’

I decompose the relative pronouns into two morphemes: the *we* and the final consonant (*n* or *m*). For each morpheme, I discuss which features they spell out, and I give their lexical entries. In the next section, I show how I construct the relative pronouns by combining the separate morphemes.

I start with the final consonants: *n* and *m*. These two morphemes correspond to what I called the phi and case feature portmanteau in Chapter 6 and the introduction to this chapter. I argue that the phi features actually correspond to gender features, 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.

¹The KP in this functional sequence is a placeholder for multiple case projections. When the relative pronoun is the nominative, the KP consists of the feature F1, and it forms the NOMP. When the relative pronoun is the accusative, the KP consists of the features F1 and F2, and they form the ACCP. When the relative pronoun is the dative, the KP consists of the features F1, F2 and F3, and they form the DATP.

Table 7.2: Modern German relative pronouns (Durrell 2011: 5.3.3)

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

The final consonants change depending on animateness and case.² The differing final consonant can be observed in several contexts besides relative pronouns. Table 7.3 gives an overview of the demonstrative *dieser* ‘this’ in Modern German in two numbers, three genders and three cases.³

Table 7.3: Modern German demonstrative *dieser* ‘this’ (Durrell 2011: Table 5.2)

	M.SG	N.SG	F.SG	PL
NOM	diese-r	diese-s	diese	diese
ACC	diese-n	diese-s	diese	diese
DAT	diese-m	diese-m	diese-r	diese-n

Table 7.3 shows that the final consonant differs depending on gender, number and case. There is no vowel that differs between the different forms. I conclude from this that the consonant realizes features having to do with gender, number and case. In other words, the final consonant is a portmanteau that realizes gender, number and case features.

For number and gender, I adopt the features that are distinguished by Harley and Ritter (2002) for pronouns. The feature CL corresponds to a gender feature, which is inanimate or neuter if it is not combined with any other features. Combining CL with the feature AN gives the animate or masculine gender.⁴ The feature IND corresponds to number, which is singular if it is not combined with any other features.

For case, I adopt the features of Caha (2009), already introduced in Chapter 3. The feature F1 and F2 corresponds to the accusative, and the features F1, F2 and F3 correspond to the dative.

Having discussed the number, gender and case features, only the pronominal features remain. Another context in which the final consonants appear (besides their

²The vowel also differs between animateness. I return to this point when I discuss the feature content of the *we*.

³Notice 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.

⁴If the features CL and AN are combined with the feature FEM, it becomes the feminine gender.

use as relative pronouns and demonstrative pronouns) is as pronouns on their own. In (4), I give examples of the masculine accusative singular and masculine dative singular.

- (4) a. Ich wollte *n* gestern schon anrufen.
 I wanted 3SG.M.ACC.WK yesterday already call
 ‘I already wanted to call him yesterday.’
 b. Ich helfe *m* sein Fahrrad zu reparieren.
 I help 3SG.M.DAT.WK his bike to repara
 ‘I help him repairing 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.⁵

5

To be more precise, the final consonants correspond to the weak pronoun in Modern German. 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.

First, *n* and *m* are not strong pronouns because of how they behave under coordination and under focus. Strong pronouns can be coordinated. *n* and *m* cannot be coordinated, as shown in (i).

- (i) a. *Ich wollte Jan und *n* gestern schon anrufen.
 I wanted Jan and 3SG.M.ACC.WK yesterday already call
 ‘I already wanted to call Jan and him yesterday.’
 b. *Ich helfe Jan und *m* sein Fahrrad zu reparieren.
 I help Jan and 3SG.M.ACC.WK his bike to repara
 ‘I help Jan and him repairing his bike.’

Strong pronouns can be focused, whereas *n* and *m* cannot be focused.

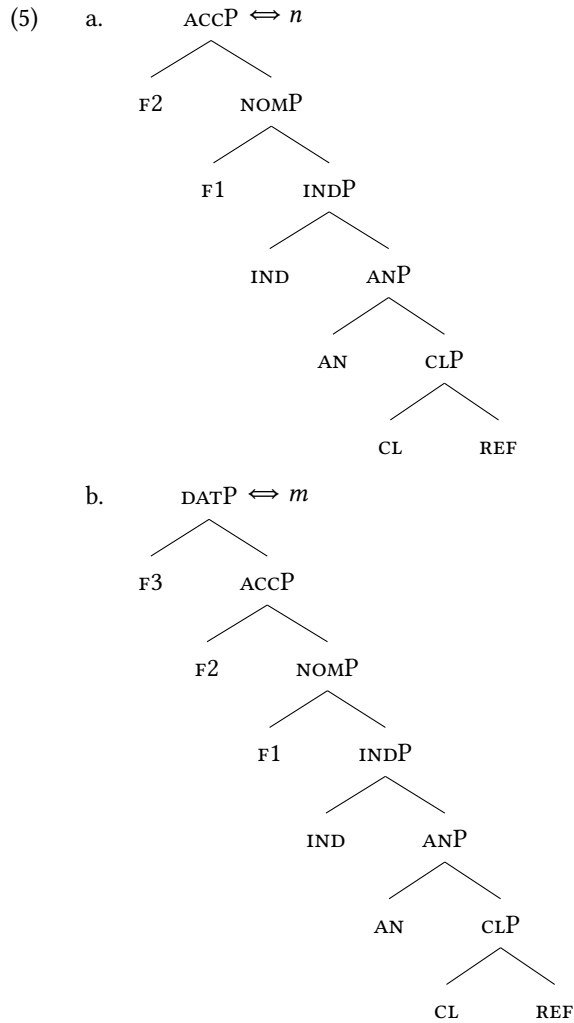
Second, the consonants are not clitics because clitics cannot combine with prepositions, but *n* and *m* can, as shown in (ii).

- (ii) a. Ich bin schnell auf *n* zu gelaufen.
 I am fast on 3SG.M.ACC.WK to walked
 ‘I walked toward him fast.’
 b. Ich war mit *m* im Wald wandern.
 I have already a gift for 3SG.M.DAT.WK bought
 ‘I was hiking with him in the woods.’

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

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, IND, F1 and F2. The *m* is the dative animate singular, so it spells out the features that the *n* spells out plus F3.



Note that the ordering of the features here is not random. I motivate the ordering in Section 7.2.

I continue with the morpheme *wē*. 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.

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

have, in addition to REF and Σ , another feature (C in terms of Cardinaletti and Starke 1994: 61).

Table 7.4: Modern German demonstrative pronouns (Durrell 2011: 5.4.1)

	M	N	F	PL
NOM	de-r	da-s	die	die
ACC	de-n	da-s	die	die
DAT	de-m	de-m	de-r	de-n

Table 7.5: Modern German relative pronouns (Durrell 2011: 5.3.3)

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

The morpheme *we* combines with the same endings as the morpheme *de* does in demonstrative pronouns (or relative pronouns in headed relatives).⁶ This identifies the *de* and, more importantly for the discussion here, the *we* as a separate morpheme.^{7,8}

⁶Note that *wh*-relative pronouns, unlike the demonstratives, do not have feminine and plural forms, and *wh*-relative pronouns do not. As far as I know, this holds for all relative pronouns in languages of the internal-only type (cf. also for Finnish, even though it makes a lot of morphological distinctions) and of the matching type. Relative pronouns in languages of the unrestricted type do inflect for feminine and plural, as well as always-external languages.

⁷It is also possible to analyze *we* as two separate morphemes: *w* and *e*. This further decomposition would not make a difference for the analysis I propose here. What is crucial is that *phi* and case features correspond to a single morpheme and the other part has its own morpheme or morphemes.

⁸I actually think that *we* also spells out deixis features. In relative pronouns it does not express spatial deixis, but discourse deixis: it establishes a relation with an antecedent. Generally, three types of deixis are distinguished: proximal, medial and distal. I argue that *e* in the relative pronoun corresponds to the medial. Generally speaking, *wh*-pronouns combine with the medial or the distal. English has morphological evidence for this claim. Demonstratives in English can combine with either the proximal or this medial/distal, as shown in (i).

- (i) a. this
DEM.PROX
- b. that
DEM.MED/DIST

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

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) (Hachem, 2015). This contrasts with the *D* in Table 7.4, which is responsible for establishing a definite reference. The feature *REL* is present to establish a relation.

I continue with the last two features that are spelled out by *we*, namely the number feature *IND* and the gender feature *AN*. Consider again Table 7.5. In the different genders, not only the final consonants differ, but also the vowel. This suggests that *we* also realizes gender features.⁹

-
- (ii) a. *whis
 WH.PROX
 b. what
 WH.MED/DIST

The use of the medial in *WH*-pronouns can be understood conceptually if one connects spatial deixis to discourse deixis (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 discussion and the lexical entries because they are not relevant for the analysis.

⁹An alternative to this analysis is to let *wer* correspond two lexical entries of which the phonological part look as in (i).

- (i) a. /w/ + CV
 b. /er/ + C

Under this analysis, the final consonant has the vowel *e* in its lexical entry (as shown in (ib)), but it does not have a phonological slot for a vowel (i.e. no C). When the lexical entry is present without the lexical entry in (ia), the vowel *e* does not surface, because there is only a slot for a consonant. Only when the lexical entry combines with a lexical entry that does have a slot for a vowel (such as (i)), the vowel *e* gets to surface.

A theoretical advantage of this analysis is that there is no need to specify a *da* and a *de* and a *wa* and a *we* for the different genders in the lexicon. The vowel is part of the lexical entry that belongs to the final consonant and it gets to surface because of the vowel slot that the *w* or *d* introduces.

An empirical advantage of this analysis concerns the vowel *e*. The dative forms in all gender and numbers have the *e*, which I assigned to masculine gender. This holds for the genitive forms too, which I have not given here. If *we* is not specified for gender (but maybe still for number) and the vowel belongs to the final consonant, it can be inserted for non-masculines too.

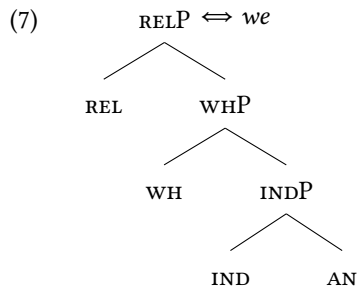
Notice also that the feminine singular and the plurals do not have a weak pronoun and they do not have

I end with discussing the feature *IND*. I derive its presence from the fact that *WH*-pronouns in Modern German can only show singular verbal agreement and no plural agreement. Consider the examples in (6).

- (6) a. Wer mach-t das?
 who do-3SG that
 ‘Who is/are doing that?’
 b. *Wer mach-en das?
 who do-3PL that
 intended: ‘Who are doing that?’

In (6a), the verb *macht* appears in third person singular. It agrees with the *WH*-pronoun *wer* ‘who’. This question can be interpreted as referring to a single referent or multiple, as indicated by the translation. The sentence in (6b), in which the verb *machen* has third person plural agreement, is ungrammatical.

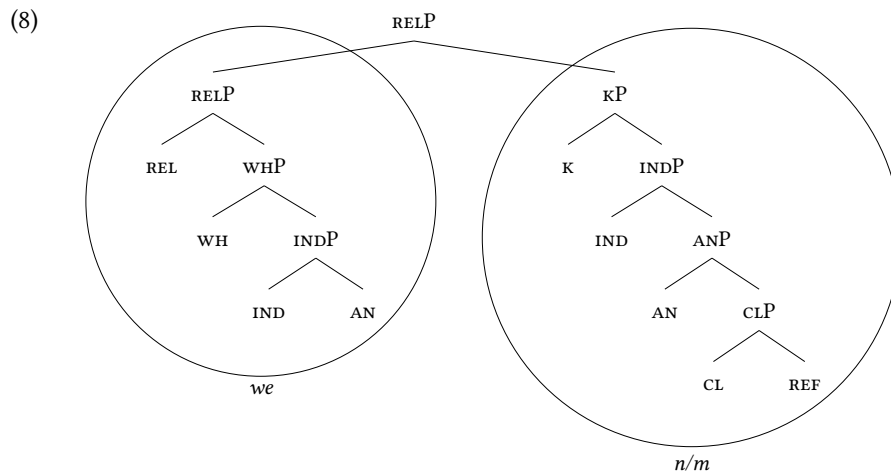
In sum, the morpheme *we* corresponds to the features *WH*, *REL*, *IND* and *AN* as shown in (7).



At this point, I gave lexical entries for each of the morphemes that the relative pronoun consists of (in (5a), (5b) and (7)), and I showed what the relative pronouns as a whole look like. I repeat them from (2) in (8).

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 phonogy 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.

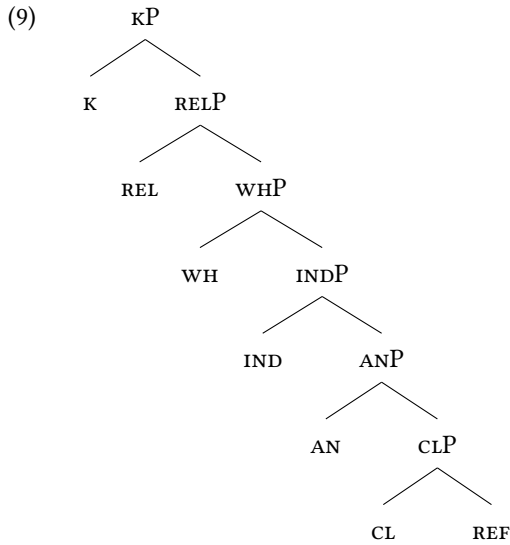


What is still needed, is a theory for combining the morphemes into relative pronouns. This theory should determine which morphemes should be combined with each other in which order. Ultimately, the result needs to be the internal syntax in (8). Ideally, the theory that derives this is not language-specific, but the same for all languages. In what follows I show how this is accomplished in Nanosyntax. Readers who are not interested in the precise mechanics can proceed directly to Section 7.3.

7.2 Combining morphemes in Nanosyntax

The way Nanosyntax combines different morphemes is not by glueing them together directly from the lexicon. Instead, features are merged one by one using two components that drive the derivation. These two components are (1) a functional sequence, in which the features that need to 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.

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



Starting from the bottom, these are pronominal feature REF, gender features CL and AN, a number feature IND, operator features WH and REL and case features κ.

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 (IND) is hierarchically higher than gender (CL and AN). Case (κ) is agreed to be higher than number (IND) (cf. Bittner and Hale, 1996).

For the position of the operator features (WH and REL) consider (10).

- (10) a. of the children
b. of which children

The linear order in (10a) reflects the hierarchical ordering of $\kappa > D > N$. *Of* is namely an instance of κ, *THE* is an instance of D, and *CHILD* is an instance of N. (10b) shows that the order is the same if the definite is substituted by the WH-word *which*, suggesting that the operator features are also positioned between κ and N. Notice also that the plural morpheme *-ren* appears more to the right, hence lower in the structure, than the operator features. Finally, I assume that the feature REL is hierarchy higher than WH.

Before I derive construct the relative pronouns, I explain how the spellout procedure in Nanosyntax works. Features (Fs) are merged one by one according to the functional sequence, starting from the bottom. After each instance of merge, the constructed phrase must be spelled out, as stated in (11).

- (11) **Cyclic phrasal spellout** (Caha, 2020a)

Spellout must successfully apply to the output of every Merge F operation. After successful spellout, the derivation may terminate, or proceed to an-

other round of Merge F.

Spellout is successful when the phrase that contains the newly merged feature forms a constituent in a lexical tree that is part of the language's lexicon. When the new feature is merged, it forms a phrase with all features merged so far. If this created phrase cannot be spelled out 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 successfully apply. Therefore, they are called spellout-driven movements. A Spellout Algorithm specifies which movement operations apply and in which order this happens. I give it in (12).

- (12) **Spellout Algorithm** (as in Caha 2020a, 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 (12), starting with the first line in (12a). This says that a feature F is merged, and the newly created phrase FP is attempted to spell out. The next two lines, (12b) and (12c), describe the two types of rescue movements that take place when the spellout in (12a) fails (i.e. when there is no match in the lexicon). In the discussion about Modern German, only the first line leads to successful spellout. In the next chapter in which I discuss Polish derivations, the second and third line also lead to successful spellouts. I give the full algorithm here to give the complete picture from the start.

If these two movement operations still do not lead to a successful spellout, there are two more derivational options possible: Backtracking and Spec Formation. I return to these options later in this section, when they are relevant in the derivation of Modern German relative pronouns.

With this background in place, I start constructing the accusative relative pronoun. I repeat the available lexical entries in (13).

- (13) a. $\text{ACCP} \Leftrightarrow n$
- ```

graph TD
 ACCP[ACCP ⇔ n] --- F2[F2]
 ACCP --- NOMP1[NOMP]
 NOMP1 --- F1[F1]
 NOMP1 --- INDP1[INDP]
 INDP1 --- IND[IND]
 INDP1 --- ANP1[ANP]
 ANP1 --- AN[AN]
 ANP1 --- CLP1[CLP]
 CLP1 --- CL[CL]
 CLP1 --- REF[REF]

```
- b.  $\text{DATP} \Leftrightarrow m$
- ```

graph TD
    DATP[DATP ⇔ m] --- F3[F3]
    DATP --- ACCP[ACCP]
    ACCP --- F2[F2]
    ACCP --- NOMP2[NOMP]
    NOMP2 --- F1[F1]
    NOMP2 --- INDP2[INDP]
    INDP2 --- IND[IND]
    INDP2 --- ANP2[ANP]
    ANP2 --- AN[AN]
    ANP2 --- CLP2[CLP]
    CLP2 --- CL[CL]
    CLP2 --- REF[REF]
  
```
- c. $\text{RELP} \Leftrightarrow we$
- ```

graph TD
 RELP[RELP ⇔ we] --- REL[REL]
 RELP --- WHP[WHP]
 WHP --- WH[WH]
 WHP --- INDP3[INDP]
 INDP3 --- IND[IND]
 INDP3 --- AN[AN]

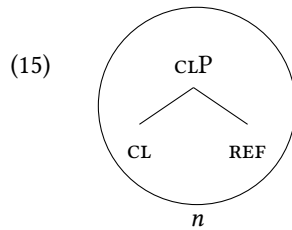
```

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

- (14)
- ```

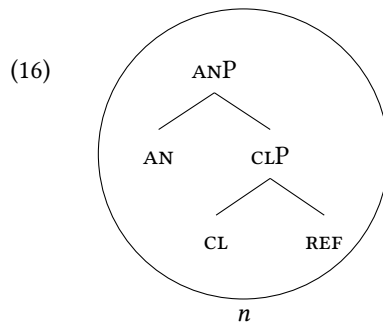
graph TD
    CLP[CLP] --- CL[CL]
    CLP --- REF[REF]
  
```

The syntactic structure forms a constituent in the lexical tree in (13a). Therefore, the *CLP* is spelled out as *n*, as shown in (15).

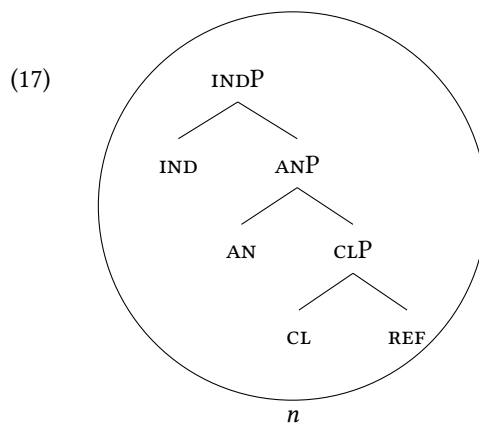


As usual, I mark this by circling the part of the structure that corresponds to the lexical entry, and placing the corresponding phonology below it. This spellout option corresponds to (12a) in the Spellout Algorithm.

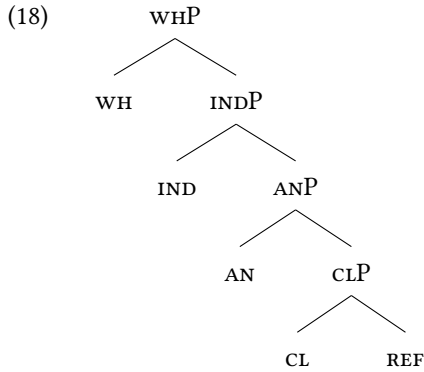
There are more features in the functional sequence, so the next feature is merged. This next feature is the feature *AN*, and a *ANP* is created. The syntactic structure forms a constituent in the lexical tree in (13a). Therefore, the *ANP* is spelled out as *n*, shown in (16).



The next feature is the feature *IND*, and a *INDP* is created. The syntactic structure forms a constituent in the lexical tree in (13a). Therefore, the *INDP* is spelled out as *n*, shown in (17).



The next feature in the functional sequence is the feature *WH*. This feature cannot be spelled out as the other ones before, which I show in what follows. The feature *WH* is merged, and a *WHP* is created, as shown in (18).



This syntactic structure does not form a constituent in the lexical tree in (13a). It namely contains the feature *WH*, which (5a) does not contain. There is also no other lexical tree that contains the structure in (18) as a constituent. Therefore, there is no successful spellout for the syntactic structure in the derivational step in which the structure is spelled out as a single phrase ((12a) in the Spellout Algorithm).

The first movement option in the Spellout Algorithm is moving the specifier, as described in (12b). As there is no specifier in this structure, the first movement option is irrelevant. The second movement option in the Spellout Algorithm is moving the complement, as described in (12c). In this case, the complement of *WH*, the *INDP*, is moved to the specifier of *INDP*. As this movement option does not lead to a successful match, I do not show it here. I come back to it in Chapter 8, in which it does lead to a successful match.

As I mentioned earlier, there are two more derivational options possible: Backtracking and Spec Formation. Derivationally, Backtracking comes first. However, since this does not lead to a successful spellout here I first introduce Spec Formation and I return to Backtracking later. Spec Formation is a last resort operation, when the feature cannot be spelled out by any of the preceding options. It is formalized as in (19).

(19) **Spec Formation** (Starke, 2018):

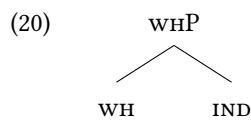
If Merge *F* has failed to spell out (even after Backtracking), try to spawn a new derivation providing *F* and merge that with the current derivation, projecting *F* to the top node.

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

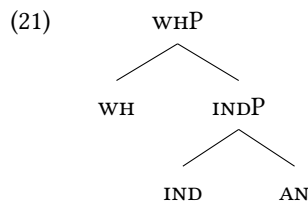
separate workspace. Crucially, the phrase that is created is contained in a lexical tree in the language's lexicon. Finally, the feature is spelled out successfully. The newly created phrase (the spec) is merged as a whole with the already existing structure.

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. This can be a single feature or multiples ones. I illustrate this with the Modern German relative pronouns.

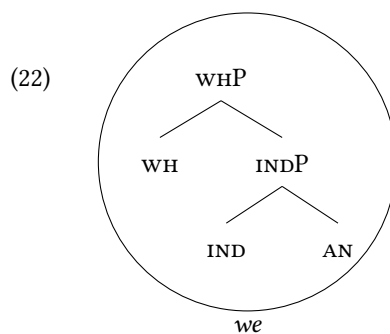
For the feature *WH* it means that it is merged with the feature *IND*. Then, the lexicon is checked for a lexical tree that contains the phrase *WHP* that contains *WH* and *IND*, as shown in (20).



This syntactic structure does not form a constituent in any of the lexical trees in the language's lexicon. Therefore, the feature *WH* combines not only with the feature merged before it, but with a phrase that consists of the two features merged before it: *IND* and *AN*. I give the phrase this gives in (21).



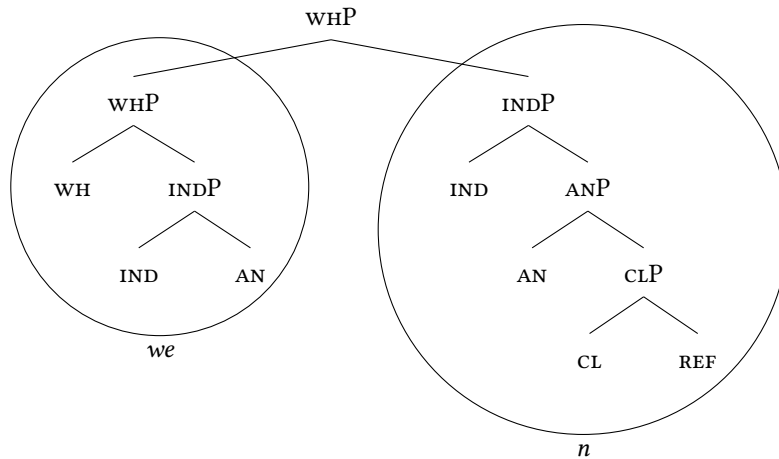
This syntactic structure forms a constituent in the lexical tree in (13c). Therefore, the *WHP* is spelled out as *we*, as shown in (22).



The newly created phrase is merged as a whole with the already existing structure. As specified in (19), the feature *WH* projects to the top node. I show the results in

(23).

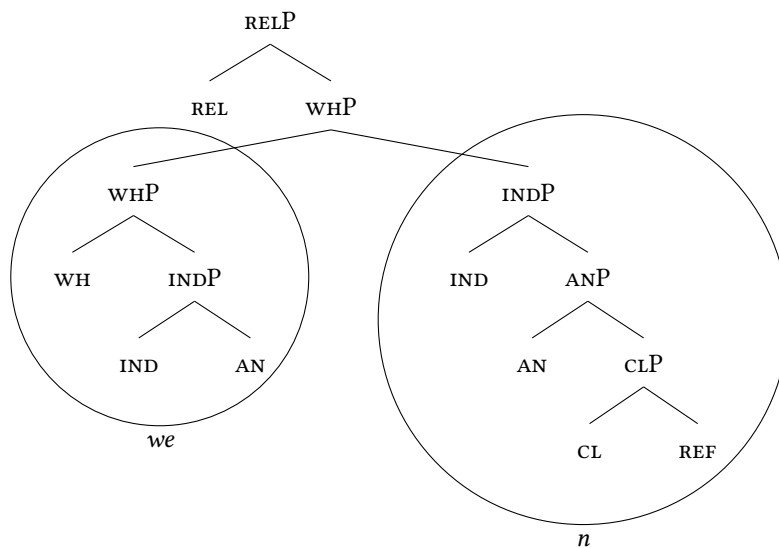
(23)



Notice here that there is an overlap of multiple features between the phrase on the right and the phrase on the left.¹⁰

The next feature in the functional sequence is the feature **REL**. As always, it is merged to the existing syntactic structure, which is now the **WHP**. The result is the **REL**P shown in (24).

(24)



¹⁰There are three different proposals on Spec Formation. Caha (2019) 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 the overlap between the phrase on the left and the phrase on the right can also be more than a single feature. This is the only proposal of the three that allows me to derive all the forms I encounter.

This whole structure does not form a constituent in any of the lexical trees in the language's lexicon. Neither of the spellout driven movement operations leads to a successful spellout. This means that, once again, the derivation reaches a point at which one of the two other possible derivational options come into play. As I mentioned before, Backtracking comes first, and this is the operation that leads to a successful spellout here.

Consider the syntactic structure in (24) again. The feature *REL* is merged with the highest *WHP*. In this position it cannot be spelled out. Consider now the lexical entry in (13c). This is a lexical tree that contains *REL*. This means that the feature *REL* somehow needs to end up in the Spec that has just been merged. I follow 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 (25).¹¹

(25) **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*.

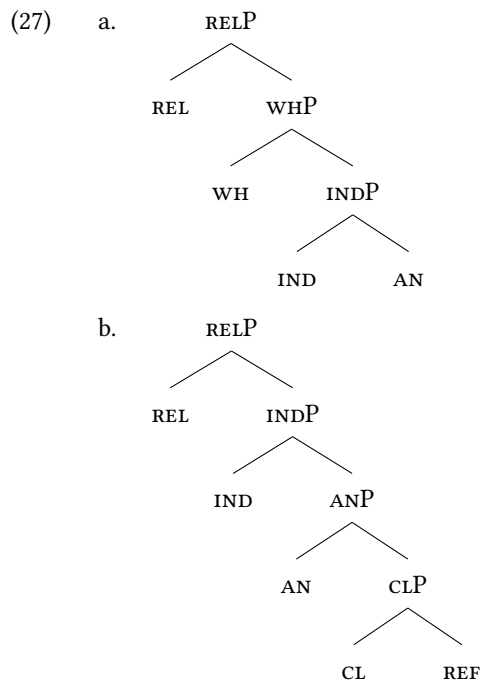
Imagine a situation in which the previous feature was spelled out with a complex specifier and the next feature reaches the derivational option Backtracking. This is exactly the situation that arises after *REL* is merged. Providing a different configuration means splitting up the two phrases, and then merging the feature again. Specifically, I adopt the proposal in which the feature is merged in both workspaces, as stated in (26).

(26) **Multiple Merge** (Caha 2019: 227)

When backtracking reopens multiple workspaces, merge *F* in each such workspace.

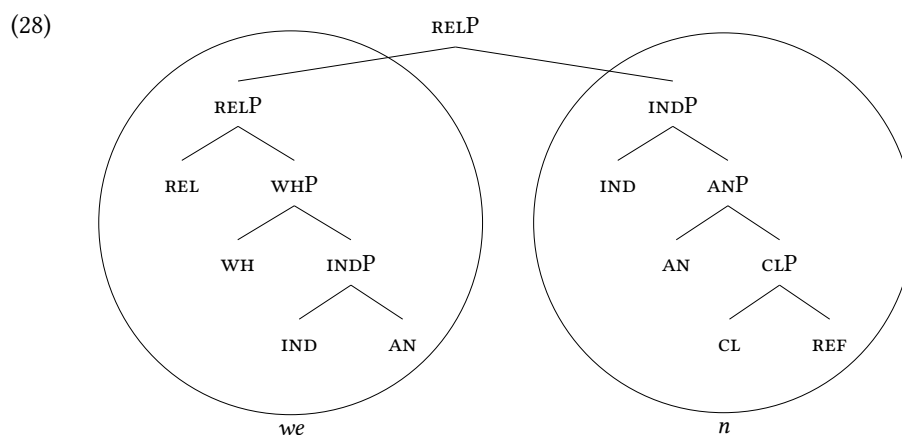
For the example under discussion, the situation looks as in (27).

¹¹In 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.



The feature `REL` is merged in both workspaces, so it combines with the `RELP` in (27a) and with the `INDP` in (27b). From here on, the derivation proceeds, as usual, according to the Spellout Algorithm, with the only difference that it happens in two workspaces simultaneously. Spellout has to be successful in at least one of the two workspaces.

In the case of (27), the spellout of `REL` is successful in the syntactic structure in (27a). This syntactic structure namely forms a constituent in the lexical tree in (13c), which corresponds to the *we*. As spellout has succeeded, the workspaces can be merged back together. The result is shown in (28).

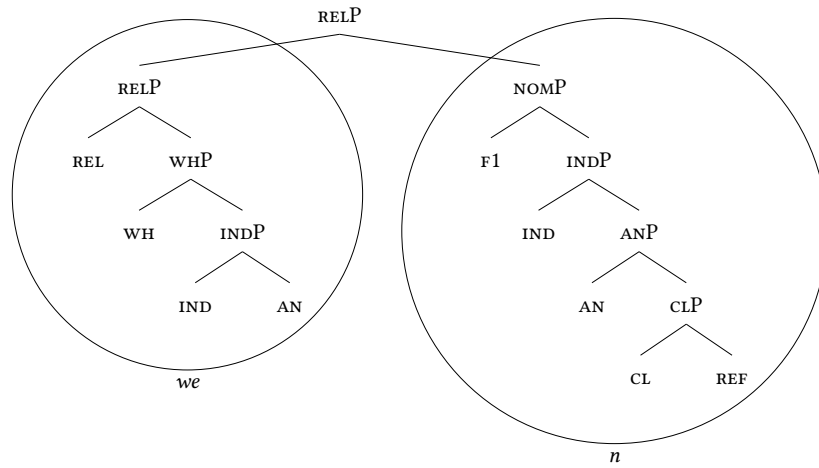


The next feature in the functional sequence is `F1`. This feature should somehow end up merging with `INDP`, because it forms a constituent in the lexical tree in (13a),

which corresponds to *n*. This can again be achieved via Backtracking in which phrases are split up. I go through the derivation step by step.

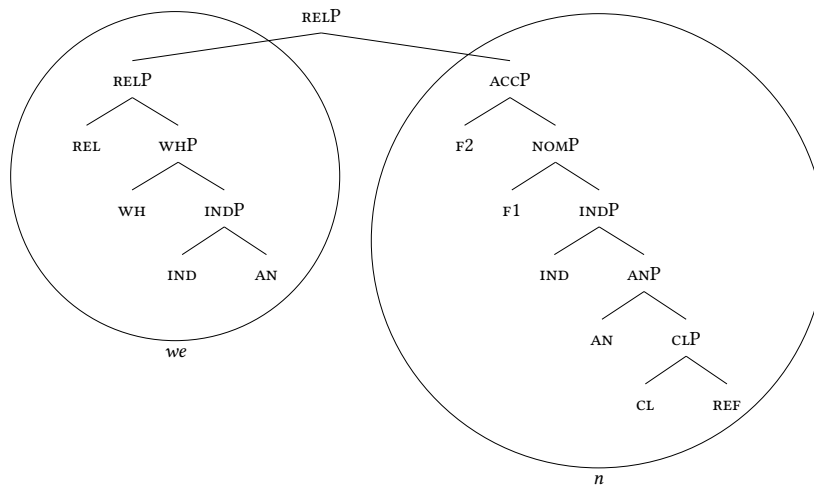
The feature *F1* is merged with the existing syntactic structure, creating a *NOMP*. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the *RELP* from the *INDP*. The feature *F1* is merged in both workspaces, so with the *RELP* and and with the *INDP*. The spellout of *F1* is successful when it is combined with the *INDP*. It namely forms a constituent in the lexical tree in (13a), which corresponds to the *n*. The *NOMP* is spelled out as *n*, and all constituents are merged back into the existing syntactic structure, as shown in (29).

(29)



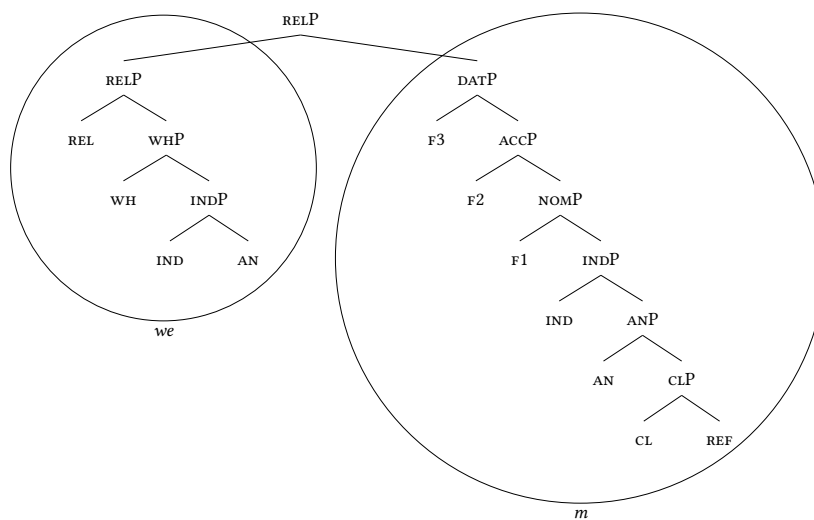
For the accusative relative pronoun, the last feature is merged: the *F2*. The derivation for *F2* resembles the derivation of *F1*. The feature is merged with the existing syntactic structure, creating a *AccP*. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the *RELP* from the *NOMP*. The feature *F2* is merged in both workspaces, so with the *RELP* and and with the *NOMP*. The spellout of *F2* is successful when it is combined with the *NOMP*. It namely forms a constituent in the lexical tree in (13a), which corresponds to the *n*. The *AccP* is spelled out as *n*, and all constituents are merged back into the existing syntactic structure, as shown in (30).

(30)



For the dative relative pronoun, one more feature is merged: the F3. The derivation for F3 resembles the derivation of F1 and F2. The feature is merged with the existing syntactic structure, creating a DATP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the ACCP. The feature F3 is merged in both workspaces, so with the RELP and and with the ACCP. The spellout of F3 is successful when it is combined with the ACCP. It namely forms a constituent in the lexical tree in (13b). The DATP is spelled out as *m*, and all constituents are merged back into the existing syntactic structure, as shown in (31).

(31)

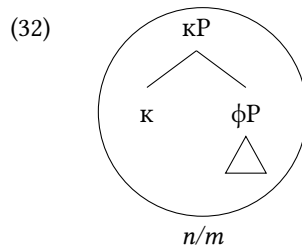


To summarize, I decomposed the relative pronoun into the two morphemes: *we* and the final consonant (*n* and *m*). I showed which features each of the morphemes

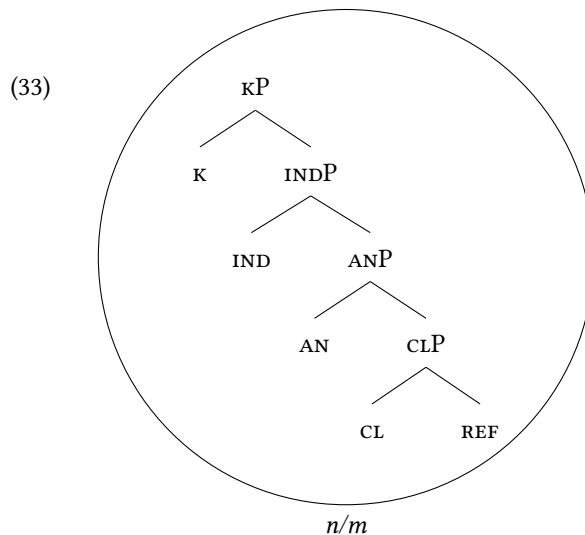
spells out and what the internal syntax looks like that they are combined into. It is this internal syntax that determines whether the light head can be deleted or not.

7.3 The Modern German (extra) light head

I have suggested that headless relatives are derived from light-headed relatives. The light head or the relative pronoun can be deleted when either of them is structurally contained in the other one. In the introduction of this chapter, I claimed that the internal syntax of light heads in Modern German looks as shown in (32).



In Chapter 6, I suggested that light heads consist of at least two features: ϕ and κ . In this section, I determine the exact feature content of the light head. I end up claiming that the phi and case feature portmanteau of the relative pronoun is the light head in headless relatives. I show the complete structure that I work towards in this section in (33).



Before I dive into the feature content of the light head, I first need to identify it, as it does not surface in headless relatives. I consider two kinds of light-headed relatives as the source of the headless relative. First, the deletion of the light head is optional, and the headless relative is derived from an existing light-headed relative. Second,

the deletion of the light head is obligatory, and the headless relative is derived from a light-headed relative that does not surface in Modern German. I consider the first option first, and I give two arguments against it. Then, to identify the exact input structure, I take the light head from the existing light-headed relative as a point of departure, and I modify it in such a way that it is appropriate as a light head for a headless relative.

I give an example of a Modern German light-headed relative in (34).¹²

- (34) Jan umarmt den **wen** **er mag**.
 Jan hugs DEM.M.SG.ACC RP.AN.ACC he likes
 ‘Jan hugs the man that he likes.’

In (34), the relative pronoun is the WH-pronoun *wen* ‘RP.AN.ACC’, and the light head is the D-pronoun *den* ‘DEM.M.SG.ACC’. For easy reference, I call this light-headed relative the *den-wen* relative.

One hypothesis is that the demonstrative *den* ‘DEM.M.SG.ACC’ is deleted from the light-headed relative in (34) and that the headless relative in (35) remains.¹³ For easy reference, I call this headless relative the *wen* relative.

- (35) Jan umarmt **wen** **er mag**.
 Jan hugs RP.AN.ACC he likes
 ‘Jan hugs who he likes.’

I give two arguments against this hypothesis. First, in headless relatives the morpheme *auch immer* ‘ever’ can appear, as shown in (36).

¹²Modern German also has another light-headed relative, in which the relative pronoun is the D-pronoun. I give an example in (i).

- (i) Jan umarmt den **den** **er mag**.
 Jan hugs D.M.SG.ACC RP.M.SG.ACC he likes
 ‘Jan hugs the man that he likes.’

This relative pronoun generally appears in headed relatives, shown in (ii).

- (ii) Jan umarmt den Mann **den** **er mag**.
 Jan hugs D.M.SG.ACC man RP.M.SG.ACC he likes
 ‘Jan hugs the man that he likes.’

I directly exclude the possibility that Modern German headless relatives are derived from these light-headed relatives, because they appear with the incorrect relative pronoun.

¹³This is exactly what Hanink (2018) argues for. She claims that the feature content of the light head *den* matches the feature content of the relative pronoun *wen*. Therefore, the light head is by default deleted. Only if the light head carries an extra focus feature it surfaces.

- (36) Jan unarmt **wen** **auch immer er mag**.
 Jan hugs RP.AN.ACC ever he likes
 ‘Jan hugs whoever he likes.’

Light-headed relatives do not allow for this morpheme to be inserted, illustrated in (37).

- (37) *Jan unarmt den **wen** **auch immer er mag**.
 Jan hugs DEM.M.SG.ACC RP.AN.ACC ever he likes
 ‘Jan hugs him whoever he likes.’

I assume that headless relatives are not derived from an ungrammatical structure.¹⁴

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

Table 7.6: Interpretations of *wen* and *den-wen* relatives

	<i>wen</i>	<i>den-wen</i>
definite-like	✓	✓
universal-like	✓	*

The first interpretation of the *wen* relative is a definite-like one. This interpretation corresponds to a definite description. Consider the context which facilitates a definite-interpretation and the repeated *den-wen* and *wen* relative in (38a).

- (38) a. Context: Yesterday Jan met with two friends. He likes one of them. The other one he does not like so much.
 b. Jan unarmt den **wen** **er mag**.
 Jan hugs DEM.M.SG.ACC RP.AN.ACC he likes
 ‘Jan hugs who he likes.’
 c. Jan unarmt **wen** **er mag**.
 Jan hugs RP.AN.ACC he likes
 ‘Jan hugs who he likes.’

A definite-like interpretation is one in which Jan hugs the person that he likes. The interpretation is available for the *wen* relative and for the *den-wen* relative.

¹⁴I am aware that such an analysis is common for sluicing.

The second interpretation of the *wen* relative is a universal-like one. This interpretation corresponds to a universal quantifier. Consider the context which facilitates a universal-interpretation and the repeated *den-wen* and *wen* relative in (39a).

- (39) a. Jan has a general habit of hugging everybody that he likes.
 b. #Jan umarmt den **wen** **er** mag.
 Jan hugs DEM.M.SG.ACC RP.AN.ACC he likes
 ‘Jan hugs who he likes.’
 c. Jan umarmt **wen** **er** mag.
 Jan hugs RP.AN.ACC he likes
 ‘Jan hugs who he likes.’

A universal-like interpretation is one in which Jan hugs everybody that he likes. This interpretation is available for the *wen* relative, but not for the *den-wen* relative.

There are some indications that the universal-like interpretation of headless relatives is the main interpretation that should be accounted for. First, informants have reported to me that headless relatives with case mismatches become more acceptable in the universal-like interpretation compared to the definite-like interpretation. Second, 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 *den-wen* relative being the source of the *wen* relative. In what follows, I show how the presence of *den* leads to having only the definite-like interpretation. I suggest that the problem lies in the feature content of the light head *den*. I point out how the feature content should be modified such that it is a suitable light head for a headless relative.

The light head in the *den-wen* relative is a demonstrative. A demonstrative refers back to a linguistic or extra-linguistic antecedent. Consider the context in (38a) again. The demonstrative *den* in the *den-wen* relative refers back to the friend of Jan that he likes, and the construction is grammatical. Now consider the context in (39a) again. In this case, there is no antecedent for the demonstrative *den* to refer back to, and the structure is infelicitous.

I zoom in on the internal syntax of the demonstrative *den* to investigate what it is about the demonstrative that forces the definite-like interpretation. The demonstrative consists (at least) of the two morphemes *de* and *n*. One of these morphemes are identical to the WH-relative pronoun: the *n*, which spells out pronominal, number, gender and case features. The other morpheme differs: the *de*, which establishes a definite reference.

So far, I established that the *den-wen* relative cannot be the source from which

the headless relative is derived. Still, there must be some light-headed relative that is the source. I propose that the light head in the light-headed relative is even lighter than the head in the *den-wen* relative: it is an extra light head.

I propose that the extra light head is the element that is left once the morphemes *de* is absent. This is the morpheme that is the final consonant of the relative pronoun. I give the extra light-headed relative that the *wen*-relative is derived from in (40). The brackets around the light head indicate that it is obligatorily deleted.¹⁵

- (40) Jan umarmt [n] **wen** **er mag**.
 Jan hugs ELH.AN.ACC RP.AN.ACC he likes
 ‘Jan hugs who he likes.’

In the remainder of this section, I discuss the two extra light heads that I compare the internal syntax of in Section 7.4. They are the accusative animate and the dative animate, shown in (41).

- (41) a. n
 ELH.AN.ACC

¹⁵The light head and the extra light head I discuss resemble the strong and weak definite in Schwarz (2009), at least morphologically (although my light head is always obligatorily deleted). Schwarz’s (2009) strong definite is anaphoric in nature, and the weak definite encodes uniqueness. I give an example of a strong definite in (i). The strong definite is *dem* that precedes *Freund* ‘friend’. It refers back to the linguistic antecedent *einen Freund* ‘a friend’.

- (i) Hans hat heute einen Freund zum Essen mit nach Hause gebracht. Er hat uns vorher
 Hans has today a friend to the dinner with to home brought he has us beforehand
 ein Foto von dem Freund gezeigt.
 a photo of the_{STRONG} friend shown
 ‘Hans brought a friend home for dinner today. He had shown us a photo of the friend beforehand.’

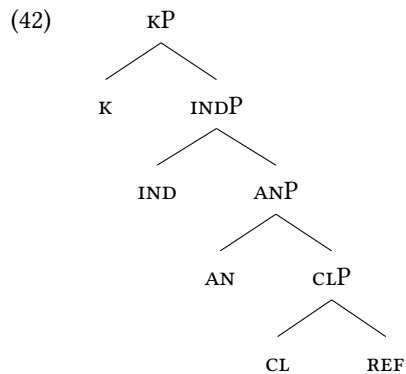
Weak definites are used when situational uniqueness is involved. This uniqueness can be global or within a restricted domain. I give two examples in (ii). In (iia), the dog is unique in this specific situation of the break-in. In (iib), the moon is unique for us people on the planet.

- (ii) a. Der Einbrecher ist zum Glück vom Hund verjagt worden.
 the burglar is luckily by the_{WEAK} dog chased away been
 ‘Luckily, the burglar was chased away by the dog.’
 b. Armstrong flog als erster zum Mond.
 Armstrong flew as first one to the_{WEAK} moon
 ‘Armstrong was the first one to fly to the moon.’ (Modern German, Schwarz 2009: 40)

The meaning of Schwarz’s (2009) strong definite seems similar to the meaning of the light head in the *den-wen* relative. I do not see right away how the extra light head in headless relatives could encode uniqueness. One possibility is that the feature content of his and my form differs slightly after all. Another possibility is that the fact that his form combines with a preposition and an overt nouns leads to a change in interpretation.

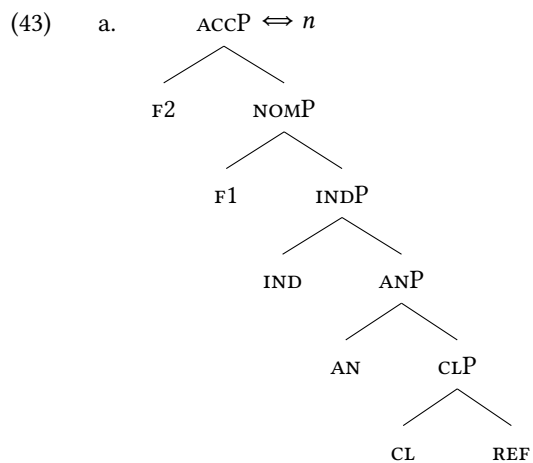
- b. m
ELH.AN.DAT

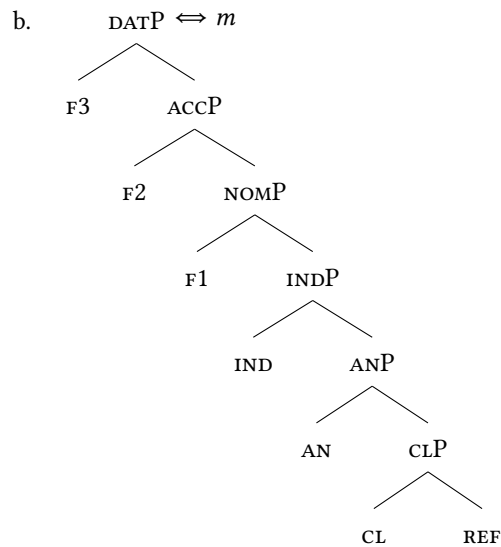
In Chapter 6, I suggested that the relative pronoun contains at least one feature more than the extra light head. In my proposal, it is actually two features, namely *WH* and *REL*. This leaves the functional sequence for the extra light head as shown in (42).



It contains the pronominal feature *REF*, the gender features *CL* and *AN*, the number feature *IND* and case features *κ*.

I introduced the lexical entries that are required to spell out these features in Section 7.1. I repeat them in (43).



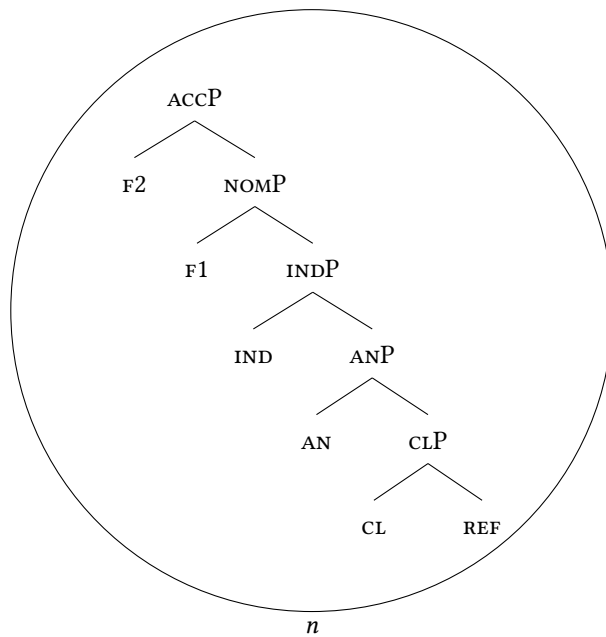


The derivations of the extra light heads are straight-forward ones. The features are merged one by one, and after each new phrase is created, it is spelled out as a whole. I still go through them step by step.

First, the features REF and CL is merged, and the CLP is created. The syntactic structure forms a constituent in the lexical tree in (43a). Therefore, the CLP is spelled out as *n*. Exactly the same happens for the features AN, IND and F1. They are merged, they form a constituent in the lexical tree in (43a), and they are spelled out as *n*.

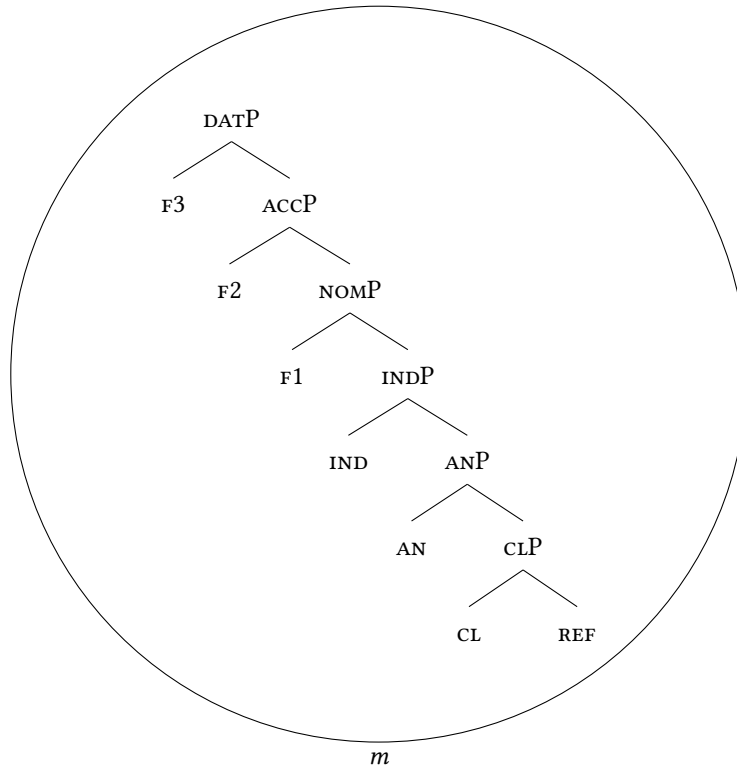
The last feature that is merged for the accusative extra light head is the F2. It is merged, and the ACCP is created. The syntactic structure forms a constituent in the lexical tree in (43a). Therefore, the ACCP is spelled out as *n*, as shown in (44).

(44)



For the dative extra light head another feature is merged: the **F3**. The feature **F3** is merged, and the **DATP** is created. The syntactic structure forms a constituent in the lexical tree in (43b). Therefore, the **DATP** is spelled out as *m*, as shown in (45).

(45)



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

7.4 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 comparison for Modern German specifically, and that the content of the internal syntax that is being compared is motivated earlier in this chapter.

I give three examples, in which the internal and external case vary. I start with an example with matching cases, in which the internal and the external case are both accusative. Then I give an example in which the internal dative case is more complex than the external accusative case. I end with an example in which the external dative case is more complex than the internal accusative case. I show that the first two examples are grammatical and the last one is not. I derive this by showing that only in the first two situations the light head is structurally contained in the relative pronoun, and that it can therefore then be deleted. In the last 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 (46), in which the internal accusative case competes against the external accusative case. The relative clause is marked in bold. The internal case is accusative, as the predicate *mögen* ‘to like’ takes accusative objects. The relative pronoun *wen* ‘REL.AN.ACC’ appears in the accusative case. This is the element that surfaces. The external case is accusative as well, as the predicate *einladen* ‘to invite’ also takes accusative objects. The extra light head *n* ‘ELH.AN.ACC’ appears in the accusative case. It is placed between square brackets because it does not surface.

- (46) Ich lade ein [n], **wen auch**
 1SG.NOM invite.PRES.1SG_[ACC] ELH.AN.ACC RP.AN.ACC Maria.NOM
Maria mag.
 like.PRES.3SG_[ACC]
 ‘I invite who Maria also likes.’

(Modern German, adapted from 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.

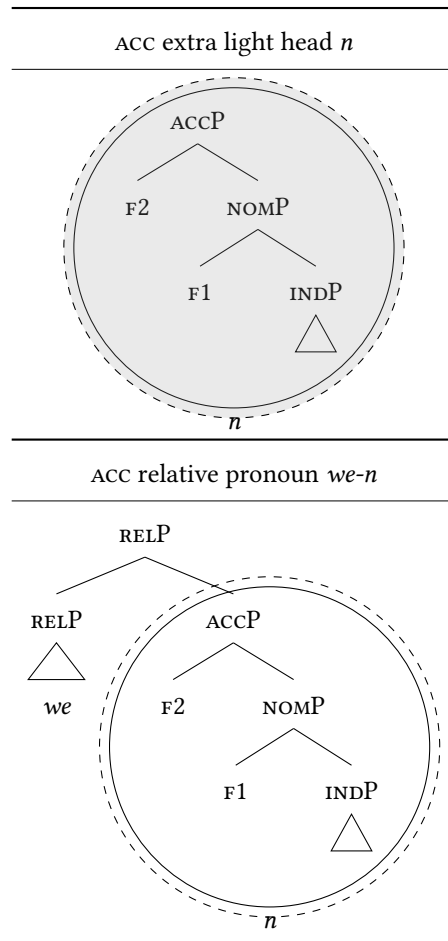


Figure 7.3: Modern German EXT_{ACC} vs. $\text{INT}_{\text{ACC}} \rightarrow \text{wen}$

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 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 pronoun is the relative pronoun that bears the internal case: *wen*.

I continue with the situation in which the internal case is the more complex one. Consider the example in (47), in which the internal dative case competes against the

external accusative case. The relative clause is marked in bold. The internal case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The relative pronoun *wem* ‘REL.AN.DAT’ appears in the dative case. This is the element that surfaces. The external case is accusative, as the predicate *einladen* ‘to invite’ takes accusative objects. The extra light head *n* ‘ELH.AN.ACC’ appears in the accusative case. It is placed between square brackets because it does not surface.

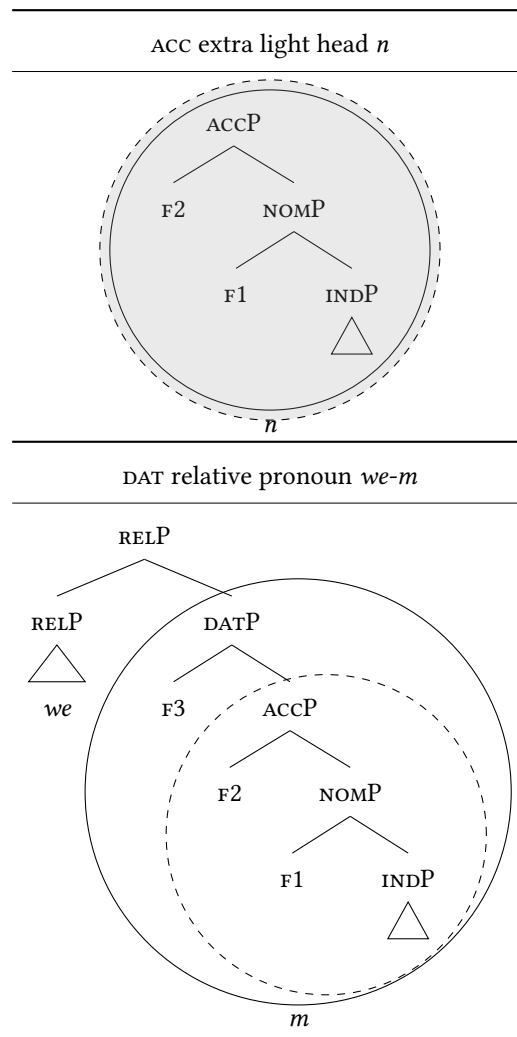
- (47) Ich lade ein [n], **wem auch Maria**
 1SG.NOM invite.PRES.1SG[ACC] ELH.AN.DAT RP.AN.DAT also Maria.NOM
vertraut.
 trust.PRES.3SG[DAT]
 ‘I invite whoever Maria also trusts.’
 (Modern German, adapted from Vogel 2001: 344)

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*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around 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 pronoun is the relative pronoun that bears the internal case: *wem*.

I end with the situation in which the external case is the more complex one. Consider the examples in (48), in which the internal accusative case competes against the external dative case. The relative clauses are marked in bold. It is not possible to make a grammatical headless relative in this situation. The internal case is accusative, as the predicate *mögen* ‘to like’ takes accusative objects. The relative pronoun *wen* ‘REL.AN.ACC’ appears in the accusative case. The external case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The extra light head *m* ‘ELH.AN.DAT’ appears in the dative case. (48a) is the variant of the sentence in which the extra light head is absent (indicated by the square brackets) and the relative pronoun surfaces, which is ungrammatical. (48b) is the variant of the sentence in which the relative pronoun is absent (indicated by the square brackets) and the extra light head surfaces, which is ungrammatical too.

Figure 7.4: Modern German EXT_{ACC} vs. $\text{INT}_{\text{DAT}} \rightarrow wem$

- (48) a. *Ich vertraue [m], **wen** **auch Maria**
 1SG.NOM trust.PRES.1SG_[DAT] ELH.AN.DAT RP.AN.ACC also Maria.NOM
mag.
 like.PRES.3SG_[ACC]
 ‘I trust whoever Maria also likes.’
 (Modern German, adapted from Vogel 2001: 345)
- b. *Ich vertraue m, [wen] **auch Maria**
 1SG.NOM trust.PRES.1SG_[DAT] ELH.AN.DAT RP.AN.ACC also Maria.NOM
mag.
 like.PRES.3SG_[ACC]
 ‘I trust whoever Maria also likes.’

(Modern German, adapted from 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.

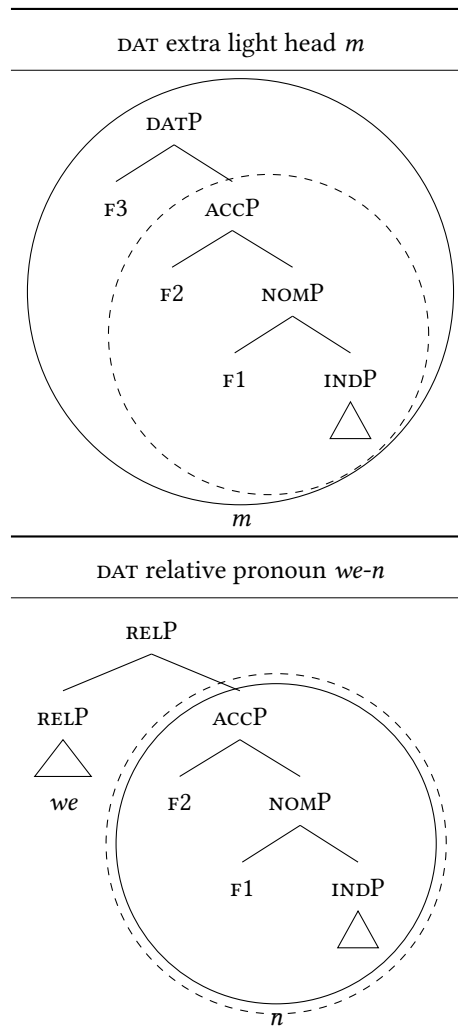


Figure 7.5: Modern German EXT_{DAT} VS. $\text{INT}_{\text{ACC}} \rightarrow m/wen$

The extra light head consists of a single morpheme: *m*. The relative pronoun consists of two morphemes: *we* and *n*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around 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 F3 that makes a DATP. Since the weaker feature containment requirement is not met, the stronger constituent containment requirement cannot be met either.

The relative pronoun is not structurally contained in the light head. It namely lacks the complete constituent and RELP. Therefore, the extra light cannot be deleted, and the relative pronoun cannot be deleted either. As a result, there is no grammatical headless relative possible.¹⁶

7.5 Summary

Modern German is an example of an internal-only type of language. This means that headless relatives are grammatical in the language, as long as the internal and external case match or the internal case is the more complex one.

I derive this from the internal syntax of light heads and relative pronouns in Modern German. The features of the light head are spelled out by a single lexical entry, which spells out phi and case features. The features of the relative pronoun are spelled out by the same lexical entry plus one which amongst other spells out a relative feature. The internal syntax of the Modern German light head and relative pronoun are shown in Figure 7.6.

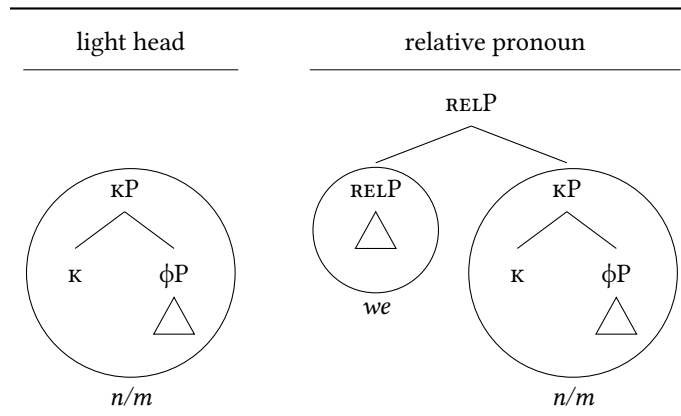


Figure 7.6: ELH and RP in Modern German (repeated)

A crucial characteristic of internal-only languages such as Modern German is that they have a portmanteau for phi and case features. Therefore, the light head is 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.

¹⁶The only exception is when there is a syncretism.

When the internal 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.

Chapter 8

Deriving the matching type

In Chapter 6, I suggested that languages of the matching type have a lexical entry that spells out phi features and another one that spells out case features. This is the crucial difference with internal-only languages such as Modern German, that have a portmanteau for phi and case features. It means that the internal syntax of light heads and relative pronouns looks as shown in Figure 8.1.

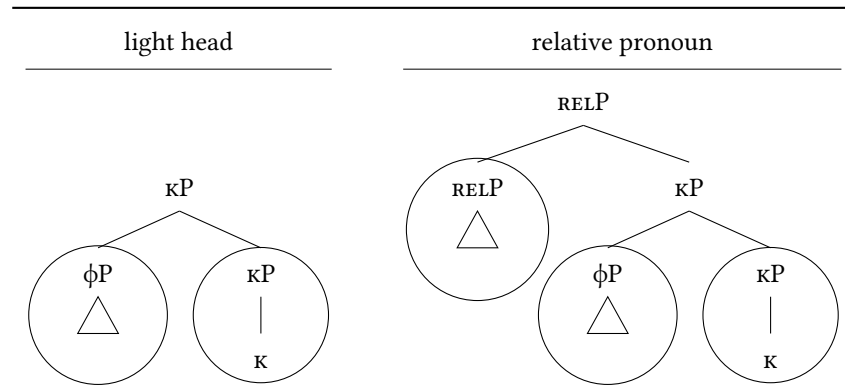


Figure 8.1: LH and RP in the matching type

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

Table 8.1: Grammaticality in the matching type

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

Consider first the situation in which the internal and the external case match. The light head consists of a phi feature morpheme and a case feature morpheme. The relative pronoun consists of the same two morphemes plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is 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 the internal case wins the case competition. The light head consists of a phi feature morpheme and a case feature morpheme. The relative pronoun consists of the same phi feature morpheme, a case morpheme that contains at least one more case feature than the light head (κ_2 in Figure 8.1) plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is 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 wins the case competition. The relative pronoun consists of a phi feature morpheme, a case feature morpheme and an additional morpheme that spells out the feature REL. Compared to the relative pronoun, the light head lacks the morpheme that spells out REL, and it contains at least one more case feature (κ_2 in Figure 8.1). The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is 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.

Consider the light head in Figure 8.2. Light heads (i.e. the phi and case features) in

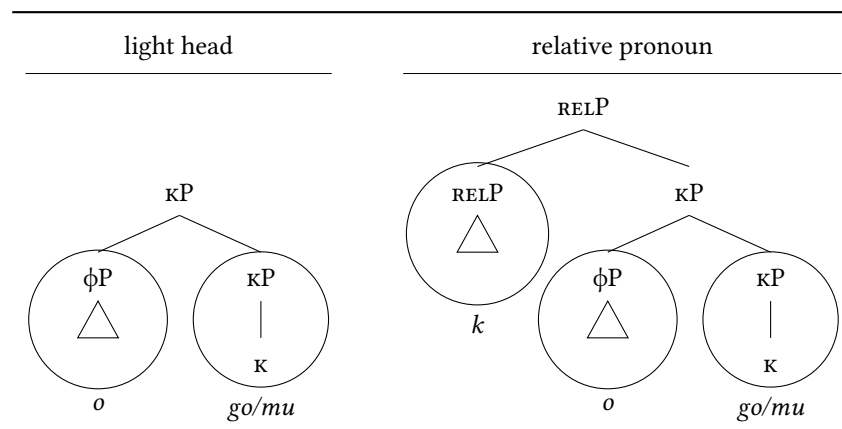


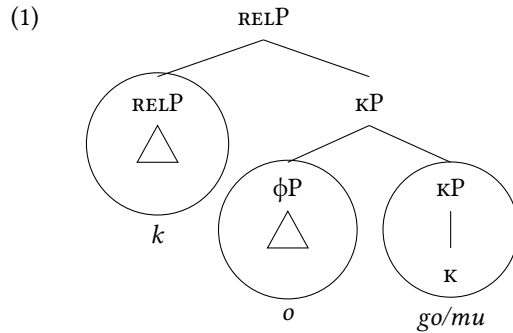
Figure 8.2: LH and RP in Polish

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.

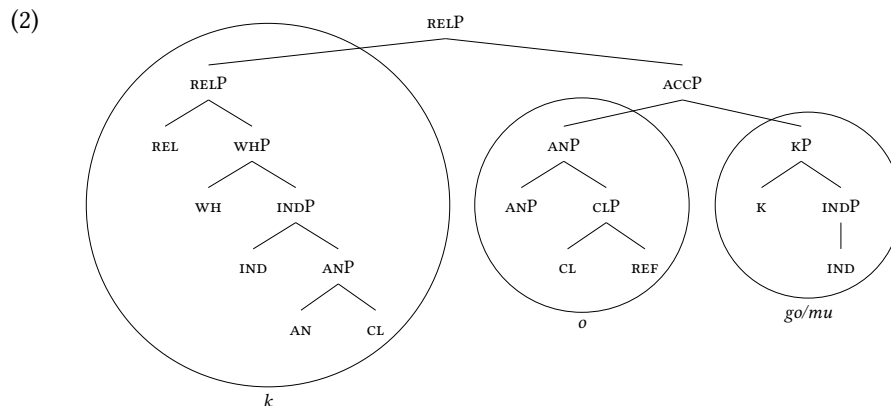
The chapter is structured as follows. First, I discuss the relative pronoun. I decompose it into the three morphemes I showed in Figure 8.2. Then I show which features each of the morphemes corresponds to. Then I discuss the light head. I argue that Polish headless relatives are, just as Modern German 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 one of the morphemes of the relative pronoun (the κP in Figure 8.2). Importantly, the features that form the Polish light head and relative pronoun are the same ones that form the Modern German light head and relative pronoun. The only difference between the two languages is how the features are spelled out. Finally, I compare the 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).



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).



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.

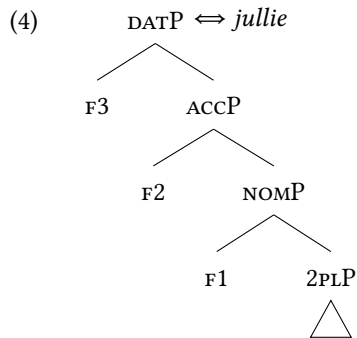
To determine their exact feature content, I first focus on *mu*. Then, I extend the analysis to *go*. The morpheme *mu* (and also the *go*) do not only appear in relative pronouns. They also show up as nominal endings, adjectival endings and in other pronominal forms. Interestingly, forms containing *mu* are often syncretic between masculine dative and neuter dative. Consider Table 8.2.

Table 8.2: Syncretic N/M dative forms (Swan, 2002)

	M.DAT	N.DAT
<i>je</i> -pronoun	je-mu	je-mu
<i>ni</i> -pronoun	nie-mu	nie-mu
DEM	te-mu	te-mu

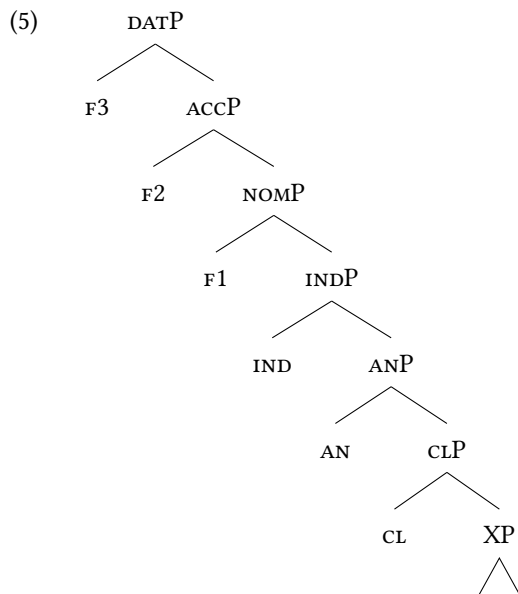
The table shows three forms in which there is a syncretism between the neuter and the masculine in the dative case. The complete pronouns are syncretic. I set up a system that can derive the syncretism between the two genders. Doing this allows me to establish which features the morpheme *mu* spells out.

I discussed in Chapter 3 that syncretisms can be derived in Nanosyntax via the Superset Principle. The lexicon contains a lexical entry that is specified for the form that corresponds to the most features. To illustrate this, I repeat the lexical entry for the Dutch *jullie* ‘you’ in (4).



Jullie is syncretic between nominative, accusative and dative. It is specified for dative in the lexicon, it is the most complex case of the three. The nominative, the accusative and the dative second person plural in Dutch are spelled out as *jullie*, because the DATP, the ACCP and the NOMP are all contained in the lexical tree in (4) (Superset Principle), and there is no more specific lexical entry available in Dutch (Elsewhere Condition). Importantly, the potentially unused features (so the F3 or F3 and the F2) are at the top, so that the constituent that needs to be spelled out is still contained in the lexical tree.

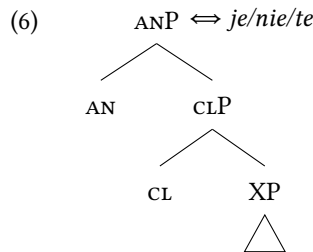
In what follows, I show how I can derive the syncretisms for the forms in Table 8.2. I propose that *jemu*, *niemu* and *temu* spell out the syntactic structure in (5).



I do not discuss the feature content that distinguishes *jemu*, *niemu* and *temu*, but I call them XP. Following the functional sequence I suggested in Chapter 7, all forms

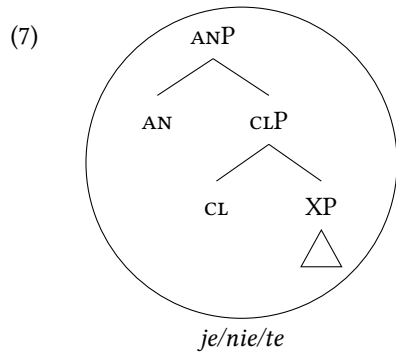
contain the feature CL for inanimate/neuter gender, AN for animate/masculine gender and IND for singular number and case features up to the dative.

The forms *jemu*, *niemu* and *temu* are syncretic between the masculine and the neuter. This can be captured if the highest feature in the lexical tree is the feature that distinguishes masculine and neuter gender. This distinguishing feature is the feature AN (Harley and Ritter, 2002), which is not the the highest feature in (5). Fortunately, different from *jullie*, *jemu*, *niemu* and *temu* are bimorphemic: they contain morphemes *je*, *nie* or *te* and the morpheme *mu*. The highest feature of one of the two morphemes needs to be the feature AN. I suggest that this is the case for *je*, *nie* and *te* is AN, as shown in (6).



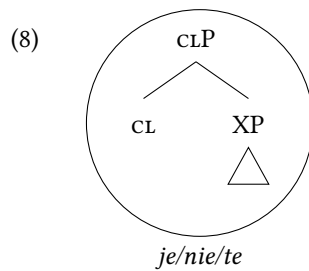
Since the feature AN can be either present or absent, the forms can easily spell both the structure with or without the feature AN.

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



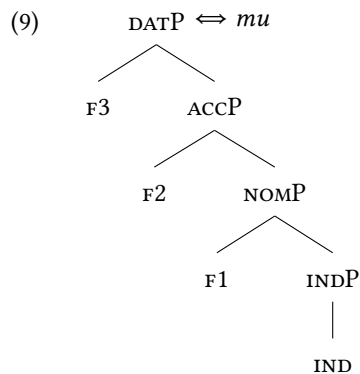
The syntactic structure forms a constituent within the lexical tree in (6), and the structure can be spelled out as *je/nie/te*.

In (8), I give the syntactic structure of a neuter form.



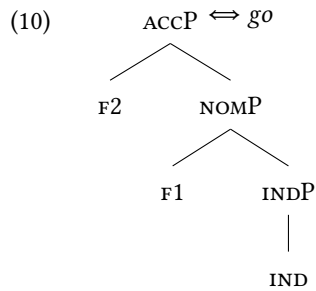
Again, the syntactic structure forms a constituent within the lexical tree in (6), and the structure can be spelled out as *je/nie/te*.

This means that the lexical tree for the suffix *mu* should contain all features in (5) that are not spelled out by *je/nie/te* so far. These are the feature IND and all case features up to the dative. I give the lexical entry for *mu* in (9).



Notice here that *mu* has a unary bottom, just as the morpheme *e:l* in Khanty (see Chapter 3 and Chapter 6). Therefore, it can be inserted as the result of movement. It also means that the inserted phonology form follows the already present phonology and is spelled out as a suffix. This is how the correct order of *je/nie/te* and *mu* comes about. I illustrate the movement operation and how it is a step of the Spellout Algorithm later on in this section.

The morpheme *go* is identical to the morpheme *mu*, except for that it expresses accusative case instead of dative case. Therefore, the morpheme *go* differs from *mu* in that it lacks the feature F3 in its lexical entry, as shown in (10).



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 environments, even though it does not surface. 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. From the genitive on, the final suffixes in the animate and the inanimate paradigm are the same.¹ The forms differ in their initial consonant and the vowel. The animates have a *k* and an *o* or *i*, and the inanimates have a *cz* and a *e* or *y*.

There are several ways to analyze this. The first possibility is to not decompose the portion before the suffix. Under this analysis, Polish has the morphemes *ko*,

¹I include genitive and the instrumental in the paradigms to show that the patterns observed in the dative are not standing on themselves. Instead, they are more generally attested in Polish, and they deserve an explanation. In Polish, the genitive comes between the accusative and the dative, i.e. it is more complex than the accusative and less complex than the dative. However, I do not incorporate them in the syntactic structures. This does not change anything about the main point about case I want to make: the dative is more complex than the accusative.

ki, *cze* and *czy*. The point that is missed is that the animates always have a *k* and inanimates always have a *cz*.

A second possibility that captures this observation is an analysis in which Polish has the morphemes *k*, *o*, *i* and *cz*, *e* and *y*.² What is not captured now is that numerous *wh*-elements in Polish start with a *k*. I give some examples in (11).³

- (11) a. *k-tóry*
which
b. *k-iedy*
when
c. *g-dzie*
where

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

Moreover, *cz* is not a primary consonant in Polish but a derived one (Swan 2002: 23). The consonants *cz* and *c* are derived from *k*.

I propose that the *k* is underlyingly present in the inanimate relative pronouns. They appear as a consequence of being combined with an *i*.⁴ I show the proposed decomposition in Table 8.4.

Table 8.4: Polish (in)animate relative pronouns (underlying forms) (Swan 2002: 160)

	AN	INAM
NOM	<i>kto</i>	<i>k-i-o</i>
ACC	<i>k-o-go</i>	<i>k-i-o</i>
GEN	<i>k-o-go</i>	<i>k-i-o-go</i>
DAT	<i>k-o-mu</i>	<i>k-i-o-mu</i>
INS	<i>k-i-m</i>	<i>k-i-i-m</i>

Under this analysis, Polish only has the morphemes *k*, *o* and *i* that can be observed in the animate plus an *i* that is present throughout the whole paradigm in the inanimate.⁵ I put the underlying forms and the surface form side by side in Table 8.5.

²This is more or less what Wiland (2019) proposes.

³The *k* in (11c) gets voiced into *g* because it is followed by *d*.

⁴In this dissertation I do not discuss the exact feature content that corresponds to *i*. I assume it spells out features that have to do with being strong pronouns. For why the morpheme is not inserted in animate relative pronouns, see footnote 8 of this chapter.

⁵As first sight, there seems to be a contradiction here: the inanimate is featurally speaking less 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 8 of this chapter

Table 8.5: Polish inanimate relative pronouns (underlying + surface forms) (Swan 2002: 160)

	underlying	surface
NOM	k-i-o	c-o
ACC	k-i-o	c-o
GEN	k-i-o-go	cz-e-go
DAT	k-i-o-mu	cz-e-mu
INS	k-i-i-m	cz-y-m

The sequence *k-i-i* becomes *czy* in the instrumental, and the sequence *k-i-o* becomes *cze* in the genitive and dative.⁶ To get from the underlying form to the surface form, several phonological processes are taking place, which are all independently observed within Polish. I start with *k* becoming *c* when it precedes *i*, as shown in (12).

(12) /k/ → /c/ / ____ /i/

Consider the paradigm for the singular of *lampa* ‘light’ and the singular of *córka* ‘daughter’ in Table 8.6.

Table 8.6: Polish nouns (Swan 2002: 47,57)

	light.sg	daughter.sg
NOM	lamp-a	córk-a
ACC	lamp-ę	córk-ę
GEN	lamp-y	córk-i
DAT	lamp-i-e	córc-e
INS	lamp-ą	córk-ą

The stem and the suffixes are identical in both paradigms, except for in the dative.⁷ There, the stem of *córka* does no longer end with a *k*, but with a *c*. Also, part of the suffix, namely the *i* has disappeared. Analyzing *córc-e* as *córk-i-e* brings back regularity in the paradigm.

to show how this apparent contradiction can be resolved. hoi

⁶Under this analysis, the WH-element *czyj* ‘whose’ is underlyingly *k-i-i-j*.

⁷There is also the change from /i/ to /y/ in the genitive of *lampa*.

Consider the forms after this first phonological change and the surface forms in Table 8.7.

Table 8.7: Polish inanimate relative pronouns (after change 1 + surface forms) (Swan 2002: 160)

	after change 1	surface
NOM	c-i-o	c-o
ACC	c-i-o	c-o
GEN	c-i-o-go	cz-e-go
DAT	c-i-o-mu	cz-e-mu
INS	c-i-i-m	cz-y-m

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

- (13) a. /c/ + /i/ + /i/ → /czy/

Assuming that the two *is* merge into one, this change can be independently observed in (14).

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

(Swan 2002: 26)

The noun *walc* ‘waltz’ combines with the diminutive marker *ik*. The sequence *c-ik* changes to *czyk*.

Consider the forms after this second phonological change and the surface forms in Table 8.8.

Table 8.8: Polish inanimate relative pronouns (after change 1 + surface forms) (Swan 2002: 160)

	after change 1	surface
NOM	c-i-o	c-o
ACC	c-i-o	c-o
GEN	c-i-o-go	cz-e-go
DAT	c-i-o-mu	cz-e-mu
INS	cz-y-m	cz-y-m

The last phonological change is the combination of *c*, *i* and *o* becoming *cze* in the genitive and dative.

- (15) a. $/c/ + /i/ + /o/ \rightarrow /cze/$

Note, however, that the *co* in the nominative and the accusative does not become *cze*. I assume that the *o* in the nominative and accusative resists the process in (15). This is because the *o* in the nominative and accusative is a ‘different’ *o* than the *o* in the genitive and dative. This *o* spells out different features than the *o*, such as nominative and accusative case, which in the case of the genitive and dative are realized by *go* and *mu*.

I am not aware of an example that independently shows this change as a whole. However, there are examples that show the change step by step. That is, I have an example in which the combination of *i* and *o* becomes *e*, and I have an example in which *c* and *e* become *cze*. I give them in

- (16) a. $/i/ + /o/ \rightarrow /e/$
 (i) $/c/ + /e/ \rightarrow /cze/$

Consider the paradigm for the singular of *biurko* ‘desk’ and the singular of *słońce* ‘sun’ in Table 8.9.

Table 8.9: Polish nouns (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*. Analyzing *słońc-e* as *słońc-i-o* brings back regularity in the paradigm.

I give the example in which the combination of *c* and *e* results in *cze* in (17).

- (17) ojc-e: ojcz-e
 father-voc father.voc

(Swan 2002: 26)

The noun *ojc* ‘father’ combines with the vocative marker *e*. The sequence *c-e* changes

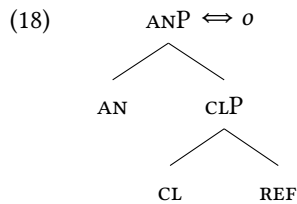
to *cze*.

The conclusion I draw from this rather long reasoning is that the morpheme *o* is not specific to animate relative pronouns, but it also appears elsewhere, for instance in inanimate relative pronouns, demonstratives and in the *ni*- and *je*-pronouns, as shown in Table 8.10.

Table 8.10: Polish dative pronouns (underlying and surface)

	underlying	surface
DEM	t-i-o-mu	t-e-mu
<i>nie</i> -pronoun	ni(-i)-o-mu	n-i-e-mu
<i>je</i> -pronoun	j(-i)-o-mu	j-e-mu

What these elements all have in common is that they are pronouns. Moreover, they can all appear in both animate and inanimate gender. Therefore, I assume that the *o* spells out pronominal features and gender features. I give the lexical entry in (18).



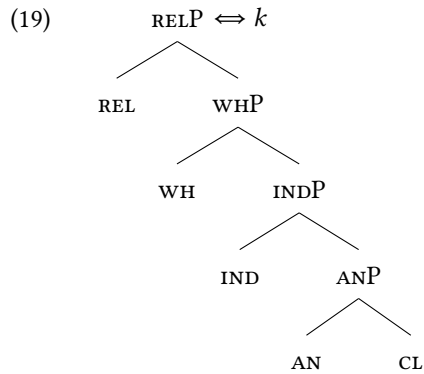
Finally, I discuss morpheme *k*. This morpheme corresponds to what I called the *REL*-feature in Chapter 6 and in the introduction to this chapter. I argue that this morpheme actually spells out the operator features *WH* and *REL* and number and gender features.

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

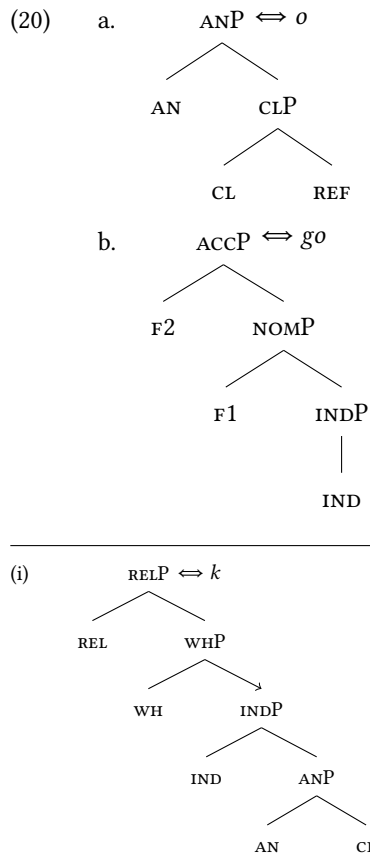
Finally, since the relative pronouns do not have a morphological plural, I assume that *k* contains the feature *IND*. Lastly, I assume that *k* also contains the features *AN* and *CL*. For this I do not have any independent support. I make this assumption to make room for the *i* to be inserted in the inanimate.⁸

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

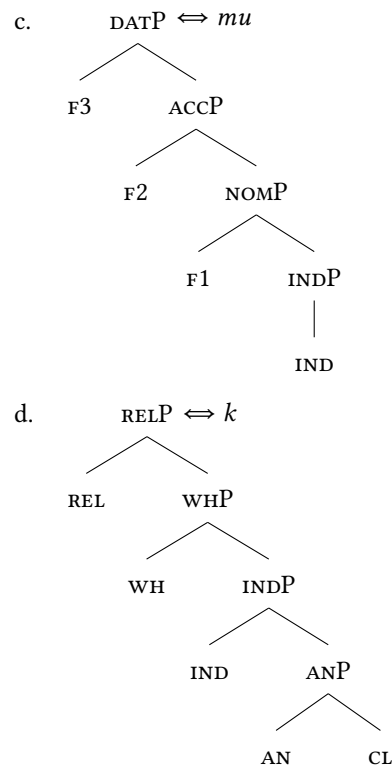
⁸ To be able to derive the inanimate relative pronoun, I also assume that there is a pointer in the lexical entry for *k*, as shown in (i).



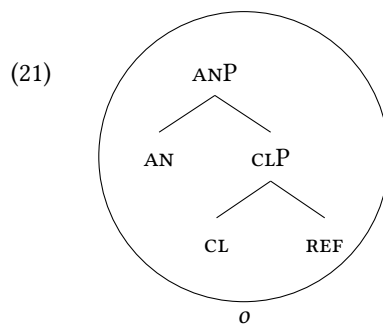
In what follows, I show how the Polish relative pronouns are constructed. I follow the same functional sequence as I did for Modern German. Also, of course, the spellout procedure is identical. The outcome is different because of the different lexical entries Polish has. I repeat the available lexical entries in (20).



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



Starting from the bottom, the first two features that are merged are REF and CL, creating a CLP. The syntactic structure forms a constituent in the lexical tree in (20a), which corresponds to *o*. Therefore, the CLP is spelled out as *o*, which I do not show here. Then, the feature AN is merged, and an ANP is created. The syntactic structure forms a constituent in the lexical tree in (20a). Therefore, the ANP is spelled out as *o*, shown in (21).



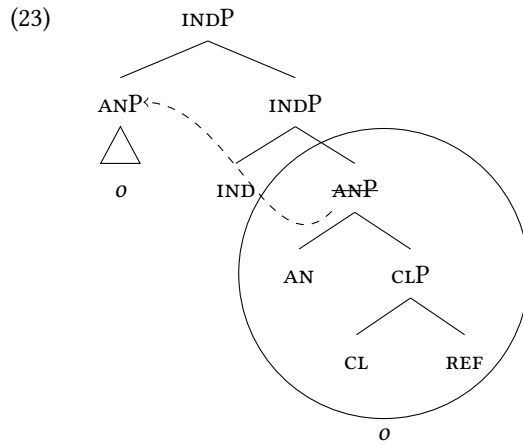
The next feature in the functional sequence is the feature IND. It is merged, and an INDP is created. This syntactic structure does not form a constituent in the lexical tree in (20a). There is no other lexical tree that contains the syntactic structure as a constituent. Therefore, there is no successful spellout for the syntactic structure in

the derivational step in which the structure is spelled out as a single phrase ((22a) in the Spellout Algorithm, repeated from Chapter 7).

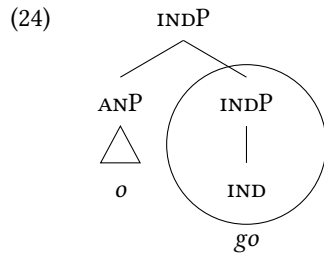
(22) **Spellout Algorithm** (as in Caha 2020a, based on Starke 2018)

- 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 (22b). As there is no specifier in this structure, the first movement option irrelevant. The second movement option in the Spellout Algorithm is moving the complement, as described in (22c). In this case, the complement of *IND*, the *ANP*, is moved to the specifier of *INDP*. I show this movement in (23).⁹

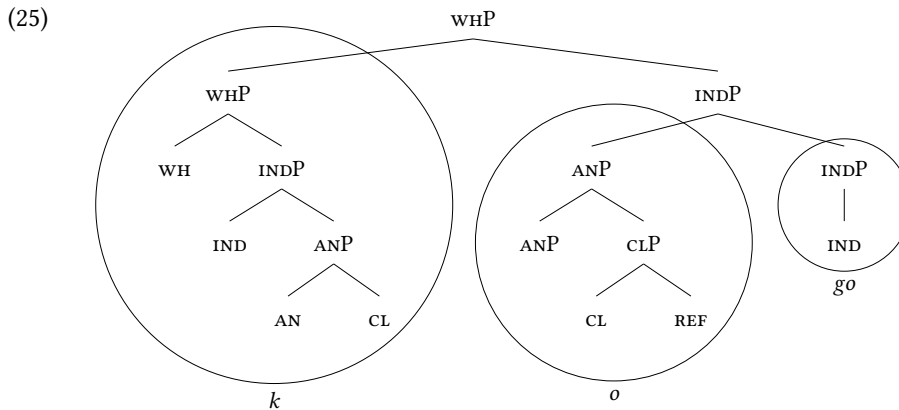


The *INDP* has a different internal syntax now. It still contains the feature *IND*, but the *ANP* is no longer a sister of *IND*. Now the *ANP* is moved away, the *INDP* forms a constituent in the lexical tree of (20b). Therefore, the *INDP* is spelled out as *go*, as shown in (24).



⁹In its landing position the internal structure of the *ANP* is no longer shown (to save some space), and its phonological form is placed under the triangle. The strikethrough of the lower *ANP* indicates that the complement of *IND* disappears.

Next, the feature *WH* is merged. The derivation for this feature resembles the derivation of *WH* in Modern German. The feature is merged with the existing syntactic structure, creating a *WHP*. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Therefore, in a second workspace, the feature *WH* is merged with the feature *IND* (the previous syntactic feature on the functional sequence) into a *WHP*. This syntactic structure does not form a constituent in any of the lexical trees in the language's lexicon. Therefore, the feature *WH* combines not only with the feature merged before it, but with a phrase that consists of the two features merged before it: *IND* and *AN*. Also this syntactic structure does not form a constituent in any of the lexical trees in the language's lexicon. Therefore, the feature *WH* combines with a phrase that consists of the three features merged before it: *IND*, *AN* and *CL*. This syntactic structure forms a constituent in the lexical tree in (20d), which corresponds to the *k*. Therefore, the *WHP* is spelled out as *k*. The newly created phrase is merged as a whole with the already existing structure, and projects to the top node, as shown in (25).

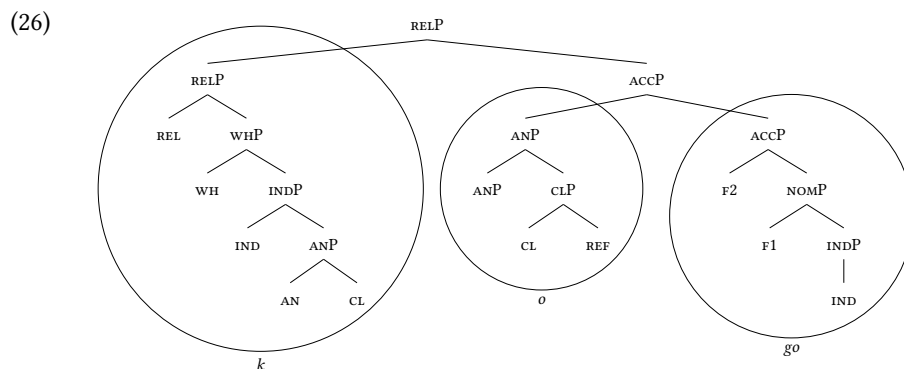


The next feature in the functional sequence is the feature *REL*. The derivation for this feature resembles the derivation of *REL* in Modern German. The feature is merged with the existing syntactic structure, creating a *RELP*. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the *WHP* from the *INDP*. The feature *REL* is merged in both workspaces, so with *WHP* and with *INDP*. The spellout of *REL* is successful when it is combined with the *WHP*. It namely forms a constituent in the lexical tree in (20d), which corresponds to the *k*. The *RELP* is spelled out as *k*, and it is merged back to the existing syntactic structure.

The next feature on the functional sequence is *F1*. This feature should somehow end up merging with *INDP*, because it forms a constituent in the lexical tree in (20b),

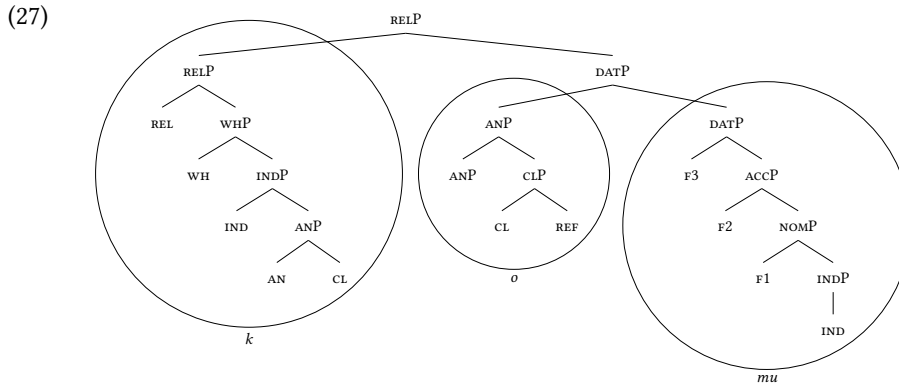
which corresponds to the *go*. This is achieved via Backtracking in which phrases are split up and going through the Spellout Algorithm. I go through the derivation step by step. The feature F1 is merged with the existing syntactic structure, creating a NOMP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the INDP. The feature F1 is merged in both workspaces, so with the RELP and and with the INDP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon. The first movement option in the Spellout Algorithm is moving the specifier. In the RELP there is no specifier, so this movement option is irrelevant. In the INDP, however, there is a specifier, which is moved to the specifier of NOMP. This syntactic structure forms a constituent in the lexical tree in (20b), which corresponds to the *go*. The NOMP is spelled out as *go*, and the NOMP is merged back to the existing syntactic structure.

For the accusative relative pronoun, the last feature on the functional sequence is the feature F2. Its derivation proceeds the same as the one for the feature F1. The feature F2 is merged with the existing syntactic structure, creating a ACCP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the NOMP. The feature F2 is merged in both workspaces, so with the RELP and and with the NOMP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon. The first movement option in the Spellout Algorithm is moving the specifier. In the RELP there is no specifier, so this movement option is irrelevant. In the NOMP, however, there is a specifier, which is moved to the specifier of ACCP. This syntactic structure forms a constituent in the lexical tree in (20b), which corresponds to the *go*. The ACCP is spelled out as *go*, and the ACCP is merged back to the existing syntactic structure, as shown in (26).



For the dative relative pronoun, the last feature on the functional sequence is the

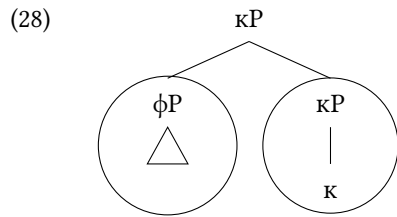
feature F3. Its derivation proceeds the same as the one for the feature F2. The feature F3 is merged with the existing syntactic structure, creating a DATP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the ACCP. The feature F3 is merged in both workspaces, so with the RELP and and with the ACCP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon. The first movement option in the Spellout Algorithm is moving the specifier. In the RELP there is no specifier, so this movement option is irrelevant. In the ACCP, however, there is a specifier, which is moved to the specifier of DATP. This syntactic structure forms a constituent in the lexical tree in (20c), which corresponds to the *mu*. The DATP is spelled out as *mu*, and the DATP is merged back to the existing syntactic structure, as shown in (27).



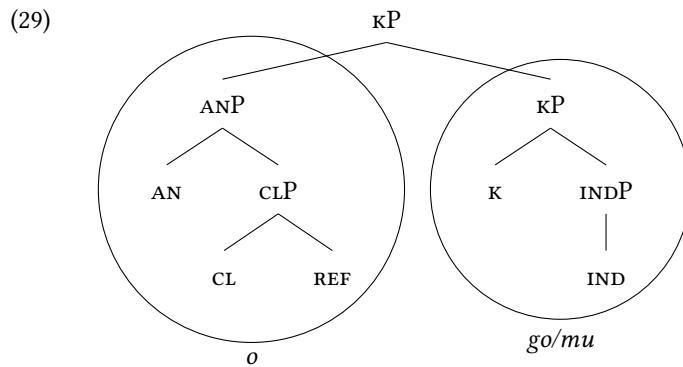
To summarize, I decomposed the relative pronoun into three morphemes: *k*, *o* and the suffix (*go* and *mu*). I showed which features each of the morphemes spells out and what the internal syntax looks like that they are combined into. It is this internal syntax that determines whether the light head 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 structurally contained in the other one. In the introduction of this chapter, I claimed that the internal syntax of light heads in Polish looks as shown in (28).



In Chapter 6, I suggested that light heads consist of at least two features: ϕ and κ . In this section, I determine the exact feature content of the light head. As I suggested in Chapter 7 for Modern German, I end up claiming that the phi and case features of the relative pronoun is the light head in headless relatives. I show the complete structure that I work towards in this section in (29).



For Modern German, I considered two kinds of headless relatives as the source of the headless relative. First, the headless relative is derived from an existing light-headed relative, and the deletion of the light head is optional. Second, the headless relative is derived from a light-headed relative that does not surface in Polish, and the deletion of the light head is obligatory. For Modern German I concluded it was the second, and I determined which features this extra light head should consist of. I do the same investigation for Polish, and I reach the same conclusion as I did for Modern German.

Consider the existing Polish light-headed relative in (30).

- (30) Jan śpiewa to, co Maria śpiewa.
 Jan sings DEM.M.SG.ACC RP.AN.ACC Maria sings
 'John sings what Mary sings.' (Polish, Citko 2004: 103)

This light-headed relative, in which the demonstrative is the light head, 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 (31).

- (31) Jan śpiewa co -kolwiek Maria śpiewa.
 Jan sings RP.AN.ACC ever Maria sings
 ‘Jan sings everything Maria sings.’ (Polish, Citko 2004: 116)

Light-headed relatives do not allow this morpheme to be inserted, illustrated in (32).

- (32) *Jan śpiewa to, co -kolwiek Maria śpiewa.
 Jan sings DEM.M.SG.ACC RP.AN.ACC ever Maria sings
 ‘John sings what Mary sings.’ (Polish, Citko 2004: 116)

just as for Modern German, I assume that the headless relative is not derived from an ungrammatical structure.¹⁰

The second argument against the existing light-headed relatives being the source of headless relatives comes from their interpretation. Headless relatives have two possible interpretations, and light-headed relatives have only one of these. just 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 (30), only have the definite interpretation.

In the remainder of this section, I discuss the two extra light heads that I compare the internal syntax of in Section 8.3. They are the accusative animate and the dative animate, shown in (33).

- (33) a. o-go
 ELH.AN.ACC

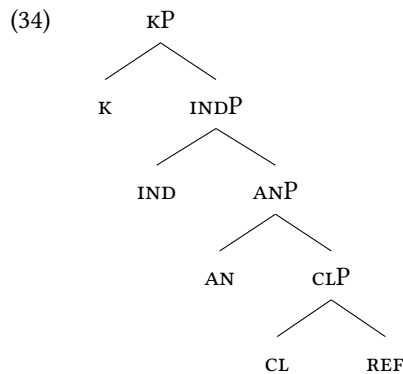
¹⁰Citko (2004) takes the complementary distribution of *kolwiek* ‘ever’ and the light head to mean that they share the same syntactic position. I have nothing to say about the exact syntactic position of *ever*, but in my account it cannot be the head of the relative clause, as this position is reserved for the extra light head. My reason for the incompatibility of *ever* and the light head is that they are semantically incompatible.

For concreteness, I assume *ever* to be situated within the relative clause. Placing it in the main clause generates a different meaning, illustrated by the contrast in meaning between (ia) and (ib) in Czech.

- (i) a. Sním co -koliv mi uvaříš.
 eat.1sg what ever I.DAT cook.2sg
 ‘I will eat whatever you will cook for me.’
 b. Sním co -koliv, co mi uvaříš.
 eat.1sg what ever what I.DAT cook.2sg
 ‘I will eat anything that you will cook for me.’ (Czech, Šimík 2016: 115)

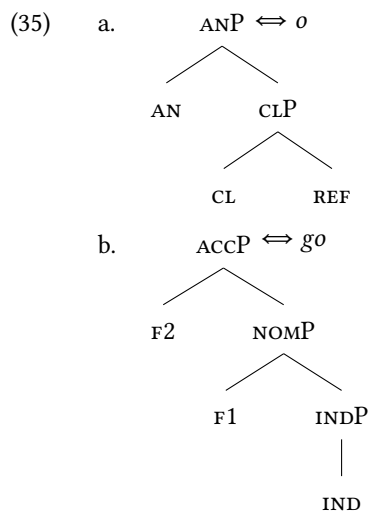
- b. o-mu
ELH.AN.DAT

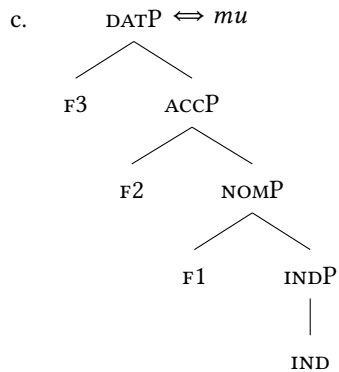
In Chapter 7, I showed that the relative pronoun contains two features more than the extra light head, namely *WH* and *REL*. This means that the functional sequence for the extra light head is as shown in (34).



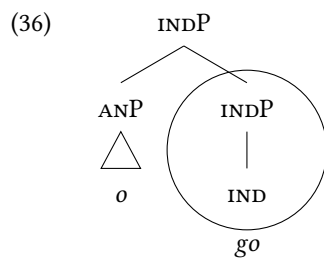
The functional sequence contains the pronominal feature *REF*, the gender features *CL* and *AN*, the number feature *IND* and case features *κ*.

I introduced the lexical entries that are required to spell out these features in Section 8.1. I repeat them in (35).

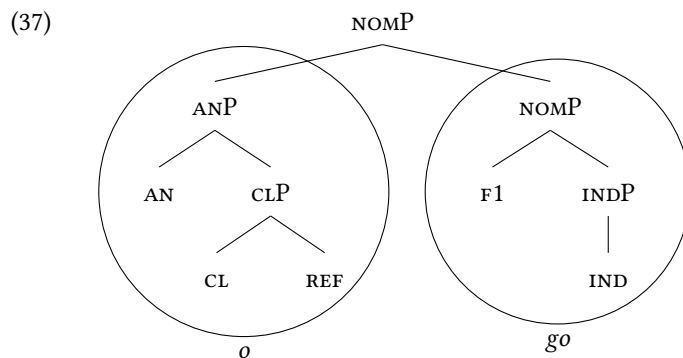




In what follows, I construct the Polish extra light heads. Until the feature `IND`, the derivation is identical to the one of the relative pronoun. I give the syntactic structure at that point in (36).

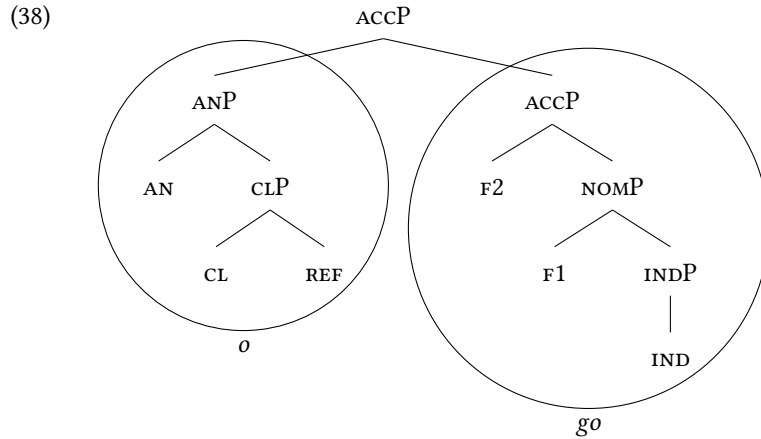


Then, the feature `F1` is merged. The feature `F1` is merged with the `INDP`, forming an `NOMP`. This phrase is not contained in any of the Polish lexical entries. The first movement is tried, and the specifier of the `INDP`, the `ANP`, is moved to the specifier of `NOMP`. This phrase is contained in the lexical tree in (35b), so it is spelled out as *go*, as shown in (37).

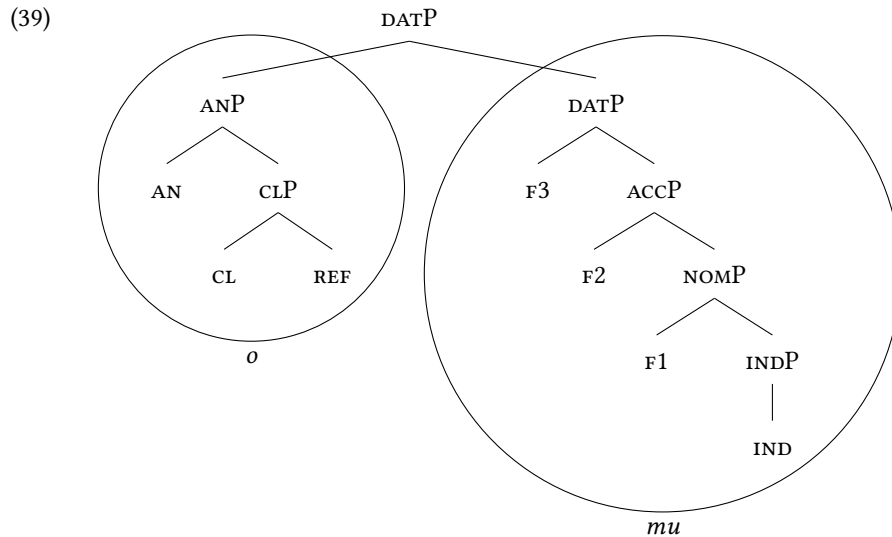


For the accusative extra light head, the last feature is merged: the `F2`. The feature is merged with the `NOMP`, forming an `ACCP`. This phrase is not contained in any of the lexical entries. The first movement is tried, and the specifier of the `NOMP`, the `ANP`, is

moved to the specifier of ACCP. This phrase is contained in the lexical tree in (35b), so it is spelled out as *go*, as shown in (38).



For the dative relative pronoun, one more feature is merged: the F3. The feature is merged with the ACCP, forming an DATP. This phrase is not contained in any of the lexical entries. The first movement is tried, and the specifier of the ACCP, the ANP, is moved to the specifier of DATP. This phrase is contained in the lexical tree in (35c), so it is spelled out as *mu*, as shown in (39).



In sum, Polish headless relatives are derived from a light-headed relative with 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 comparison for Polish specifically, and that the content of the internal syntax that is being compared is motivated earlier in this chapter.

I give three examples, in which the internal and external case vary. I start with an example with matching cases, in which the internal and the external case are both accusative. Then I give an example in which the internal dative case is more complex than the external accusative case. I end with an example in which the external dative case is more complex than the internal accusative case. I show that the first example is grammatical and that the last two are not. I derive this by showing that only in the first situation the light head is 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.

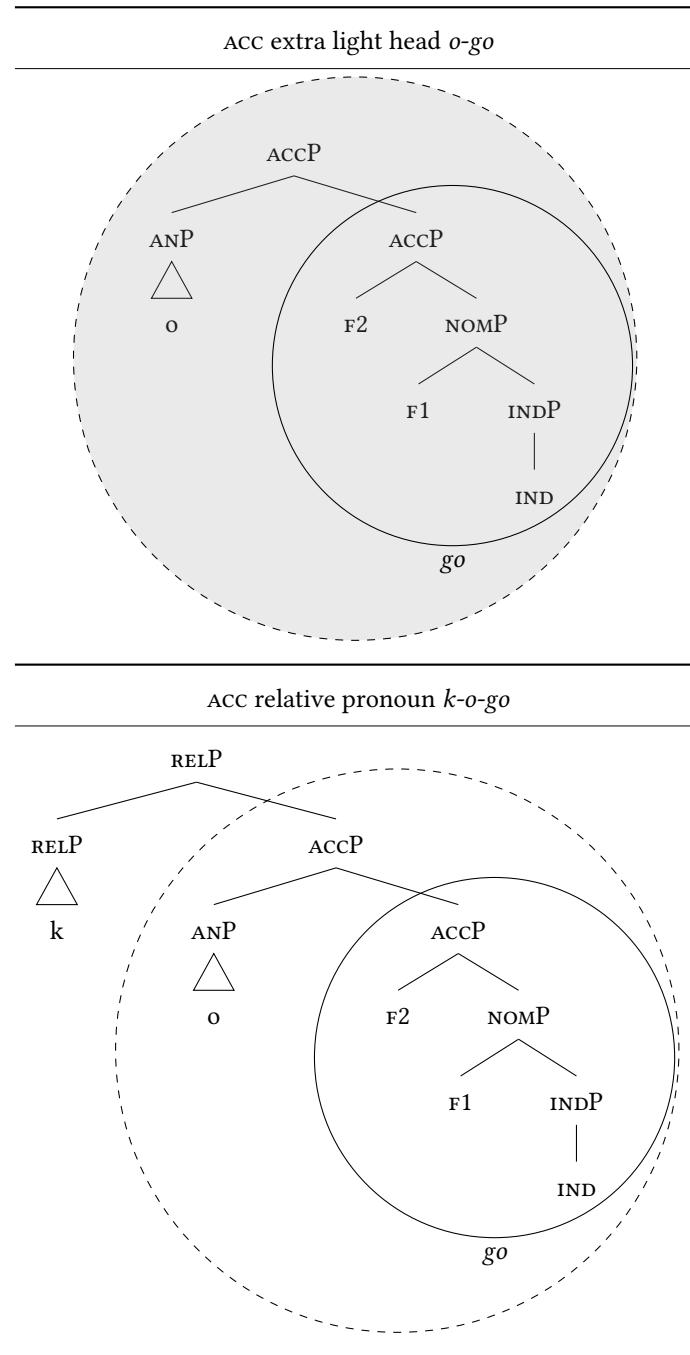
I start with the matching cases. Consider the example in (40), in which the internal accusative case competes against the external accusative case. The relative clause is marked in bold. The internal case is accusative, as the predicate *lubić* ‘to like’ takes accusative objects. The relative pronoun *kogo* ‘RP.AN.ACC’ appears in the accusative case. This is the element that surfaces. The external case is accusative as well, as the predicate *lubić* ‘to like’ also takes accusative objects. The extra light head *ogo* ‘ELH.AN.ACC’ appears in the accusative case. It is placed between square brackets because it does not surface.

- (40) Jan lubi [ogo] **kogo -kolkwiek** Maria lubi.
 Jan like.3SG_[ACC] ELH.ACC.AN.SG RP.ACC.AN ever Maria like.3SG_[ACC]
 ‘Jan likes whoever Maria likes.’
 (Polish, adapted from 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 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.

Figure 8.3: Polish EXT_{ACC} vs. $\text{INT}_{\text{ACC}} \rightarrow kogo$

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 pronoun is the relative pronoun that bears the internal case: *kogo*.

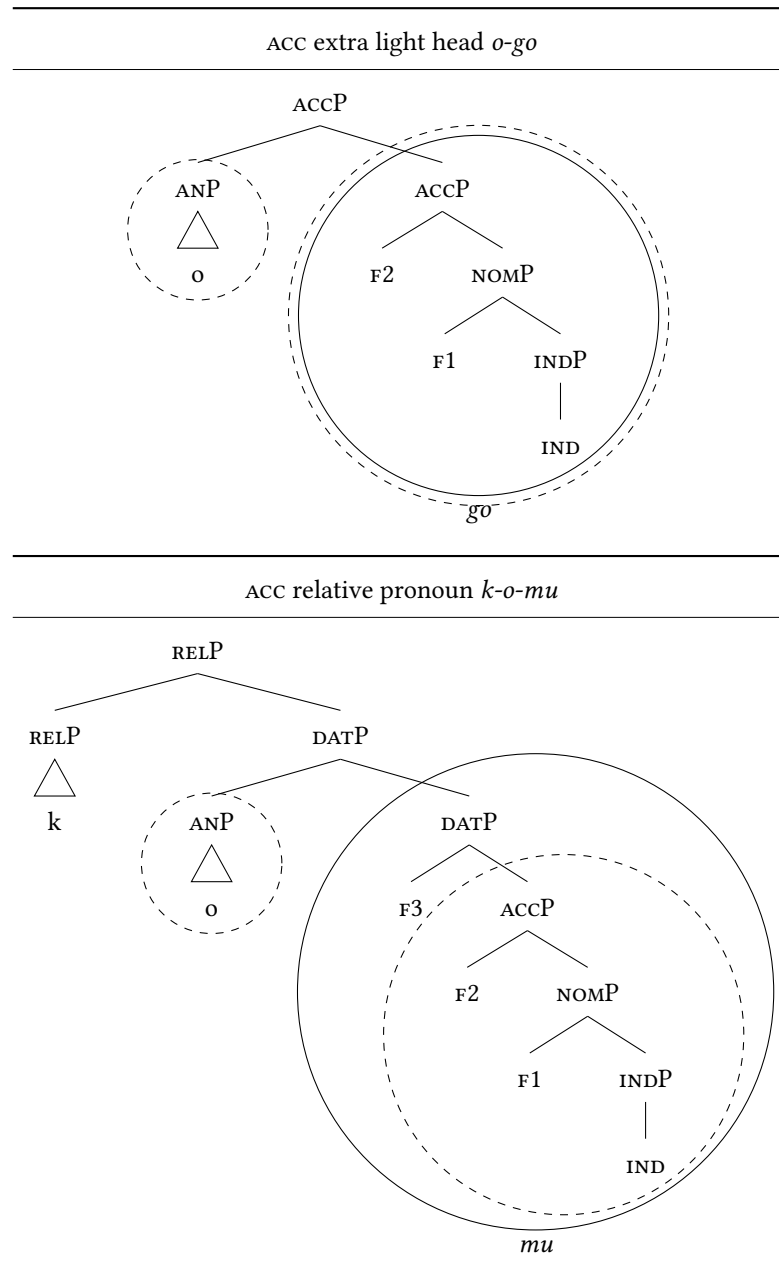
I continue with the example in which the internal case is more complex than the external case. Consider the examples in (41), in which the internal dative case competes against the external accusative case. The relative clauses are marked in bold. It is not possible to make a grammatical headless relative in this situation. The internal case is dative, as the predicate *dokuczać* ‘to tease’ takes dative objects. The relative pronoun *komu* ‘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. (41a) is the variant of the sentence in which the extra light head is absent (indicated by the square brackets) and the relative pronoun surfaces, which is ungrammatical. (41b) is the variant of the sentence in which the relative pronoun is absent (indicated by the square brackets) and the extra light head surfaces, which is ungrammatical too.

- (41) a. *Jan lubi [ogo] **komu** **-kolkwiek dokucza.**
 Jan like.3SG_[ACC] ELH.ACC.AN RP.DAT.AN.SG ever tease.3SG_[DAT]
 ‘Jan likes whoever he teases.’
 (Polish, adapted from Citko 2013 after Himmelreich 2017: 17)
- b. *Jan lubi ogo [komu] **-kolkwiek dokucza.**
 Jan like.3SG_[ACC] ELH.ACC.AN RP.DAT.AN.SG ever 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*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around 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 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 namely also contains the

Figure 8.4: Polish EXT_{ACC} vs. $\text{INT}_{\text{DAT}} \rightarrow \text{ogo/komu}$

domu.

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*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around 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 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 F3 that makes a DATP. Since the weaker feature containment requirement is not met, the stronger constituent containment requirement cannot be met either.

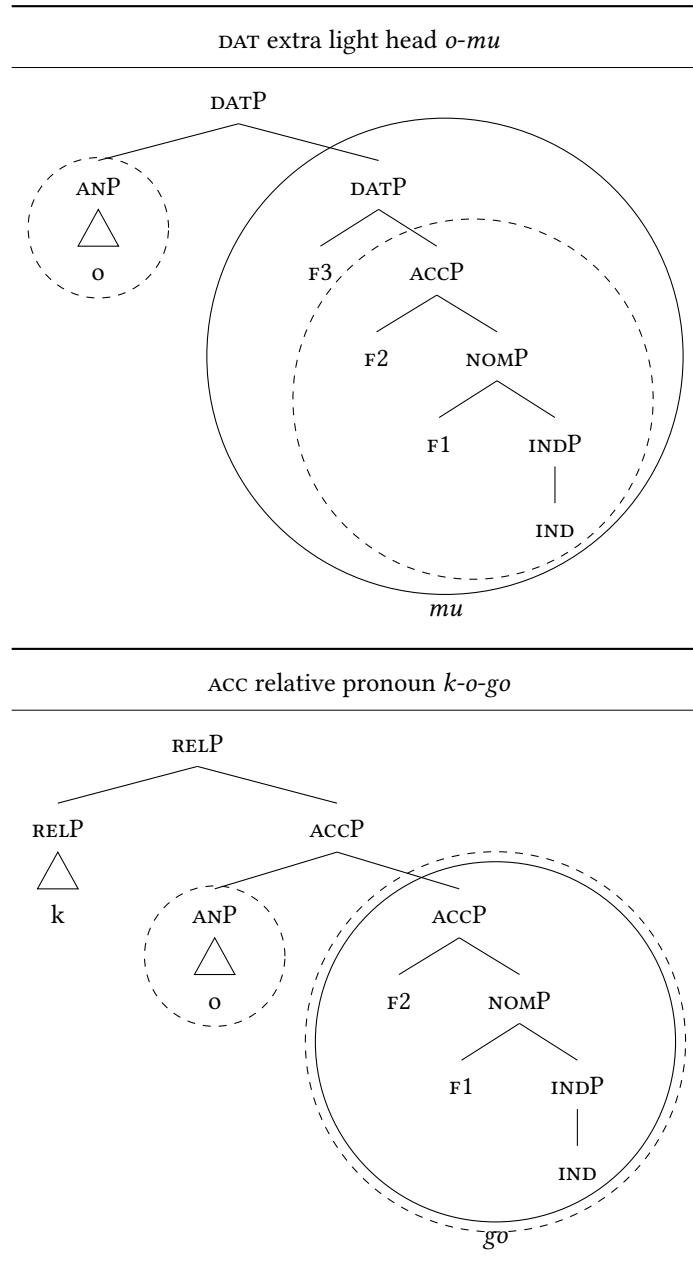
The relative pronoun is not a constituent that is structurally contained in the light head. It namely lacks the complete constituent RELP. Therefore, the extra light cannot be deleted, and the relative pronoun cannot be deleted either. As a result, there is no grammatical headless relative possible.

8.4 Summary

Polish is an example of a matching type of language. This means that headless relatives are grammatical in the language only when the internal and external case match.

I derive this from the internal syntax of light heads and relative pronouns in Polish. The features of the light head are spelled out by two lexical entries, which respectively spell out phi and case features. The features of the relative pronoun are spelled out by the same lexical entries plus one that amongst other spells out the relative feature. The internal syntax of the Polish light head and relative pronoun are shown in Figure 8.6.

A crucial characteristic of matching languages such as Polish is that they have separate morphemes for phi and case features. Therefore, the light head is 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.

Figure 8.5: Polish EXT_{DAT} vs. $\text{INT}_{\text{ACC}} \rightarrow o-mu/k-o-go$

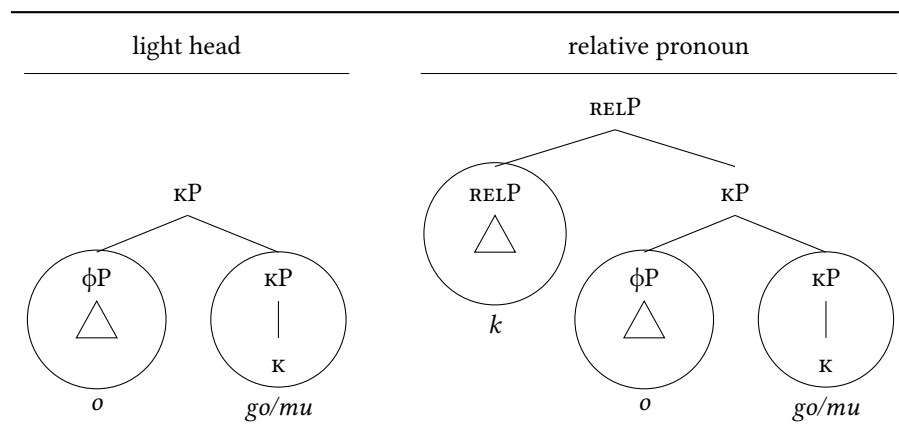


Figure 8.6: LH and RP in Polish (repeat ed)

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.

Chapter 9

Deriving the unrestricted type

In Chapter 6, I suggested that languages of the unrestricted type have two possible light heads, which are part of the derivation under different circumstances. The first possible light head derives the pattern correctly for 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 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.

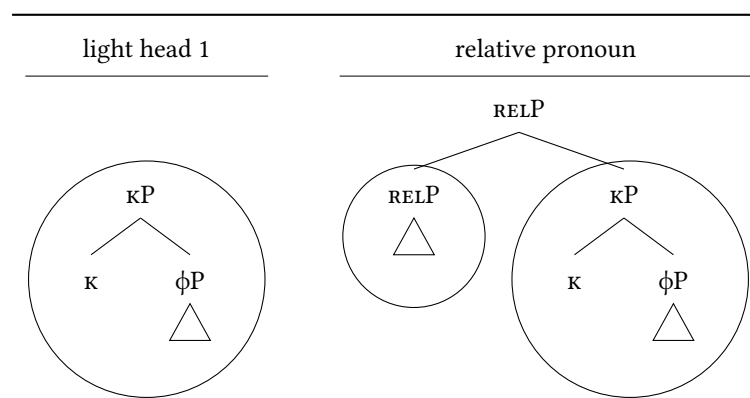


Figure 9.1: LH-1 and RP in the unrestricted type

These lexical entries lead to the grammaticality pattern shown in Table 9.1. Consider first the situation in which the internal and the external case match. The

Table 9.1: Grammaticality in the unrestricted type (part 1)

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

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 the internal case wins the case competition. Here the situation is identical to the one in the internal-only type of language too. The light head consists of a phi and case feature portmanteau. The relative pronoun consists of a phi and case feature portmanteau that contains at least one more case feature than the light head (κ_2 in Figure 9.1) plus an additional morpheme that spells out the feature REL. The lexical entries create a syntactic structure such that the light head is 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 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 (κ_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 Chapter 4, I showed that Old High German is a language of the unrestricted type. In this chapter, I show that Old High German has light heads and relative pronouns with the type of internal syntax described in Figure 9.1. I give a compact version of the structures in Figure 9.2.

Consider the first possible light head in Figure 9.2. 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 *ēr* or *ēn*, depending on which

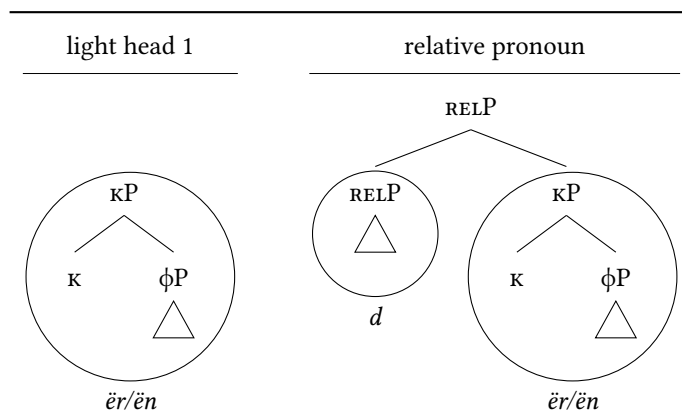


Figure 9.2: LH-1 and RP in Old High German

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.

The second possible light head differs from the first possible head in that it contains an additional feature X. The phi and case features are still spelled out by the phi and case portmanteau. The additional feature X is spelled out by its own lexical entry. The relative pronoun is spelled out by that same portmanteau plus a separate lexical entry that spells out the feature X and the feature REL. This means that the internal syntax of the second possible light head and the relative pronoun looks as shown in Figure 9.1.

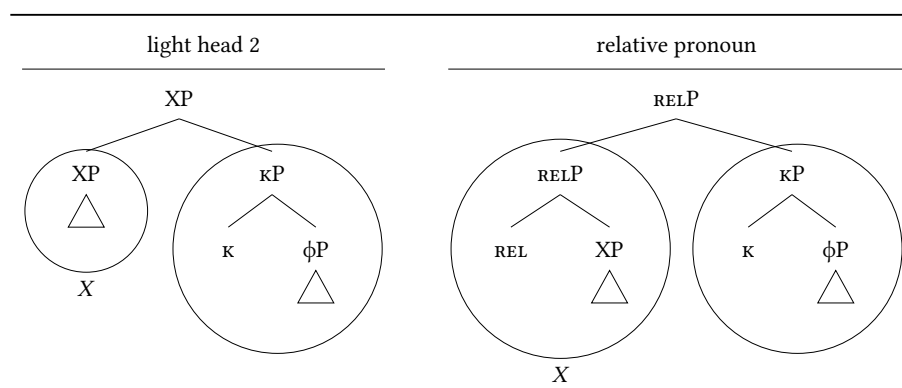


Figure 9.3: LH-2 and RP in the unrestricted type

These lexical entries lead to the grammaticality pattern shown in Table 9.2.

Table 9.2: Grammaticality in the unrestricted type (part 2)

situation	lexical entries		containment	deleted	surfacing
	LH-2	RP			
$\kappa_{\text{INT}} = \kappa_{\text{EXT}}$	/X/, /Y/	/X/, /Y/	form	RP	LH _{EXT}
$\kappa_{\text{INT}} > \kappa_{\text{EXT}}$	/X/, /Y/	/X/, /Z/	no	none	*
$\kappa_{\text{INT}} < \kappa_{\text{EXT}}$	/X/, /Y/	/X/, /Y/	form	RP	LH _{EXT}

Consider first the situation in which the internal and the external case match. The light head consists of a phi and case feature portmanteau plus a morpheme that spells out the feature X, which corresponds to phonological form *X*. The relative pronoun consists of the same phi and case feature morpheme and a morpheme that spells out the feature X and the feature REL, which corresponds to the phonological form *X* too. The lexical entries create a syntactic structure such that the light head and the relative pronoun are syncretic, so 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 plus a morpheme that spells out the feature X, which corresponds to phonological form *X*. The relative pronoun consists of a phi and case feature portmanteau that contains at least one more case feature than the light head (κ_2 in Figure 9.2) plus a morpheme that spells out the feature X and the feature REL, which corresponds to the phonological form *X* too. The lexical entries create a syntactic structure such that neither the light head nor the relative pronoun is structurally 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 plus case feature morpheme and a morpheme that spells out the feature X and the feature REL, which corresponds to the phonological form *X*. Compared to the relative pronoun, the light head lacks the feature REL and only the feature X spells out as *X*, and it contains at least one more case feature (κ_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

¹The 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. Later in this section I come back to why it is the relative pronoun that is deleted here and not the light head.

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 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.

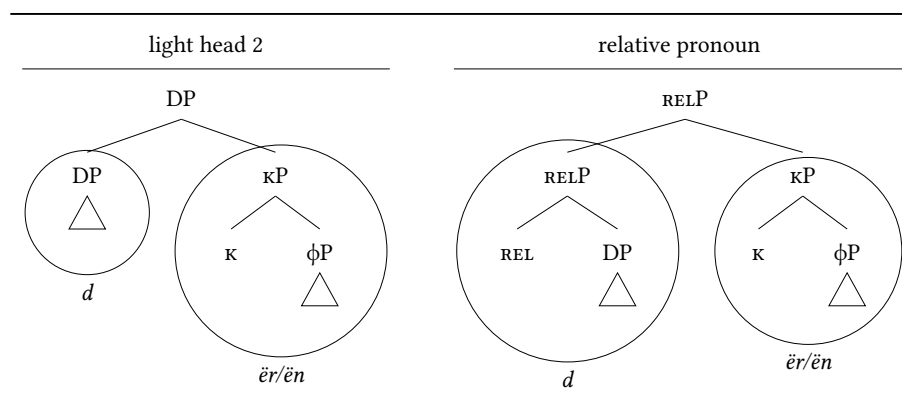


Figure 9.4: LH-2 and RP in Old High German

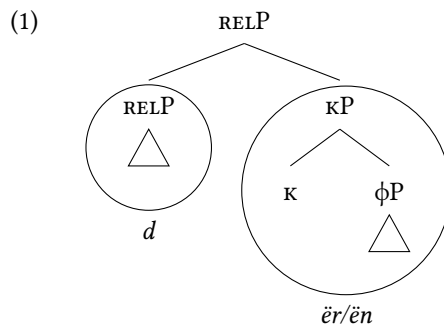
The feature I so far called X is replaced here by D. I come back to this in Section 9.1. Consider the second possible light head in Figure 9.4. The light heads (i.e. the phi and case features and the feature D) is spelled out by two morphemes, which are both circled. The feature D is spelled out as *d* and the phi and case features are spelled out as *ër* or *ën*, depending on which case they realize. Consider the relative pronoun in Figure 9.4. 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 D and the feature REL, again indicated by the circles. The constituent that spells out phi and case features has the same spellout as in the light head (*ër* or *ën*), and the RELP is spelled out as The DP on the light head: 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 de-

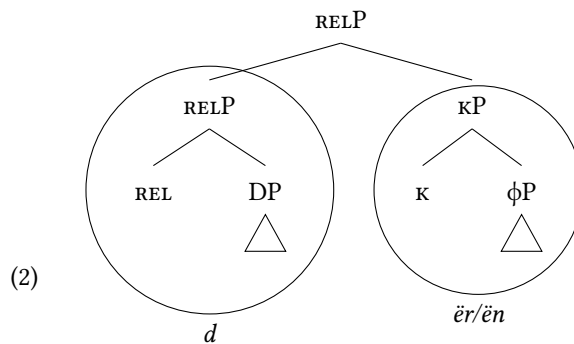
compose it into the two morphemes I showed in Figure 9.2 and Figure 9.4. Then I show which features each of the morphemes corresponds to. Next, I discuss the two possible light heads. The first possible light head is the extra light head, which does not surface as a light head in Old High German light-headed relatives, just as in Modern German and Polish. I show that the extra light head corresponds to one of the morphemes of the relative pronoun (the κP in Figure 9.2). The features that form the Old High German extra light head and relative pronoun are largely the same ones that form the Modern German and Polish extra light head and relative pronoun. The only difference in features is the wh operator feature from relative pronouns in Modern German and Polish is replaced by the feature D in Old High German. The second difference between the two languages is how the features are spelled out. The second possible head does surface as a light head in a Old High German light-headed relatives. This light head corresponds the κP in the relative pronoun plus the additional feature D (see Figure 9.4). The feature D is the only feature that is different in Old High German light heads compared to light heads in Modern German and Polish. Next, I compare the internal syntax of the extra light head and the light head to that of the relative pronoun. I show that the first possible 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 there are two possible light-headed relatives that 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

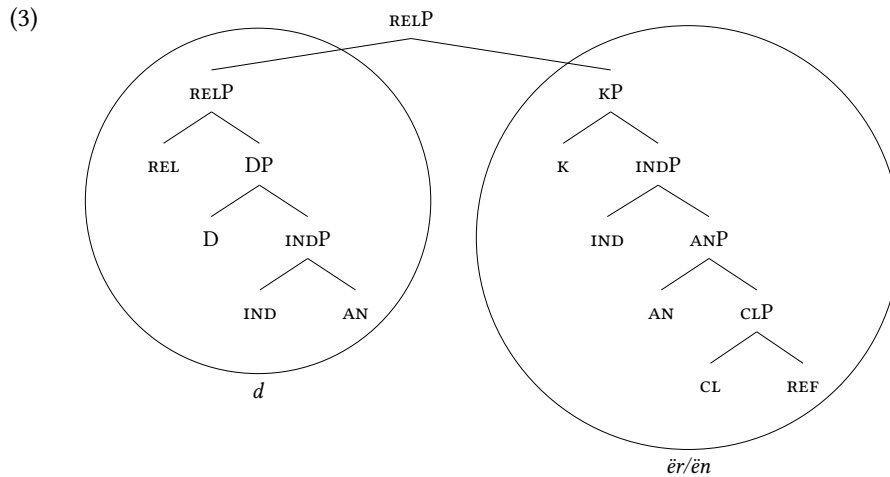
In the introduction of this chapter, I suggested in Figure 9.2 that the internal syntax of relative pronouns in Old High German looks as shown in (1).



In Figure 9.2, I suggested that the internal syntax of relative pronouns in Old High German looks as shown in (2).



In this chapter, I show that both structures show the internal syntax of relative pronouns in Old High German. The structure in (2) is a slightly more detailed version of (1). As I also showed in Chapter 7 for Modern German and in Chapter 8 for Polish, relative pronouns contain more features than only REL, ϕ and κ . In this section, I show that Old High German relative pronouns consist of the same features as in Modern German and Polish, except for that the operator feature WH is replaced by the feature D. Still, the crucial claim I made in Chapter 6 remains unchanged: unrestricted languages (of which Old High German is an example) have a portmanteau for the features that correspond to phi and case features and a morpheme that spells out the features that the first light head does not contain. I show the complete structure that I work towards in this section in (3).



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. I show them in (4).

- (4) 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 cases.²

The suffixes in Table 9.3 change depending on number, gender and case. These different suffixes can be observed in several contexts besides relative pronouns. Table 9.4 gives an overview of the adjective *jung* ‘young’ in Old High German.

For some forms, the table gives two different forms, the first one being nominal inflection and the second one being pronominal inflection (Braune, 2018). The pronominal endings are the same as can be observed in the Table 9.3. Note here that

² *d* can also be written as *dh* and *th*, *ër* and *ën* can also be *e* and *é* (Braune 2018: 339).

Table 9.3: Relative pronouns in Old High German (Braune 2018: 339)

	N.SG	M.SG	F.SG
NOM	d-az	d-ēr	d-iu
ACC	d-az	d-ēn	d-ea/d-ia
DAT	d-ēmu/d-ēmo	d-ēmu/d-ēmo	d-ēru/d-ēro
	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

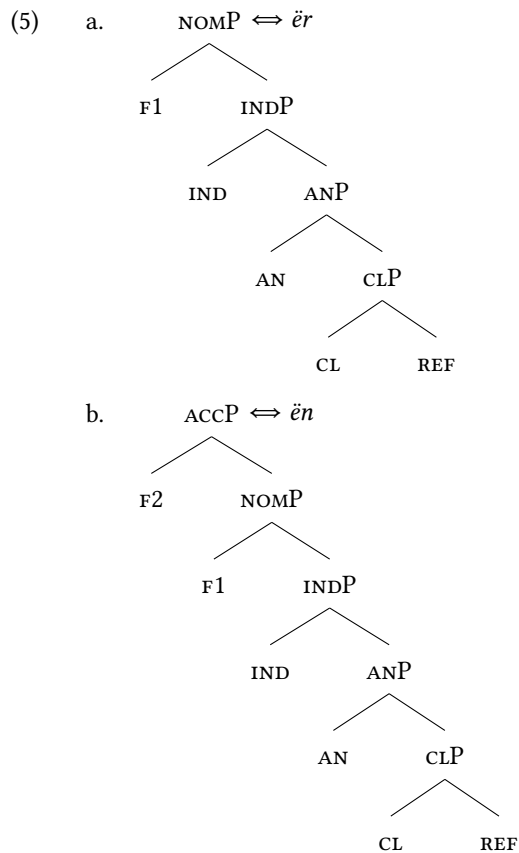
Table 9.4: Adjectives on *-a/-ō-* in Old High German Braune 2018: 300

	N.SG	M.SG	F.SG
NOM	jung, jung-az	jung, jung-ēr	jung, jung-iu
ACC	jung, jung-az	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

the situation in Old High German is slightly from the one in Modern German, in which only the final consonant expresses gender, number and case features.

Besides gender, number and case features, I assume that the suffix also contains pronominal features. I do 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 *dēs*-stem (Braune 2018: 342) and interrogatives (Braune 2018: 345).

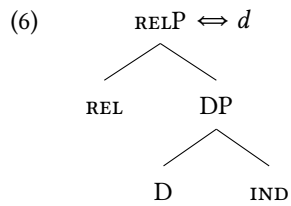
I give the lexical entries for *ēr* and *ēn* in (5a) and (5b). The *ēr* is the nominative masculine singular, so it spells out the features REF, CL, AN, IND and F1. The *ēn* is the accusative masculine singular, so it spells out the features that the *ēr* spells out plus F2.



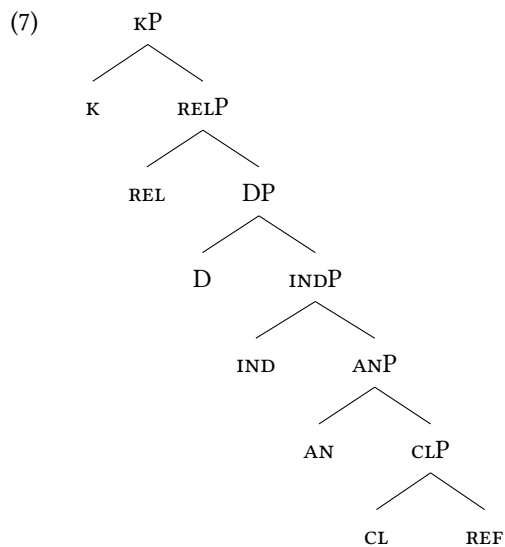
I continue with the morpheme *d*. This morpheme corresponds to what I called the REL-feature in Chapter 6 and in the introduction to this chapter. I argue that this morpheme actually spells out the feature REL, the feature D and number and gender features. Notice here that Old High German relative pronouns differ from Modern German and Polish relative pronouns in that they do not contain the operator feature WH. Instead, Old High German relative pronouns contain the feature D.

Relative and demonstrative pronouns are syncretic in Old High German (Braune 2018: 338). They contain the morpheme *d*, which is responsible for establishing a definite reference. The feature REL is present to establish a relation. I assume that *d* also spells out the feature IND. For this I do not have any independent support. I make this assumption to allow myself to build a complex specifier.

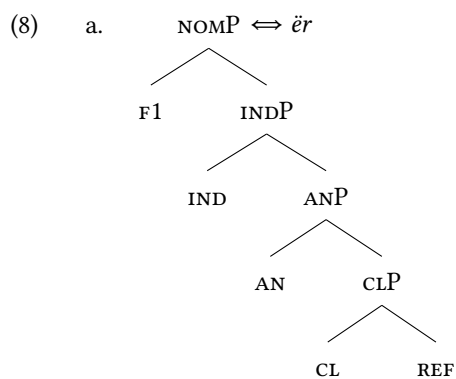
In sum, the morpheme *d* corresponds to the features D, REL and IND as shown in (6).

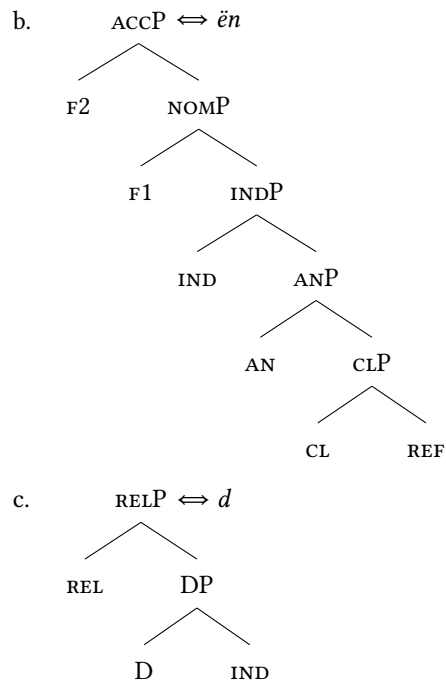


In what follows, I show how the Old High German relative pronouns are constructed. I follow the same functional sequence as I did for Modern German and Polish, except for substituting the feature WH by the feature D. I give the functional sequence in (7).

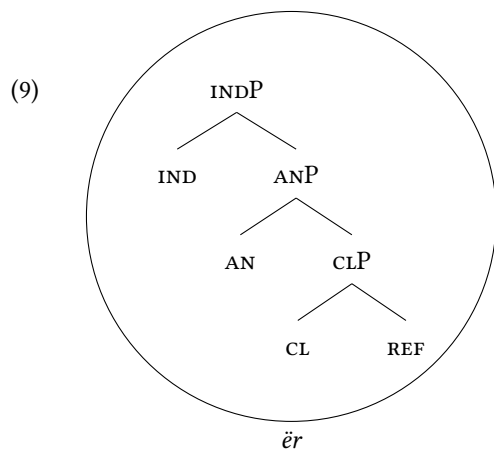


Of course, the spellout procedure remains the same. The outcome is different because of the different lexical entries Old High German has. I repeat the available lexical entries in (8).



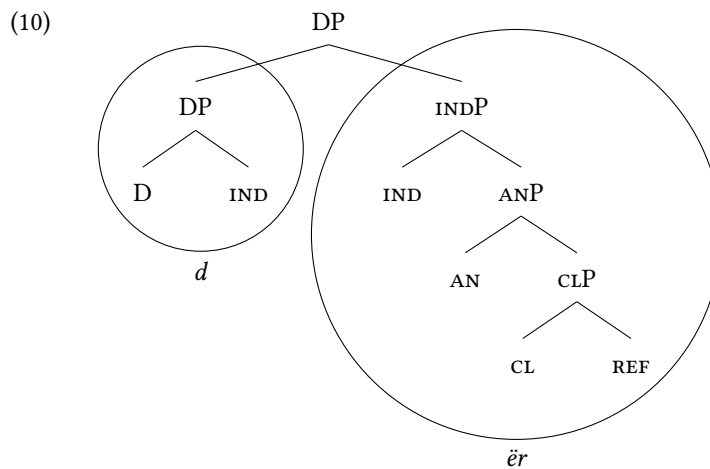


Starting from the bottom, the first two features that are merged are REF and CL, creating a CLP. The syntactic structure forms a constituent in the lexical tree in (8a), which corresponds to *ěr*. Therefore, the CLP is spelled out as *ěr*, which I do not show here. Then, the feature AN is merged, and a ANP is created. The syntactic structure forms a constituent in the lexical tree in (8a). Therefore, the ANP is spelled out as *ěr*, which I do not show here either. Then, the feature IND is merged, and a INDP is created. The syntactic structure forms a constituent in the lexical tree in (8a). Therefore, the INDP is spelled out as *ěr*, which I show in (9).



Next, the feature D is merged. The derivation for this feature resembles the deriva-

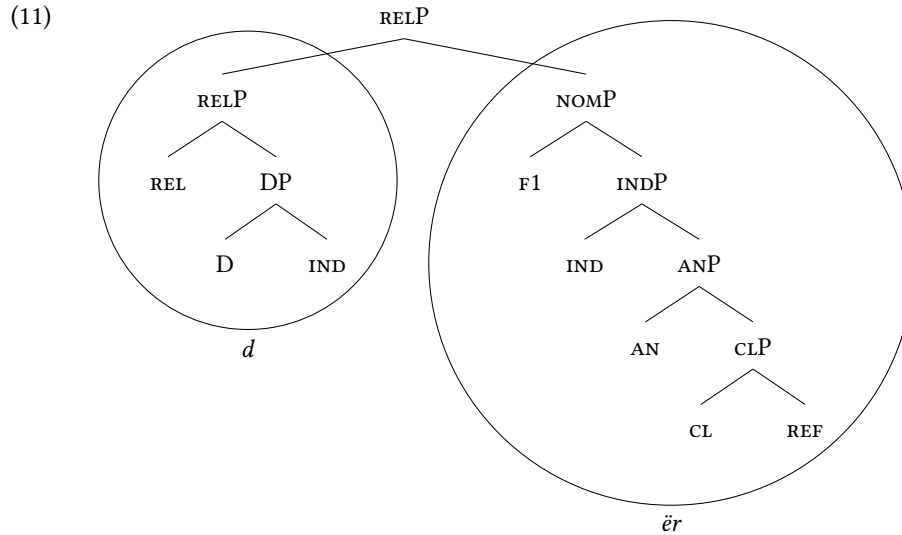
tion of *WH* in Modern German and Polish. The feature is merged with the existing syntactic structure, creating a DP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Therefore, in a second workspace, the feature *D* is merged with the feature *IND* (the previous syntactic feature on the functional sequence) into a DP. This syntactic structure forms a constituent in the lexical tree in (8c), which corresponds to the *d*. Therefore, the DP is spelled out as *d*. The newly created phrase is merged as a whole with the already existing structure, and projects to the top node, as shown in (10).



The next feature in the functional sequence is the feature *REL*. The derivation for this feature resembles the derivation of *REL* in Modern German and Polish. The feature is merged with the existing syntactic structure, creating a RELP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the DP from the INDP. The feature *REL* is merged in both workspaces, so with DP and with INDP. The spellout of *REL* is successful when it is combined with the DP. It namely forms a constituent in the lexical tree in (8c), which corresponds to the *d*. The RELP is spelled out as *d*, and it is merged back to the existing syntactic structure.

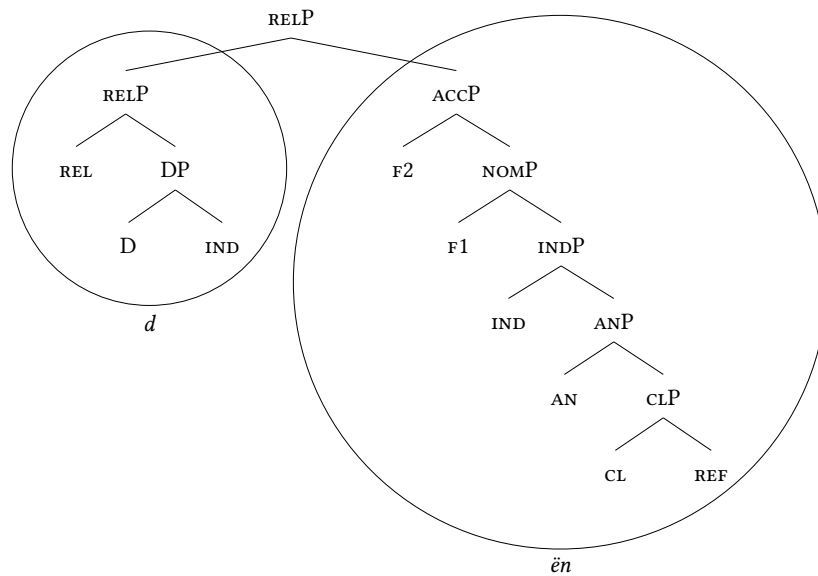
For the nominative relative pronoun, the last feature is merged: the *F1*. This feature should somehow end up merging with INDP, because it forms a constituent in the lexical tree in (8a), which corresponds to the *ër*. This is achieved via Backtracking in which phrases are split up and going through the Spellout Algorithm. I go through the derivation step by step. The feature *F1* is merged with the existing syntactic structure, creating a NOMP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the

INDP. The feature F1 is merged in both workspaces, so with the RELP and and with the INDP. The spellout of F1 is successful when it is combined with the INDP. It namely forms a constituent in the lexical tree in (8a), which corresponds to the *ër*. The NOMP is spelled out as *ër*, and all constituents are merged back into the existing syntactic structure, as shown in (11).



For the accusative relative pronoun, the last feature is merged: the F2. The derivation for F2 resembles the derivation of F1. The feature is merged with the existing syntactic structure, creating a ACCP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the RELP from the NOMP. The feature F2 is merged in both workspaces, so with the RELP and and with the NOMP. The spellout of F2 is successful when it is combined with the NOMP. It namely forms a constituent in the lexical tree in (8b), which corresponds to the *ën*. The ACCP is spelled out as *ën*, and all constituents are merged back into the existing syntactic structure, as shown in (12).

(12)



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. Therefore I will also suggest that there are two different light-headed relatives that can be the source of the headless relative.

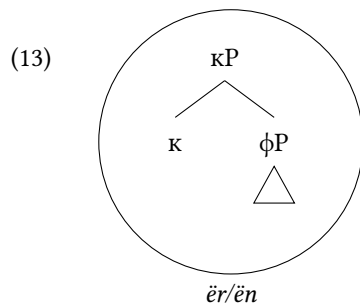
For Modern German and Polish, I considered two kinds of light-headed relatives as the potential source. The first possible scenario is that the deletion is optional and that the headless relative is derived from an existing light headed relative. The second possible scenario is that the deletion of the light head is obligatory and 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 assume that headless relatives can be derived from both 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

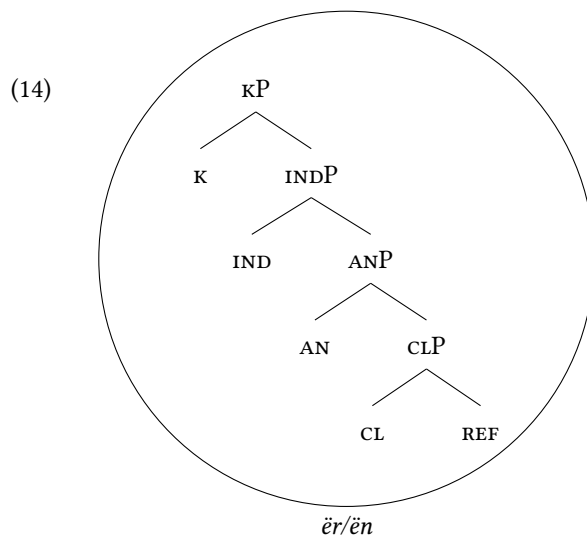
introduce the light head that does surface in the language in a light-headed relative as the second possible light head.

9.2.1 The extra light head

In the introduction of this chapter, I claimed that the internal syntax of the first possible light head is as shown in (13).



In Chapter 6, I suggested that the first possible light head in the unrestricted type of language consist of at least two features: ϕ and κ . In this section, I determine the exact feature content of the light head. As I suggested in Chapter 7 for Modern German and Polish, I end up claiming that the phi and case features of the relative pronoun can form the light head. I show the complete structure that I work towards in this section in (29).



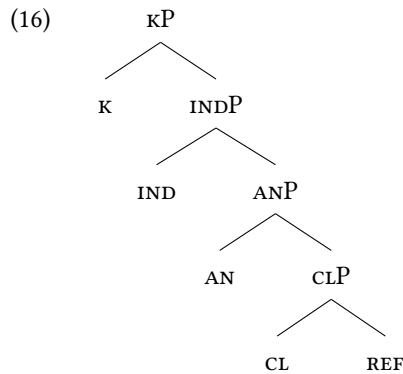
As I mentioned in the introduction of this section, headless relatives in Old High German can be derived from two different light-headed relatives: one that does not surface in the language and one that does surface in the language. In this section I discuss the second one, the light-headed relative that does not surface in the lan-

guage. This light-headed relative is headed by the extra light head, just as the ones that are attested in Modern German and Polish.³

In the remainder of this section, I discuss the two extra light heads that I compare the internal syntax of in Section 9.3. They are the nominative masculine singular and the accusative masculine singular, shown in (15).

- (15) a. *ër*
ELH.M.SG.NOM
b. *ën*
ELH.M.SG.ACC

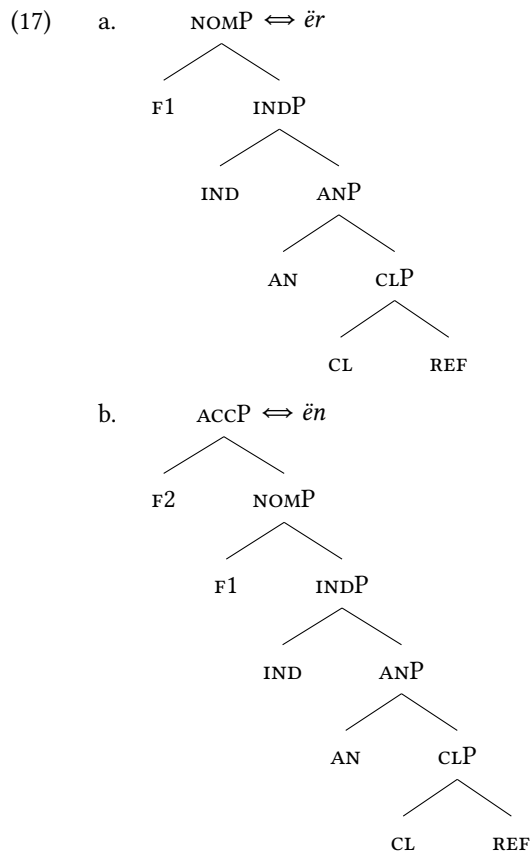
Just as in Modern German and Polish, the functional sequence for the extra light head is as shown in (16).



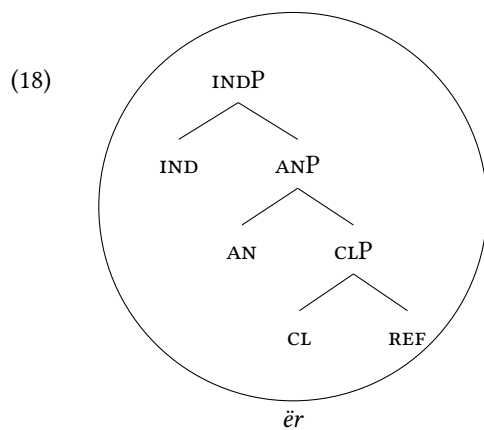
The functional sequence contains the pronominal feature REF, the gender features CL and AN, the number feature IND and case features κ.

I introduced the lexical entries that are required to spell out these features in Section 9.1. I repeat them in (17).

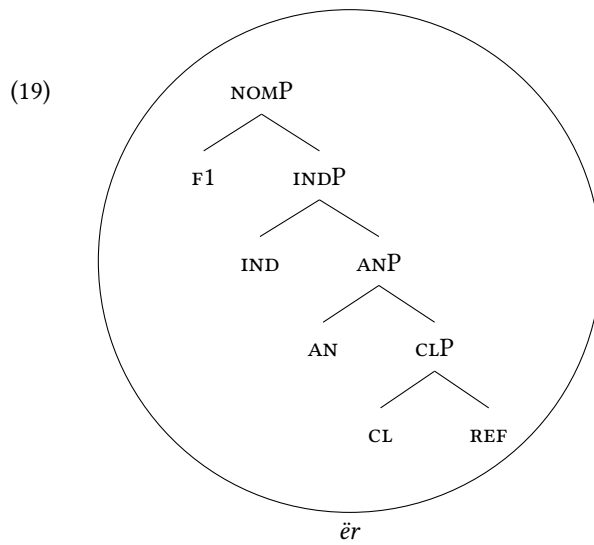
³In the sections on extra light heads in Modern German and Polish I discussed the possible interpretations of headless relatives in these languages. In this section I do not do so for Old High German. I come back to this in Section 9.4.



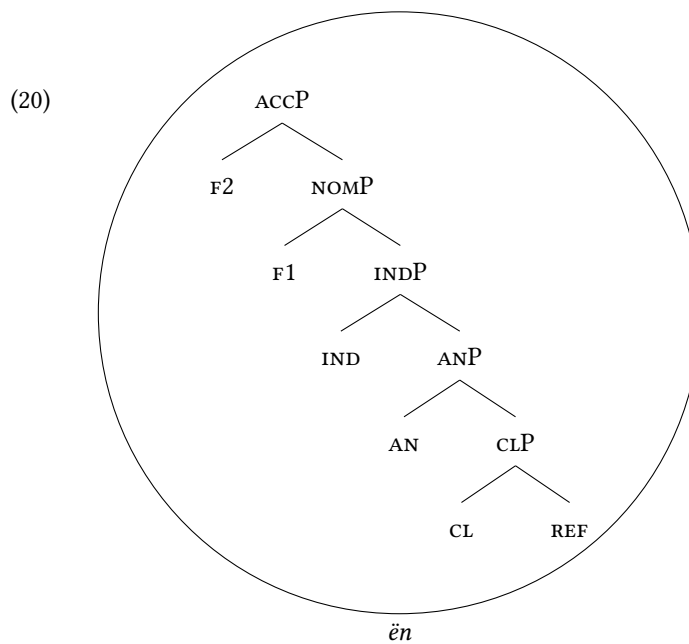
In what follows, I construct the Old High German extra light heads. Until the feature IND , the derivation is identical to the one of the relative pronoun. I give the syntactic structure at that point in (18).



The last feature that is merged for the nominative extra light head is the F1 . It is merged, and the NOMP is created. The syntactic structure forms a constituent in the lexical tree in (17a). Therefore, the NOMP is spelled out as $\ddot{e}r$, as shown in (19).



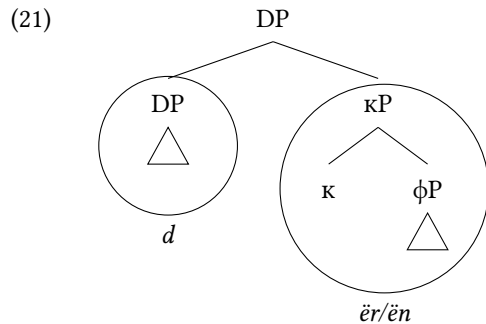
For the accusative extra light head, one more feature is merged: the F2. It is merged, and the ACCP is created. The syntactic structure forms a constituent in the lexical tree in (17b). Therefore, the ACCP is spelled out as *ēn*, as shown in (20).



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 part of the internal syntax of the relative pronoun.

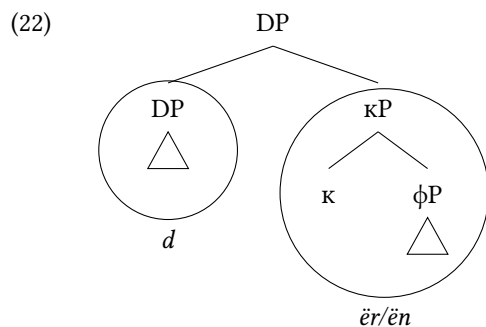
9.2.2 The light head

In the introduction of this chapter, I suggested that the internal syntax of the second possible light head is as shown in (21).



Also in the introduction of this chapter, I suggested that the second possible light head in the unrestricted type of language consist of at least three features: D, ϕ and κ . In this section, I determine the exact feature content of the light head.

As I noted in Chapter 6 and in the introduction of this chapter, the second possible light head is spelled out by the same lexical entries as the relative pronoun. I show the complete structure that I work towards in this section in (22).



As I mentioned in the introduction of this section, headless relatives in Old High German can be derived from two different light-headed relatives: one that does not surface in the language and one that does surface in the language. 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 light head. This light-headed relative cannot be the source of a headless relative in Modern German or Polish.

I give an example of a light-headed in Old High German relative in (23) *Thér* ‘LH.SG.M.NOM’ is the light head which is the head of the relative clause. *Then* ‘RP.SG.M.ACC’ is the relative pronoun in the relative clause.⁴

⁴I assume that whether both the light head and the relative pronoun or only one of them surfaces is determined by information structure. In (23), the light head *thér* ‘LH.SG.M.NOM’ is the candidate to be

- (23) eno nist thiz thér then ir suochet
 now not be.3SG DEM.SG.ËN.NOM LH.SG.M.NOM RP.SG.M.ACC 2PL.NOM seek.2PL
 zi arslahanne?
 to kill.INF.SG.DAT
 ‘Isn’t this now the one, who you seek to kill?’

As (23) 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 morpheme. Crucially, this syncretism leads Old High German to be an unrestricted type of language. The relative pronoun can be deleted via formal containment. In Modern German and in Polish, relative pronouns and demonstratives are not syncretic (see Section 7.3 and Section 8.2)⁵ Therefore, the relative pronoun cannot be deleted via formal containment.

In the remainder of this section, I discuss the two light heads that I compare the internal syntax of in Section 9.3. The are the nominative masculine singular and the accusative masculine singular, shown in (24).

- (24) a. d-ër
 LH.M.SG.NOM
 b. d-ën
 LH.M.SG.ACC

The functional sequence for the light head is as shown in (25).

absent, as it bears a less complex case than the relative pronoun. However, it seems plausible that the light head is emphasized in this sentence and that, therefore, it cannot be absent.

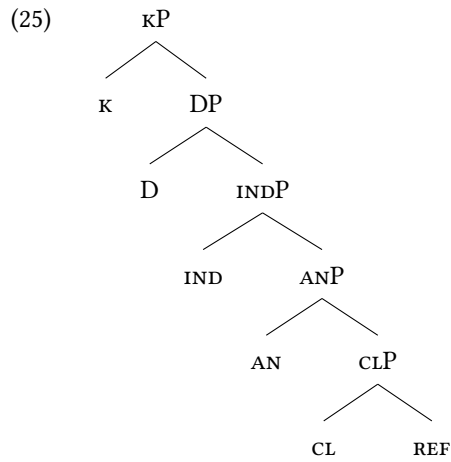
⁵An exception is..

First, German only had the *d*-pronoun and attraction. The pattern of attraction that came with that pronoun is ext only. At some point, German invented the *wh*-pronoun. Helmut showed how it emerged. With that came the other pattern: int only. Some people lost the attraction (but everybody kept the *d*-pronoun) and with that the pattern disappeared. So the patterns in headless relatives follow from the relative pronouns in the language.

Why are all languages of the ‘unrestricted’ type dead languages? Was it a common thing that *wh*-pronouns were not used as relative pronouns?

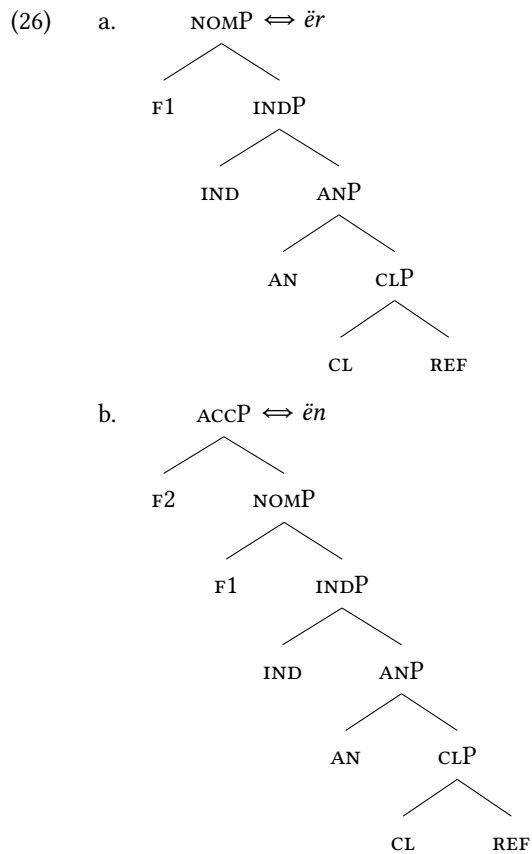
Wouldn’t we now not expect that Modern German patterns with Old High German wrt attraction in headed constructions. Yes, we would. And yes, this is exactly what we see. Paper by Bader on case attraction.

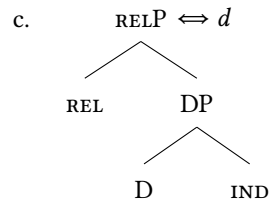
First there was only the relative pronoun with a *D*. Then we did case competition with this one, in both directions. Later, we only did it with the *wh*, and we only had internal left. Because this competitor was introduced, the case competition with *D* disappeared.



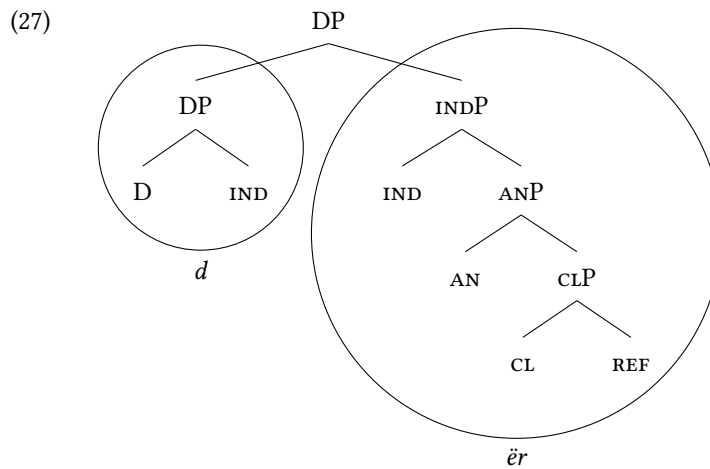
The functional sequence contains the pronominal feature REF, the gender features CL and AN, the number feature IND, the definite feature D and case features κ.

I introduced the lexical entries that are required to spell out these features in Section 9.1. I repeat them in (26).



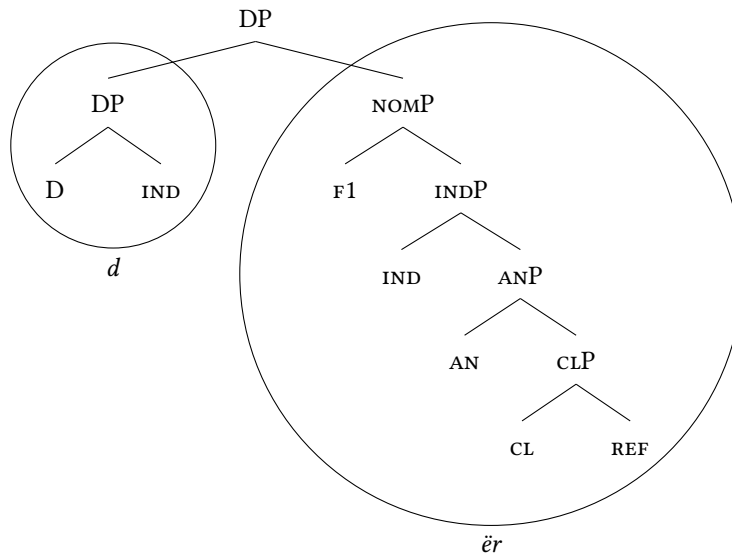


In what follows, I construct the Old High German light heads. Until the feature D, the derivation is identical to the one of the relative pronoun. I give the syntactic structure at that point in (27).

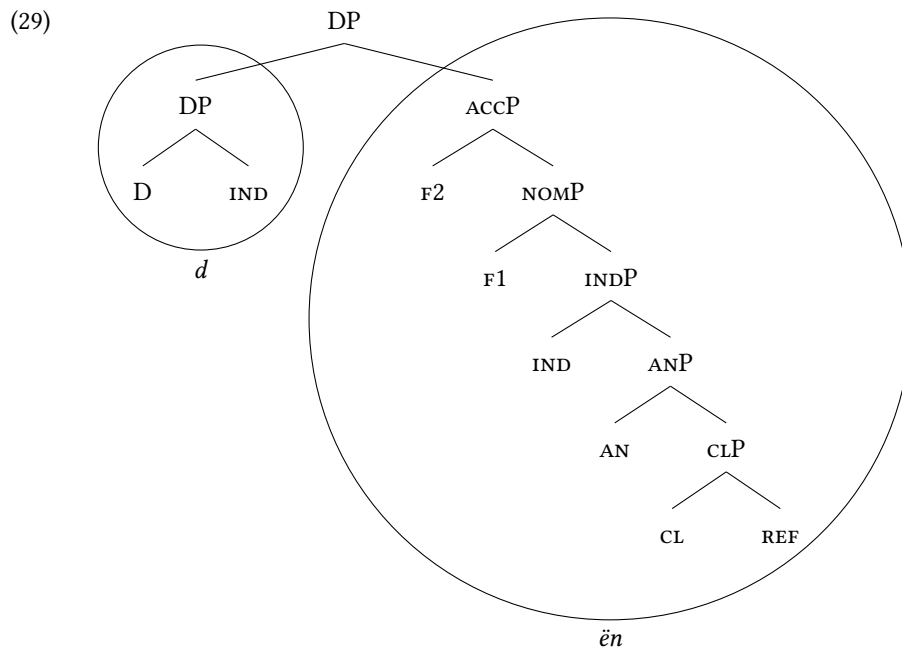


For the nominative light head, the last feature is merged: the F1. This feature should somehow end up merging with INDP, because it forms a constituent in the lexical tree in (26a), which corresponds to the *ër*. This is achieved via Backtracking in which phrases are split up and going through the Spellout Algorithm. I go through the derivation step by step. The feature F1 is merged with the existing syntactic structure, creating a NOMP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the DP from the INDP. The feature F1 is merged in both workspaces, so with the DP and and with the INDP. The spellout of F1 is successful when it is combined with the INDP. It namely forms a constituent in the lexical tree in (26a), 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 (28).

(28)



For the accusative light head pronoun, the last feature is merged: the **F2**. The derivation for **F2** resembles the derivation of **F1**. The feature is merged with the existing syntactic structure, creating a **AccP**. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads to splitting up the **DP** from the **NOMP**. The feature **F2** is merged in both workspaces, so with the **DP** and and with the **NOMP**. The spellout of **F2** is successful when it is combined with the **NOMP**. It namely forms a constituent in the lexical tree in (26b), 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 (29).



In sum, Old High German headless relatives can be derived from a light-headed relative headed by a light head. This light head is spelled out by a morpheme that spells out the definite feature and by a phi and case feature portmanteau. The lexical entries used to spell this light head out are also used to spell out the relative pronoun, as the light head 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 light heads 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 comparison for Old High German specifically, and that the content of the internal syntax that is being compared is motivated earlier in this chapter.

I give three examples, in which the internal and external case vary. I start with an example with matching cases, in which the internal and the external case are both 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 light head 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 light head 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 light head.

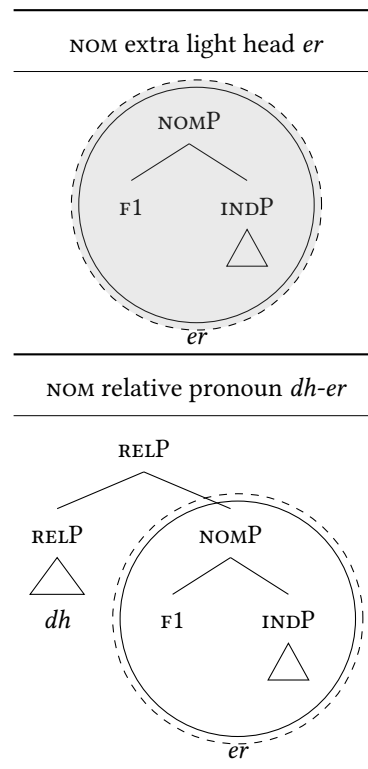
I start with the situation in which the cases match. Consider the example in (30), in which the internal nominative case competes against the external nominative case. The relative clause is marked in bold. (30a) shows the example with the extra light head, and (30b) shows the example with the light head. 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 (30a), 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 (30b), the light head *dher* ‘LH.SG.M.NOM’ appears in the nominative case. Here the relative pronoun is placed between square brackets because it does not surface.

- (30) a. quham [er] **dher** **chisendit**
 come.PST.3SG_[NOM] ELH.SG.M.NOM RP.SG.M.NOM send.PST.PTCP_[NOM]
scolda uuerdhan
 should.PST.3SG become.INF
 ‘the one, who should have been sent, came’
 (Old High German, Isid. 35:5)
- b. quham dher [**dher**] **chisendit**
 come.PST.3SG_[NOM] LH.SG.M.NOM RP.SG.M.NOM send.PST.PTCP_[NOM]
scolda uuerdhan
 should.PST.3SG become.INF
 ‘the one, who should have been sent, came’
 (Old High German, Isid. 35:5)

Both examples in (30) 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 (30a). Then I show the comparison of the internal syntax of the light head and the relative pronoun in (30b).

In Figure 9.5, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The 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

Figure 9.5: Old High German EXT_{NOM} vs. $INT_{NOM} \rightarrow dher$ (ELH)

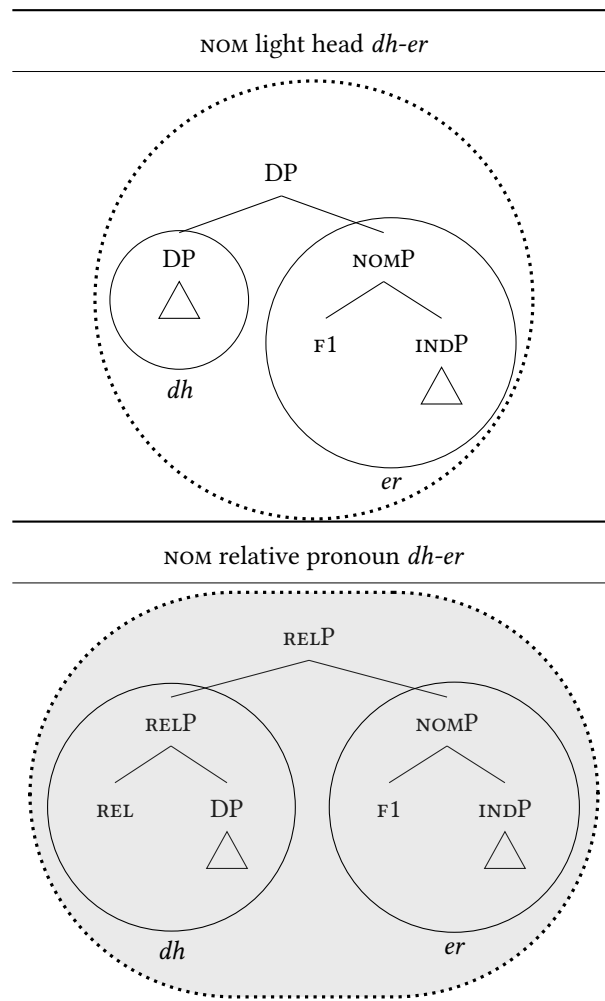
biggest possible element that is structurally contained in both the extra light head and the relative pronoun.

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 pronoun is the relative pronoun that bears the internal case: *dher*.

In Figure 9.6, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

The light head also consists of two morphemes: *dh* and *er*. The relative pronoun consists of two morphemes: *dh* and *er*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dotted circle around the biggest possible element that formally contained in both the light head and the relative pronoun.

The relative pronoun (the $RELP$ realized by *dher*) is formally contained in the light head (the DP 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.

Figure 9.6: Old High German EXT_{NOM} VS. $\text{INT}_{\text{NOM}} \rightarrow dher$ (LH)

The surface pronoun is the light head that bears the external case: *dher*.⁶

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 (31), in which the internal nominative case competes against the external accusative case. The relative clause is marked in bold.

⁶The same holds the other way around: the light head (the DP 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 light head 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.

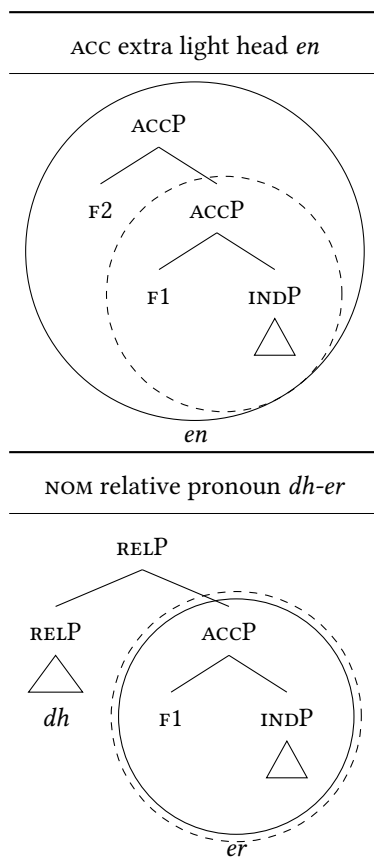
(31a) shows the example with the extra light head, and (31b) shows the example with the light head. The internal case is nominative, as the predicate *gisizzen* ‘to possess’ takes nominative subjects. In both examples, the relative pronoun *dher* ‘RP.SG.M.NOM’ appears in the nominative case. The external case is accusative, as the predicate *bibringan* ‘to create’ takes accusative objects. In (31a), 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 (31b), the light head *dhen* ‘LH.SG.M.ACC’ appears in the accusative case. Here the relative pronoun is placed between square brackets because it does not surface.

- (31) a. *ih bibringu fona iacobes samin endi fona
 1SG.NOM create.PRES.1SG_[ACC] of Jakob.GEN seed.SG.DAT and of
 iuda [en] **dher** **mina** **berga**
 Judah.DAT ELH.SG.M.ACC RP.SG.M.NOM my.ACC.M.PL mountain.ACC.PL
 chisitzit
 possess.PRES.3SG_[NOM]
 ‘I create of the seed of Jacob and of Judah the one, who possess my
 mountains’ (Old High German, Isid. 34:3)
- b. ih bibringu fona iacobes samin endi fona
 1SG.NOM create.PRES.1SG_[ACC] of Jakob.GEN seed.SG.DAT and of
 iuda dhen [**dher**] **mina** **berga**
 Judah.DAT LH.SG.M.ACC RP.SG.M.NOM my.ACC.M.PL mountain.ACC.PL
 chisitzit
 possess.PRES.3SG_[NOM]
 ‘I create of the seed of Jacob and of Judah the one, who possess my
 mountains’ (Old High German, Isid. 34:3)

Only (31b) 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 (31a), which does not lead to a grammatical headless relative. Then I show the comparison of the internal syntax of the light head and the relative pronoun in (31b), 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.

The extra light head consists of a single morpheme: *er*. The relative pronoun consists of two morphemes: *dh* and *en*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around the biggest possible element that is structurally contained in both the extra light head

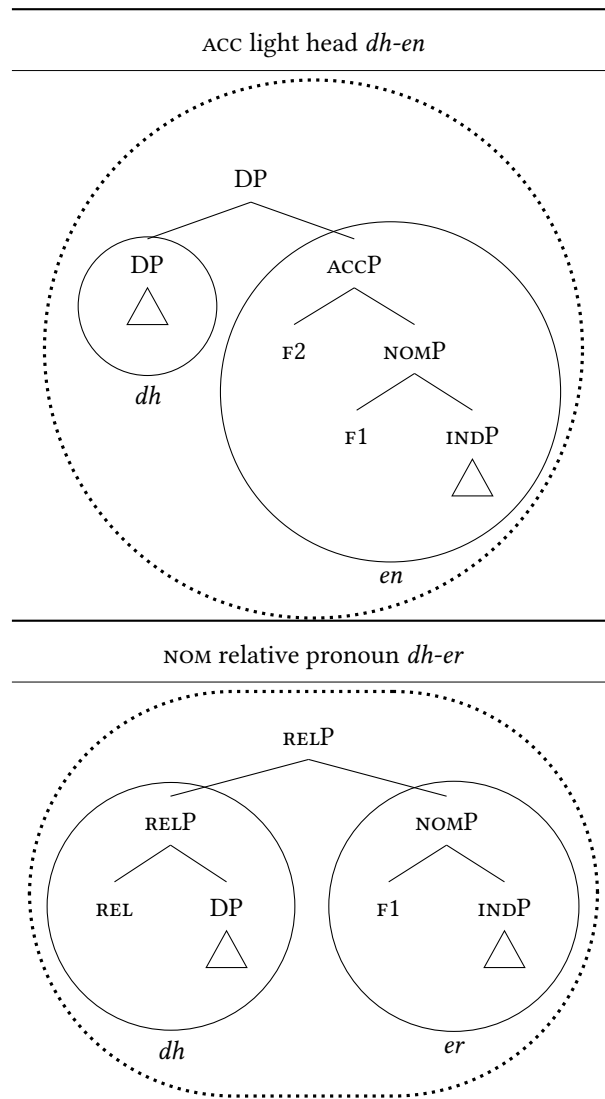
Figure 9.7: Old High German EXT_{ACC} VS. $\text{INT}_{\text{NOM}} \rightarrow \text{en/dher}$ (ELH)

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 ACCP. The relative pronoun only contains the NOMP, and it lacks the F2 that makes a 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 light head. It namely lacks the complete constituent RELP. The extra light 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.

In Figure 9.8, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

The light head also consists of two morphemes: *dh* and *en*. The relative pronoun consists of two morphemes: *dh* and *er*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and

Figure 9.8: Old High German EXT_{ACC} VS. $\text{INT}_{\text{NOM}} \rightarrow dh\ddot{e}n/dh\ddot{e}r$ (LH)

I place the corresponding phonology 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.

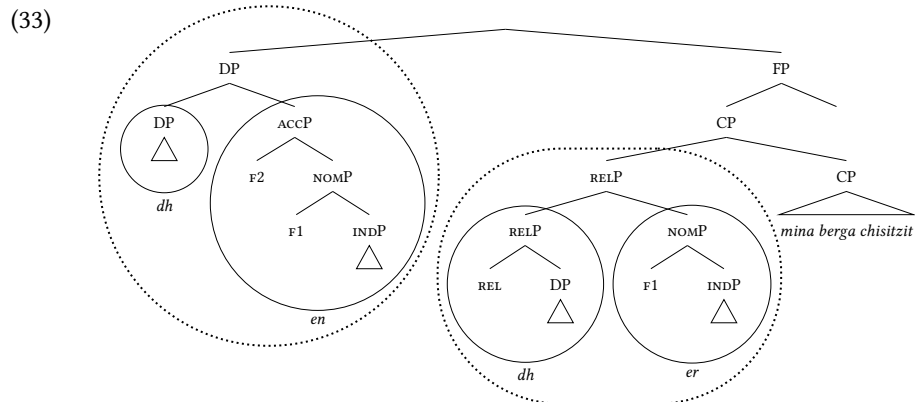
The light head is realized as *dhen*, and the relative pronoun is realized as *dher*. The light head is not formally contained in the relative pronoun, and the relative pronoun is not formally contained in the light head. Therefore, the extra light cannot be deleted, and the relative pronoun cannot be deleted either. The inevitable result seems to be that the light-headed relative headed by the light head 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 light-headed relative that is the source of the example from (31b) in (32).

- (32) ih bibringu fona iacobes samin endi fona
 1SG.NOM create.PRES.1SG_[ACC] of Jakob.GEN seed.SG.DAT and of
 iuda dhen [dher] mina berga
 Judah.DAT LH.SG.M.ACC RP.SG.M.NOM my.ACC.M.PL mountain.ACC.PL
chisitzit
 possess.PRES.3SG_[NOM]
 ‘I create of the seed of Jacob and of Judah the one, who possess my mountains’

(Old High German, Isid. 34:3)

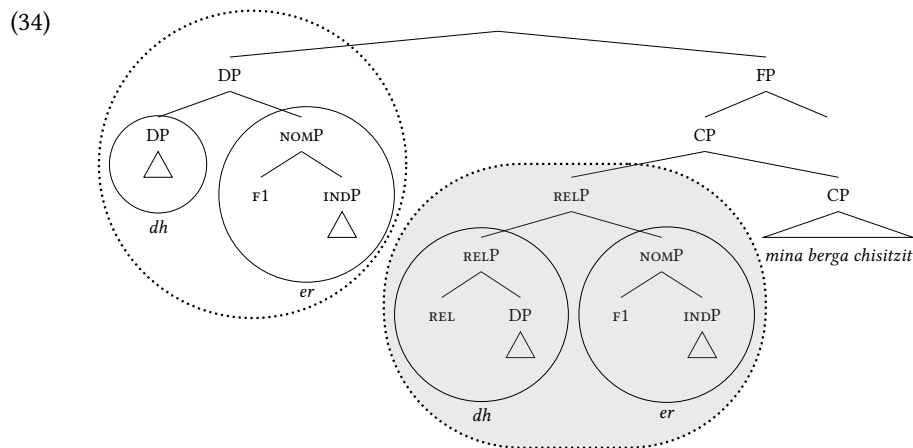
Consider the syntactic structure in (33) that represents part of the sentence in (32).



The DP on the left (that spells out as *dhen*) is the light head from Figure 9.8. The RELP in the middle (that spells out as *dher*) is the relative pronoun from Figure 9.8. 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 the 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 (33) has come into being by merging features one by one. The last feature that has been merged is F2, which created the AccP within the DP. Remember from the functional sequence in (25) that case features are the highest features, so they are the last ones to be merged. Before the feature F2 was merged, the syntactic structure looked as in (34).⁷

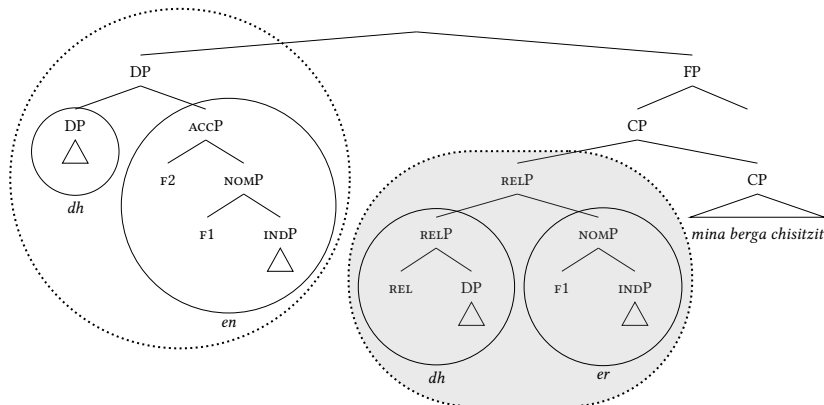


The DP on the left (that spells out as *dher*) is the light head from Figure 9.6. The RELP in the middle (that spells out as *dher*) is the relative pronoun from Figure 9.6. At this point in the derivation, the relative pronoun is formally contained in the light head. Therefore, the relative pronoun can be deleted. I signal the deletion of the relative pronoun by marking the content of its circle gray in (34). The surface pronoun is the light head that bears the external case: *dher*.

Then the feature F2 is merged, and the light head is spelled out as *dhen*, as shown in (35).

⁷ The feature F2 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 DP and the FP are split up and F2 is merged in both workspaces. None of them leads to a successful spellout, so both workspaces are split up further, giving three workspaces: the DP, the NOMP and the lowest CP. Now F2 can be spelled out with the NOMP. All workspaces are merged back together and the result is the structure in 9.8.

(35)



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 light head 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. When the cases match, the endpoint of the derivation is the step in between. 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 light heads 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 (35) works for these situations too.

I end with the situation in which the internal case is the more complex one. Consider the examples in (36), in which the internal accusative case competes against the external nominative case. The relative clause is marked in bold. (36a) shows the example with the extra light head, and (36b) shows the example with the light head. 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 (36a), 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 (36b), the light head *dher* ‘LH.SG.M.NOM’ appears in the nominative case. Here the relative pronoun is placed between square brackets because it does not surface.

- (36) a. Thíz ist [er] **then** **sie**
 DEM.SG.N.NOM be.PRES.3SG_[NOM] ELH.SG.M.NOM RP.SG.M.ACC 3PL.M.NOM
zélent
 tell.PRES.3PL_[ACC]
 ‘this is the one whom they talk about’
 (Old High German, Otfrid III 16:50)
- b. *Thíz ist ther [**then**] **sie**
 DEM.SG.N.NOM be.PRES.3SG_[NOM] LH.SG.M.NOM RP.SG.M.ACC 3PL.M.NOM
zélent
 tell.PRES.3PL_[ACC]
 ‘this is the one whom they talk about’
 (Old High German, Otfrid III 16:50)

Only (36b) 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 (36a), which leads to a grammatical headless relative. Then I show the comparison of the internal syntax of the light head and the relative pronoun in (36b), 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.

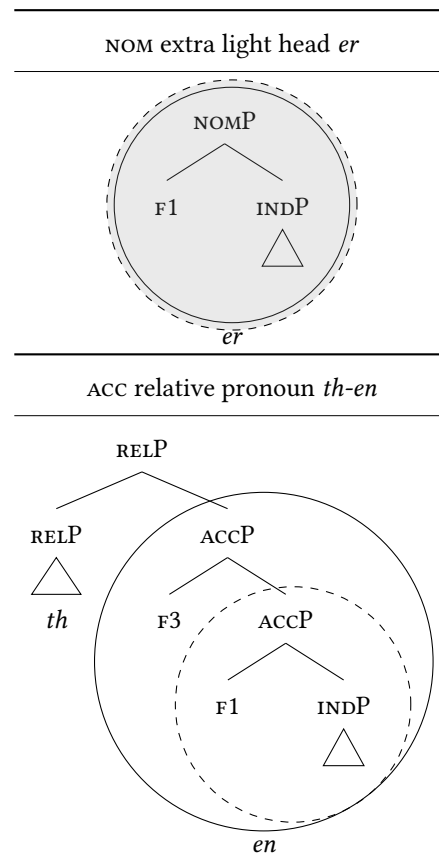
The extra light head consists of a single morpheme: *er*. The relative pronoun consists of two morphemes: *th* and *en*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dashed circle around 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 can be deleted. I signal the deletion of the extra light head by marking the content of its circle gray. The surface pronoun is the relative pronoun that bears the internal case: *then*.

In Figure 9.10, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

The light head also consists of two morphemes: *th* and *er*. The relative pronoun consists of two morphemes: *th* and *en*. Again, I circle the part of the structure that corresponds to a particular lexical entry, or I reduce the structure to a triangle, and I place the corresponding phonology below it. I draw a dotted circle around the biggest possible element that formally contained in both the light head and the relative pronoun.

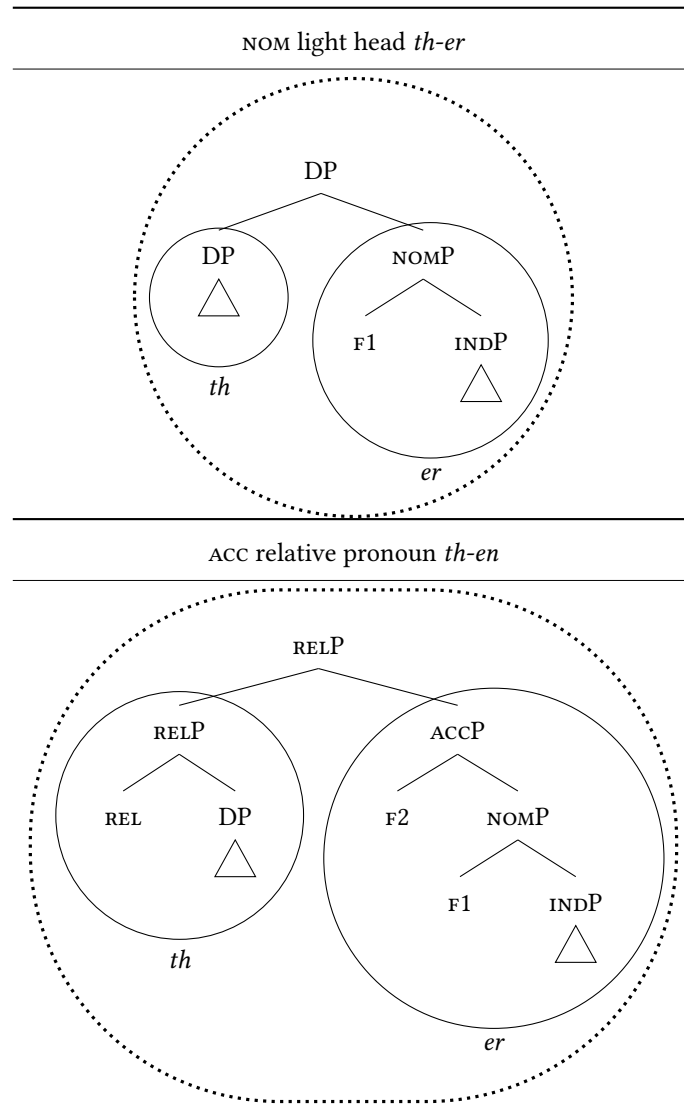
The light head is realized as *ther*, and the relative pronoun is realized as *then*.

Figure 9.9: Old High German EXT_{NOM} VS. $\text{INT}_{\text{ACC}} \rightarrow \text{then}$ (ELH)

The light head is not formally contained in the relative pronoun, and the relative pronoun is not formally contained in the light head. Therefore, the extra light 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.

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 light head. Going back in the derivation removes case features from the light head (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

Figure 9.10: Old High German EXT_{NOM} vs. $\text{INT}_{\text{ACC}} \rightarrow \text{ther/then}$ (LH)

9.4 Coming back to the light heads

9.4.1 The interpretation of Old High German headless relatives

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, n.d.). This is confirmed by my data. In (37) I give an example, repeated from Chapter 4.

- In this example, the author refers to the specific things that the I-person said, and not to whatever the I-person said.

Table 9.5: Grammaticality in Old High German with `ELH`

situation	lexical entries		containment	deleted	surfacing
	ELH	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}
$K_{\text{INT}} < K_{\text{EXT}}$	$[\text{REL}], [K_1[\phi]]$	$[K_2[K_1[\phi]]]$	no	none	*

Table 9.6: Grammaticality in Old High German with LH

situation	lexical entries		containment	deleted	surfacing
	LH	RP			
$K_{\text{INT}} = K_{\text{EXT}}$	/X/, /Y/	/X/, /Y/	form	RP	LH _{EXT}
$K_{\text{INT}} > K_{\text{EXT}}$	/X/, /Y/	/X/, /Z/	no	none	*
$K_{\text{INT}} < K_{\text{EXT}}$	/X/, /Y/	/X/, /Y/	form	RP	LH _{EXT}

(38) a. gihortut ir [iu] **thiu** **ih** **iu**
listen.PST.2PL_[ACC] 2PL.NOM ELH.PL.N.NOM RP.PL.N.ACC 1SG.NOM 2PL.DAT
quad
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** **iu**
listen.PST.2PL_[ACC] 2PL.ACC LH.PL.N.NOM RP.PL.N.NOM 1SG.NOM 2PL.DAT

quadspeak.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 9.5 and 9.6 show that 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 light head does not generate a grammatical example. On the other hand, the tables show that headless relative with a more complex external case needs to be derived from a light-headed relative headed by a light head. 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 (39) I give an example, in which the external case is more complex than the internal case, repeated from Chapter 4.

- (39) enti aer ant uurta demo **zaimo**
and 3SG.M.NOM reply.PST.3SG_[DAT] RP.SG.M.DAT to 3SG.M.DAT

sprahspeak.PST.3SG_[NOM]

‘and he replied to the one who spoke to him’

not: ‘and he replied to whoever spoke to him’

(Old High German, Mons. 7:24, adapted from 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 light head, as shown in (40).

- (40) enti aer ant uurta demo **[der]** **zaimo**
and 3SG.M.NOM reply.PST.3SG_[DAT] RP.SG.M.DAT LH.SG.M.NOM to 3SG.M.DAT

sprahspeak.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 interpretation is a definite one.

In (41) I give an example, in which the internal case is more complex than the

external case, repeated from Chapter 4.

- (41) Thíz ist **then** **sie** **zélent**
 DEM.SG.N.NOM be.PRES.3SG_[NOM] RP.SG.M.ACC 3PL.M.NOM tell.PRES.3PL_[ACC]
 ‘this is the one whom they talk about’
 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 (42).

- (42) Thíz ist [er] **then** **sie**
 DEM.SG.N.NOM be.PRES.3SG_[NOM] ELH.SG.M.NOM RP.SG.M.ACC 3PL.M.NOM
zélent
 tell.PRES.3PL_[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*.

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 larger syntactic structure. I show that deletion always takes place under c-command.

Consider the syntactic structure with the light head and the relative pronoun both appearing in nominative case in (43), repeated from (34).

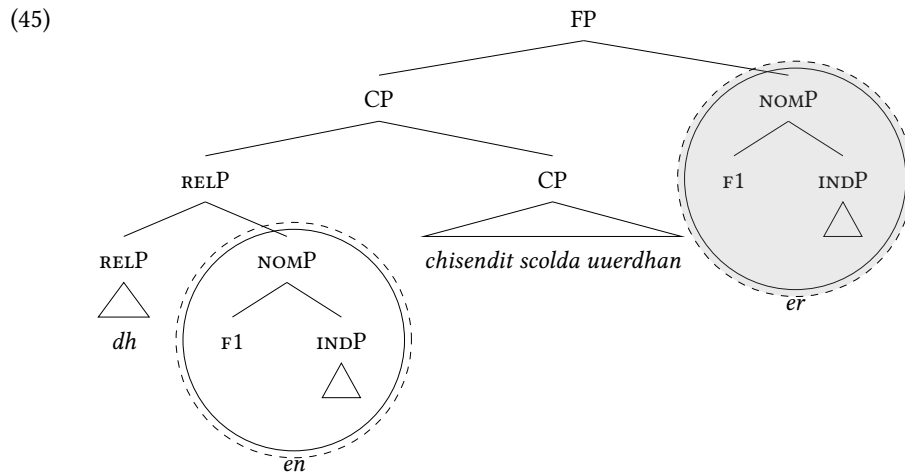
Figure 1 consists of two syntactic tree diagrams, (a) and (b), illustrating the structure of the sentence "The boy saw the girl who was holding a book".

Diagram (a) shows a DP (Determiner Phrase) complement for the verb "saw". The DP branches into a DP (labeled "dh") and a NOMP (Noun Phrase). The NOMP branches into F1 (labeled "er") and INDP (Indefinite Noun Phrase). The INDP branches into a triangle symbol and a triangle symbol.

Diagram (b) shows a CP (Complementizer Phrase) complement for the verb "saw". The CP branches into a CP (labeled "mina berga chisitzit") and a RELP (Relative Noun Phrase). The RELP branches into a RELP (labeled "dh") and a NOMP. The NOMP branches into F1 and INDP. The INDP branches into a triangle symbol and a triangle symbol.

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 (44).

- 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 (44) looks as shown in (45).



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 namely in the specifier of CP, which is 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 pronoun is the relative pronoun that bears the internal case: *dher*.

The two syntactic structures in (43) and in (45) 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 (43) represents the situation in which the source structure contains a light head. In these cases, the relative pronoun can be deleted via formal containment. This applies when the internal and external case match, as in (43), but also when the external case is more complex. In that case, the derivation namely also goes through the stage shown in (43) (see Section 9.3). There is no successful deletion possible when the internal case is more complex, because in that situation the light head does not formally contain the relative pronoun at any point in the derivation.

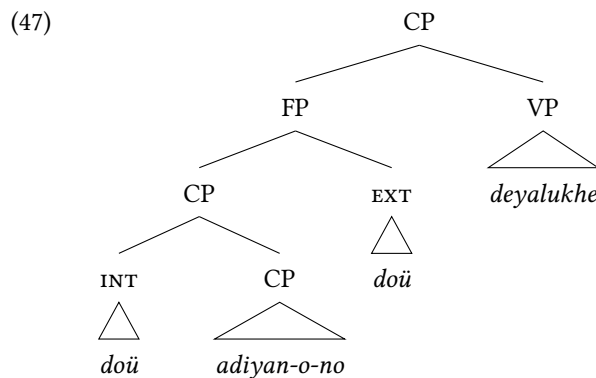
The structure in (45) represent the situation in which the source structure contains an extra light head. In these cases, the extra light head can be deleted via structural containment. This applies when the internal and external case match, as in (45), but also when the internal case is more complex. 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.

I am not the only one to place a light head 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 (2020) suggests the same, but then more generally for relative

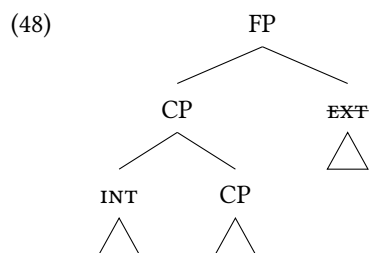
clauses. He suggests every type of relative clause in every language is underlyingly double-headed. Support for this claim comes from languages that show this morphologically. An example from Kombai is given in (46). The head of the relative clause is *doü* ‘sago’, and it appears inside the relative clause and outside of it, which make them respectively the internal and the external head.

- (46) [doü adiyān-o-no] doü deyalukhe
 sago give.3PL.NONFUT-tr-CONN sago finished.ADJ
 ‘The sago that they gave is finished.’ (Kombai, Vries 1993: 78)

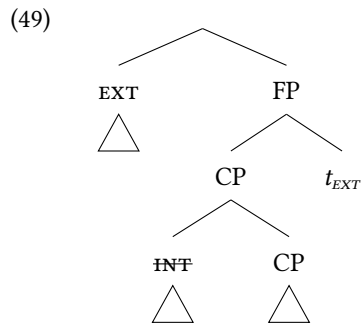
(47) shows the syntactic structure of the sentence in (46).



In most languages one of the two heads is deleted throughout the derivation. According to Cinque (2020), the internal element can delete the external element, because the internal element c-commands the external element, as shown in (48).



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 (49).



Crucially, Cinque (2020) 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 light head. The extra light head is indefinite and lives in a structurally low position, as in (48). The light head is definite and lives in a structurally high position, as in (49).⁸

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 (45) and (48)). 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

Old High German is an example of a unrestricted type of language. This means that headless relatives are grammatical in the language when the internal and external

⁸At 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 this the same as what I described for how case features end up on the light head in footnote 7: 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 (IND in the case of Old High German).

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 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 are shown in Figure 9.11.

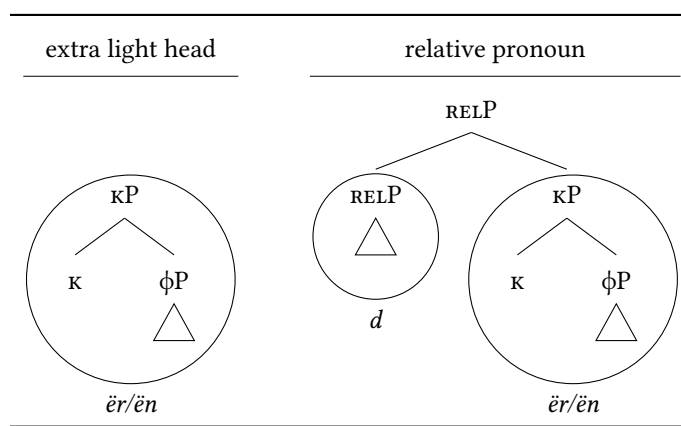


Figure 9.11: ELH and RP in Old High German (repeated)

The features of the second possible light head are spelled out by two lexical entries, one which spells out phi and case features and one which spells out the additional feature D. The features of the relative pronoun are spelled out by the same two lexical entries. The internal syntax of the light head and the relative pronoun in Old High German are shown in Figure 9.12.

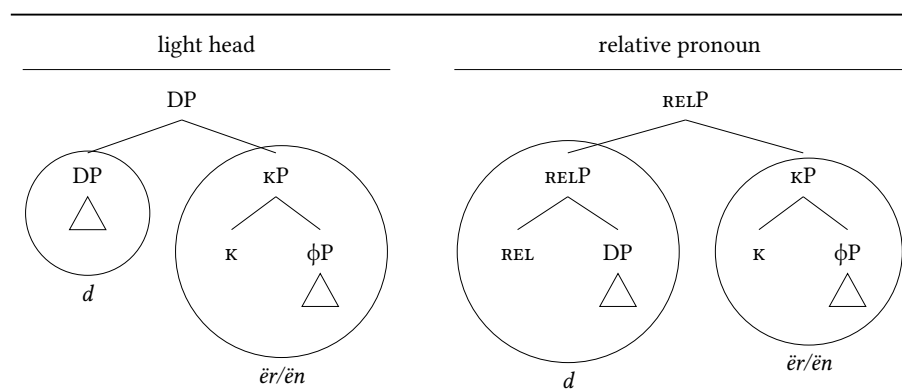


Figure 9.12: LH and RP in Old High German (repeated)

A crucial characteristic of unrestricted languages such as Old High German is that there is a syncretism between one of the light heads and the relative pronoun. Therefore, the relative pronoun is formally contained in the light head, and the relative pronoun can be deleted. This can lead to a more complex external case surfacing. The other 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.

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 lives 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 light head lives higher in the structure, such that it c-commands the relative pronoun and the relative pronoun can be deleted when it is structurally contained in the light head.

Chapter 10

Conclusion

something happens in syntax it can be explained if you look at morphology

Case competition in headless relatives has been described as some special property of a few special languages. Therefore, language-specific rules have been postulated to account for the data. My goal is to show that this phenomenon can be captured with ‘normal’ syntactic processes, like ellipsis, c-command. The account makes predictions about how a language behaves based on the shape of its relative pronouns. And we see that case competition in headless relatives is actually more wide-spread than what has been assumed.

Table 10.1 shows per language type which of the three options is chosen when the internal and external case differ.

Table 10.1: The surface pronoun with differing cases per language

	$K_{INT} > K_{EXT}$	$K_{EXT} > K_{INT}$	
unrestricted	relative pronoun _{INT}	light head _{EXT}	Old High German
internal-only	relative pronoun _{INT}	*	Modern German
matching	*	*	Polish
external-only	*	light head _{EXT}	not attested

The first column list the types of languages. The second column shows the situation in which the internal case is the most complex. The relative pronoun that bears the internal case is the potential surface pronoun. The third column shows the situation in which the external case is the most complex. The light head that bears the external case is the potential surface pronoun. The asterix (*) indicates that there is no grammatical form for the surface pronoun. The fourth column gives the example of the language type that I discuss in this chapter. A language of the unrestricted type (like Old High German) allows both the internal case and the external case to

surface when either of them wins the case competition. Either the light head with its external case or the relative pronoun with its internal case can be the surface pronoun. A language of the internal-only type (like Modern German) allows only the internal case to surface when it wins the case competition, and it does not allow the external case to do so. The relative pronoun with its internal case can be the surface pronoun and the light head with its external case cannot. A language of the matching type (like Polish) allows neither the internal nor the external case to surface when either of them wins the case competition. Neither the relative pronoun with its internal case nor the light head with its external case can be the surface pronoun.¹ The language type that is not attested is the external-only type. That means that there is no language that allows only the external case to surface when it wins the case competition, and it does not allow the internal case to do so. In other words, there exist no language, in which the surface pronoun can only be the light head and not the relative pronoun.

What I have done in this section so far is reformulate the two descriptive parameters from Figure 6.1 into two other descriptive parameters. Whether the internal case is allowed to surface corresponds to whether the relative pronoun surfaces. That implicates that the light head has been deleted and is therefore absent. Similarly, whether the external case is allowed to surface corresponds to whether the light head surfaces. That implicates that the relative pronoun has been deleted and is therefore absent. I show this in Figure 10.1.

Reformulating these parameters is not just restating the generalization in different terms. With this new formulation, I am able to identify the elements (i.e. the light head and the relative pronoun) that bear the internal and external cases. The difference between languages lies in whether or not it is possible to delete the light head (and with it the external case) and the relative pronoun (and with it the internal case).

¹This holds for the situation in which the internal and external case differ. In Section 8, I show that the relative pronoun surfaces in matching contexts.

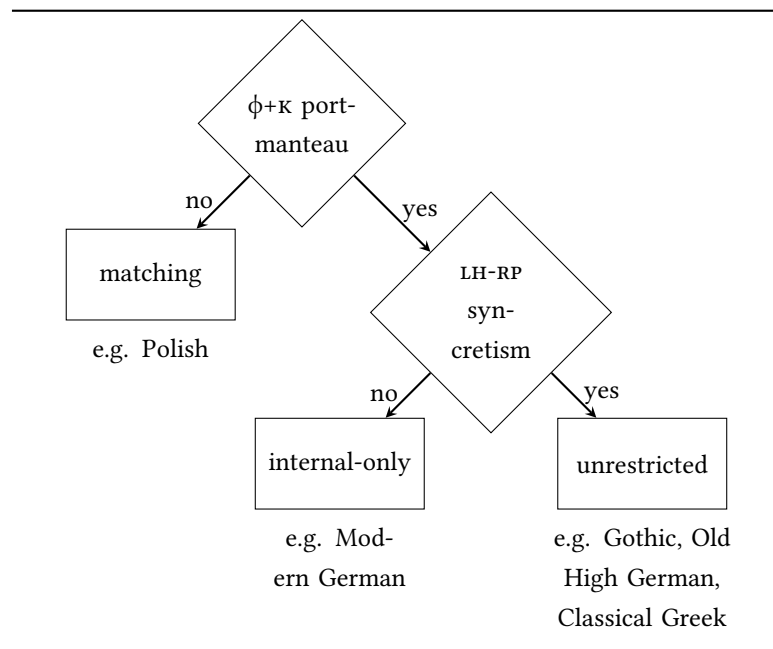


Figure 10.1: Different lexical entries generate three language types (repeated)

Primary texts

Col.	Colossians, New Testament
Hel.	Heliand
Isid.	Der althochdeutsche Isidor
John	John, New Testament
Luke	Luke, New Testament
Mark	Mark, New Testament
Men. DD.	Menander, The Double Deceiver
Mons.	The Monsee fragments
Nib.	Das Nibelungenlied
Otfrid	Otfrid's Evangelienbuch
Pl. Men.	Plato, Menexenus
Rom.	Romans, New Testament
Tatian	Tatian

Bibliography

- Arregi, Karlos and Gainko Molina-Azaola (2004). "Restructuring in Basque and the theory of agreement". In: *Proceedings of the 23rd West Coast Conference on Formal Linguistics*. Ed. by Angelo J. Rodríguez Vineeta Chand Ann Kelleher and Benjamin Schmeiser. Somerville, MA: Cascadia Press, pp. 43–56.
- Baerman, Matthew, Dunstan Brown, and Greville G Corbett (2002). "Surrey syncretisms database". In: DOI: 10.15126/SMG.10/1.
- Baerman, Matthew, Dunstan Brown, and Greville G Corbett (2005). *The syntax-morphology interface: A study of syncretism*. Cambridge: Cambridge University Press.
- Behaghel, Otto (1923-1932). *Deutsche Syntax: Eine geschichtliche Darstellung*. Heidelberg: Winter.
- Bergsma, Fenna (2019). "Mismatches in free relatives — grafting nanosyntactic trees". In: *Glossa: a journal of general linguistics* 4.1. DOI: 10.5334/gjgl.821.
- Bittner, Maria and Ken Hale (1996). "The structural determination of case and agreement". In: *Linguistic inquiry*, pp. 1–68.
- Bobaljik, Jonathan (2006). "Where's Φ ? Agreement as a Post-Syntactic Operation". In: *Phi-Theory: Phi Features Across Interfaces and Modules*. Ed. by Daniel Harbour, David Adger, and Susana Béjar. Oxford: Oxford University Press, pp. 295–328.
- Bobaljik, Jonathan (2012). *Universals In Comparative Morphology*. Cambridge: MIT Press. DOI: 10.7551/mitpress/9069.003.0001.
- Boretzky, Norbert (1994). *Romani: Grammatik des Kalderaš-Dialektes mit Texten und Glossar*. Wiesbaden: Harrassowitz Verlag.
- Braune, Wilhelm (2018). *Althochdeutsche Grammatik I*. Walter de Gruyter GmbH & Co KG. DOI: 10.1515/9783110515114.
- Bresnan, Joan and Jane Grimshaw (1978). "The Syntax of Free Relatives in English". In: *Linguistic Inquiry* 9.2, pp. 331–391.
- Caha, Pavel (2009). "The Nanosyntax of Case". PhD thesis. University of Tromsø.
- Caha, Pavel (2010). "The parameters of case marking and spell out driven movement". In: ed. by Jeroen van Craenenbroeck. Vol. 10. 1. Amsterdam/Philadelphia: John Benjamins Publishing Company, pp. 32–77. DOI: 10.1075/livy.10.02cah.

- Caha, Pavel (2013). "Explaining the structure of case paradigms by the mechanisms of Nanosyntax". In: *Natural Language and Linguistic Theory* 31, pp. 1015–1066. DOI: 10.1007/s11049-013-9206-8.
- Caha, Pavel (2019). *Case competition in Nanosyntax. A study of numeral phrases in Ossetic and Russian*.
- Caha, Pavel (2020a). "Modeling declensions without declension features". In: Caha, Pavel (2020b). "Nanosyntax: some key features". In: *The Cambridge handbook of Distributed Morphology*. Ed. by Artemis Alexiadou et al. Cambridge: Cambridge University Press.
- Cardinaletti, Anna and Michal Starke (1994). "The Typology of Structural Deficiency. On the Three Grammatical Classes". In: *Working Papers in Linguistics*. Venice: University of Venice, pp. 41–109.
- Cinque, Guglielmo (2005). "Deriving Greenberg's Universal 20 and its exceptions". In: *Linguistic inquiry* 36.3, pp. 315–332. DOI: 10.1162/0024389054396917.
- Cinque, Guglielmo (2020). *The Syntax of Relative Clauses: A Unified Double-headed Analysis*. Cambridge: Cambridge University Press. DOI: 10.1017/9781108856195.
- Citko, Barbara (2004). "On headed, headless, and light-headed relatives". In: *Natural Language & Linguistic Theory* 22.1, pp. 95–126.
- Citko, Barbara (2005). "On the Nature of Merge: External Merge, Internal Merge, and Parallel Merge". In: *Linguistic Inquiry* 36.4, pp. 475–496. DOI: 10.1162/002438905774464331.
- Citko, Barbara (2013). "Size matters: Multidominance and DP structure in Polish". In: *Talk at the 13th Poznan Linguistic Meeting*.
- Colasanti, Valentina and Martina Wiltschko (2019). "Spatial and discourse deixis and the speech act structure of nominals". In: Daskalaki, Evangelia (2011). "Case Mis-Matching as Case Stranding". In: *University of Pennsylvania Working Papers in Linguistics*. Ed. by Lauren A. Friedman. Vol. 17. Philadelphia: Penn Linguistics Club, pp. 77–86.
- De Clercq, Karen and Guido Vanden Wyngaerd (2018). "Unmerging analytic comparatives". In: *Ĵezikoslovlje* 19.3, pp. 341–363.
- Dixon, Robert Malcolm Ward (1972). *The Dyirbal language of north Queensland*. Vol. 9. Cambridge: Cambridge University Press. DOI: 10.1017/cbo9781139084987.
- Durrell, Martin (2011). *Hammer's German grammar and usage*. Routledge.
- Einarsson, Stefán (1949). *Icelandic: grammar, texts, glossary*. The Johns Hopkins Press.
- Friedman, Victor A (1991). "Romani nominal inflection: Cases or postpositions". In: *Problemy opisu gramatycznego języków słowiańskich, (Studia gramatyczne, Vol. 11)*, pp. 57–63.
- Fuß, Eric (n.d.). "Wh-relatives in German: historical and current developments". In: ().

- Fuß, Eric and Günther Grewendorf (2014). "Freie Relativsätze mit d-Pronomen". In: Gilligan, Gary Martin (1987). "A cross-linguistic approach to the pro-drop parameter". PhD thesis. Los Angeles, CA.
- Gippert, Jost (1987). "Zu Den Sekundären Kasusaffixen Des Tocharischen". In: *Tocharian and Indo-European Studies* 1, pp. 22–39.
- Groos, Anneke and Henk van Riemsdijk (1981). "Matching Effects in Free Relatives: A Parameter of Core Grammar". In: *Theory of Markedness in Generative Grammar*. Ed. by Luciana Brandi Adriana Belletti and Luigi Rizzi. Pisa: Scuola Normale Superiore.
- Grosu, Alexander (1987). "Pied piping and the matching parameter". In: *The linguistic review* 6.1, pp. 41–58.
- Grosu, Alexander (2003a). "A Unified Theory of 'standard' and 'transparent' Free Relatives". In: *Natural Language and Linguistic Theory* 21.2, pp. 247–331. doi: 10.1075/la.55.07gro.
- Grosu, Alexander (2003b). *Three studies in locality and case*. Routledge.
- Hachem, Mirjam (2015). "Multifunctionality. The Internal and External Syntax of d- and w-Items in German and Dutch". PhD thesis. Utrecht: Utrecht University.
- Hanink, Emily A (2018). "Super light-headed relatives, missing prepositions, and span-conditioned allomorphy in German". In: *The Journal of Comparative Germanic Linguistics* 21.2, pp. 247–290.
- Harbert, Wayne Eugene (1978). "Gothic syntax: a relational grammar". PhD thesis. Urbana-Champaign.
- Harbert, Wayne Eugene (1983). "A note on Old English free relatives". In: *Linguistic inquiry* 14.3, pp. 549–553.
- Harley, Heidi (1995). "Abstracting away from abstract case". In: *Proceedings-NELS*. Vol. 25. University of Massachusetts. GLSA, pp. 207–222.
- Harley, Heidi and Elizabeth Ritter (2002). "Person and number in pronouns: A feature-geometric analysis". In: *Language*, pp. 482–526.
- Himmelreich, Anke (2017). "Case Matching Effects in Free Relatives and Parasitic Gaps: A Study on the Properties of Agree". PhD thesis. Universität Leipzig.
- Kakarikos, Konstantinos (2014). "Case Attraction in Free Relative Clauses of Ancient Greek: A Study of the Syntax–Morphology Interface". In: *Major Trends in Theoretical and Applied Linguistics*. Vol. 1. Berlin, Boston: De Gruyter, pp. 289–304. doi: 10.2478/9788376560762.p35.
- Kayne, Richard S (1994). *The antisymmetry of syntax*. Vol. 25. MIT press.
- Keenan, Edward L and Bernard Comrie (1977). "Noun phrase accessibility and universal grammar". In: *Linguistic inquiry* 8.1, pp. 63–99.
- Kiparsky, Paul (1973). "'Elsewhere' in Phonology". In: *A Festschrift for Morris Halle*. Ed. by Stephen Anderson and Paul Kiparsky. New York: Holt, Rinehart, & Winston, pp. 93–106.

- Kramer, Ruth (2016). "The location of gender features in the syntax". In: *Language and linguistics Compass* 10.11, pp. 661–677.
- Krause, Thomas and Amir Zeldes (2016). "ANNIS3: A new architecture for generic corpus query and visualization". In: *Digital Scholarship in the Humanities* 31.1, pp. 118–139. DOI: 10.1093/llc/fqu057.
- Lander, Eric and Liliane Haegeman (2018). "The nanosyntax of spatial deixis". In: *Studia linguistica* 72.2, pp. 362–427. DOI: 10.1111/stul.12061.
- Lockwood, William Burley (1977). *An introduction to modern Faroese*. Torshavn: Føroya Skúlabókagrunnur.
- Marantz, Alec (2000). "Case and licensing". In: ed. by Eric J. Reuland. Vol. 34. Amsterdam/Philadelphia: John Benjamins Publishing Company, pp. 11–30. DOI: 10.1075/la.34.04mar.
- McFadden, Thomas (2018). "*ABA in stem-allomorphy and the emptiness of the nominative". In: *Glossa: a journal of general linguistics* 3.1. DOI: 10.5334/gjgl.373.
- Miyagawa, Shigeru and Takae Tsujioka (2004). "Argument structure and ditransitive verbs in Japanese". In: *Journal of East Asian Linguistics* 13.1, pp. 1–38. DOI: 10.1023/b:jeal.0000007345.64336.84.
- Moravcsik, Edith A. (1978). *Agreement*. Ed. by Charles A. Ferguson Joseph H. Greenberg and Edith A. Moravcsik. Stanford. DOI: 10.2307/413494.
- Moravcsik, Edith A. (2009). "The distribution of case". In: *The Oxford handbook of case*. Ed. by Andrej Malchukov and Andrew Spencer. Oxford University Press, pp. 231–245. DOI: 10.1093/oxfordhb/9780199206476.013.0016.
- Nikolaeva, Irina (1999). *Ostyak*. München: Lincom Europa.
- Noussia-Fantuzzi, Maria (2015). "The Politics of Food in the Early Cynics". In: *Food and History* 13.1-3, pp. 197–211.
- Picallo, M Carme (2008). "Gender and number in Romance". In: *Lingue e linguaggio* 7.1, pp. 47–66.
- Pittner, Karin (1995). "The Case of German Relatives". In: *The linguistic review* 12.3, pp. 197–231. DOI: 10.1515/tlir.1995.12.3.197.
- Rooth, Mats (1985). "Association with Focus". PhD Thesis. Amherst: University of Massachusetts.
- Rooth, Mats (1992). "A Theory of Focus Interpretation". In: *Natural Language Semantics* 1.1, pp. 76–116. DOI: 10.1007/bf02342617.
- Schwarz, Florian (2009). "Two types of definites in natural language". In: Šimik, Radek (2020). "Free Relatives". In: *The Wiley Blackwell Companion to Semantics*, pp. 1–38.
- Šimik, Radek (2016). "On the semantics of Czech free relatives". In: Smith, Peter W et al. (2019). "Case and number suppletion in pronouns". In: *Natural Language & Linguistic Theory* 37.3, pp. 1029–1101. DOI: 10.1007/s11049-018-9425-0.

- Spyropoulos, Vassilios (2011). "Case conflict in Greek free relatives". In: *Morphology and Its Interfaces* 178, p. 21.
- Starke, Michal (2009). "Nanosyntax: A Short Primer to a New Approach to Language". In: *Nordlyd* 36, pp. 1–6.
- Starke, Michal (2014). "Cleaning up the lexicon". In: *Linguistic Analysis* 39, pp. 245–256.
- Starke, Michal (2018). "Complex Left Branches, Spellout, and Prefixes". In: *Exploring Nanosyntax*. Ed. by Lena Baunaz et al. Oxford: Oxford University Press, pp. 239–249. DOI: 10.1093/oso/9780190876746.003.0009.
- Steel, Susan (1978). "Word order variation: A typological study". In: *Universals of Human Language: IV: Syntax*. Ed. by Charles A. Ferguson Joseph H. Greenberg and Edith A. Moravcsik. Stanford: Stanford University Press, pp. 585–623. DOI: 10.2307/413494.
- Swan, Oscar E (2002). *A grammar of contemporary Polish*. Slavica, Bloomington, Indiana.
- Van Baal, Yvonne and Jan Don (2018). "Universals in possessive morphology". In: *Glossa: a journal of general linguistics* 3.1. DOI: 10.5334/gjgl.395.
- Van Riemsdijk, Henk (2006). "Free Relatives". In: *The Blackwell Companion to Syntax*. Ed. by Martin Everaert and Henk van Riemsdijk. 2. Oxford: Blackwell Publishing, pp. 338–382. DOI: 10.1002/9780470996591.ch27.
- Vogel, Ralf (2001). "Case Conflict in German Free Relative Constructions: An Optimality Theoretic Treatment". In: *Competition in Syntax*. Ed. by Gereon Müller and Wolfgang Sternefeld. Berlin: Mouton de Gruyter, pp. 341–375. DOI: 10.1515/9783110829068.341.
- Vries, Lourens de (1993). *Forms and functions in Kombai, an Awyu language of Irian Jaya*. Dept. of Linguistics, Research School of Pacific Studies, The Australian National University.
- Wiland, Bartosz (2019). *The spell-out algorithm and lexicalization patterns: Slavic verbs and complementizers*. Berlin: Language Science Press.
- Zaenen, Annie, Joan Maling, and Höskuldur Thráinsson (1985). "Case and grammatical functions: The Icelandic passive". In: *Natural Language & Linguistic Theory* 3.4, pp. 441–483. DOI: 10.1163/9789004373235_005.
- Zompì, Stanislao (2017). "Case decomposition meets dependent-case theories". MA thesis. Pisa.