

CASE COMPETITION IN HEADLESS RELATIVES

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Contents

Contents	ii
List of tables	iv
List of figures	v
List of abbreviations	vii
I The case	1
II The base	3
1 Constituent containment	5
1.1 The basic idea	5
1.1.1 Underlying assumptions	6
1.1.2 The internal-only type	10
1.1.3 The matching type	12
1.1.4 The unrestricted type	15
1.1.5 Everything is constituent containment	17
1.2 Deriving the internal-only type	19
1.2.1 The relative pronoun	20
1.2.2 The light head	35
1.2.3 Comparing constituents	42
1.3 Deriving the matching type	49

<i>Contents</i>	iii
1.3.1 The relative pronoun	50
1.3.2 The (extra) light head	61
1.3.3 Comparing constituents	66
1.4 Deriving the unrestricted type	73
1.4.1 The relative pronoun	74
1.4.2 The light head	76
1.4.3 Comparing constituents	79
1.5 Summary	85
1.6 Aside: a larger syntactic context	87
Primary texts	93
Bibliography	95

List of tables

1.1	Options for the surface pronoun	7
1.2	The surface pronoun with differing cases in Modern German	19
1.3	Modern German relative pronouns (Durrell 2011: 5.3.3)	24
1.4	Modern German demonstrative pronouns (Durrell 2011: 5.4.1)	24
1.5	Modern German demonstrative <i>dieser</i> ‘this’ (Durrell 2011: Table 5.2) . .	25
1.6	Modern German relative pronouns (Durrell 2011: 5.3.3) (repeated) . . .	26
1.7	Intepretations of <i>wen</i> and <i>den-wen</i> relatives	37
1.8	The surface pronoun with differing cases in Polish	49
1.9	Polish relative pronoun Swan, p. 171	53
1.10	Polish relative pronoun Swan, p. 171	54
1.11	Polish relative pronoun Swan, p. 171	57
1.12	Polish demonstratives Swan, p. 171	57
1.13	The surface pronoun with differing cases in Polish	73
1.14	Relative/demonstrative pronouns in Old High German (Braune 2018: 339)	74
1.15	Adjectives on <i>-a/-ō-</i> in Old High German Braune 2018: 300	75
1.16	The surface pronoun with differing cases per language	85

List of figures

1.1	Two descriptive parameters generate three language types	6
1.2	Light head and relative pronoun	9
1.3	Light head and relative pronoun	10
1.4	NOM extra light head and ACC relative pronoun	11
1.5	NOM relative pronoun and ACC extra light head	11
1.6	LH vs. REL \rightarrow REL (repeated)	13
1.7	LH vs. REL after extraction \nrightarrow REL	13
1.8	Nominal ellipsis in Dutch	14
1.9	Nominal ellipsis in Kipsigis	15
1.10	Syncretism: relative pronoun deletes light head	16
1.11	Syncretism: light head deletes relative pronoun	17
1.12	Modern German EXT _{NOM} vs. INT _{NOM} \rightarrow <i>wer</i>	44
1.13	Modern German EXT _{NOM} vs. INT _{ACC} \rightarrow <i>wen</i>	46
1.14	Modern German EXT _{ACC} vs. INT _{NOM} \nrightarrow <i>wer/ən</i>	48
1.15	Polish EXT _{ACC} vs. INT _{ACC} \rightarrow <i>kogo</i>	68
1.16	Polish EXT _{ACC} vs. INT _{DAT} \nrightarrow <i>ego/komu</i>	70
1.17	Polish EXT _{DAT} vs. INT _{ACC} \nrightarrow <i>emu/kogo</i>	72
1.18	Old High German EXT _{NOM} vs. INT _{NOM} \rightarrow <i>dher</i>	80
1.19	Old High German EXT _{NOM} vs. INT _{ACC} \rightarrow <i>then</i>	82
1.20	Old High German EXT _{ACC} vs. INT _{NOM} \rightarrow <i>dhen</i>	84
1.21	Delete relative pronoun/light head as parameters	87

List of abbreviations

ACC	accusative
AN	animate
DAT	dative
DEM	demonstrative
ELH	extra light head
F	feminine
GEN	genitive
INF	infinitive
M	masculine
NOM	nominative
N	neuter
PL	plural
PRES	present tense
PST	past tense
PTCP	participle
REL	relative
SG	singular

Part I

The case

Part II

The base

Chapter 1

Constituent containment

In Chapter ?? I introduced two descriptive parameters that generate the attested languages, as shown in Figure 1.1. The first parameter concerns whether the external case is allowed to surface when it wins the case competition (allow EXT?). This parameter distinguishes between unrestricted languages (e.g. Old High German) on the one hand and internal-only languages (e.g. Modern German) and matching languages (e.g. Polish) on the other hand. The second parameter concerns whether the internal case is allowed to surface when it wins the case competition (allow INT?). This parameter distinguishes between internal-only languages (e.g. as Modern German) on the one hand and unrestricted languages (e.g. Old High German) on the other hand.

“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” Grosu (2003)¹⁴⁷

In this chapter I show how the typology can be derived from the morphology of the languages.

This chapter is structured as follows.

1.1 The basic idea

This section gives the basic idea behind my proposal. Throughout the rest of the chapter I motivate the proposal, and I illustrate it with examples.

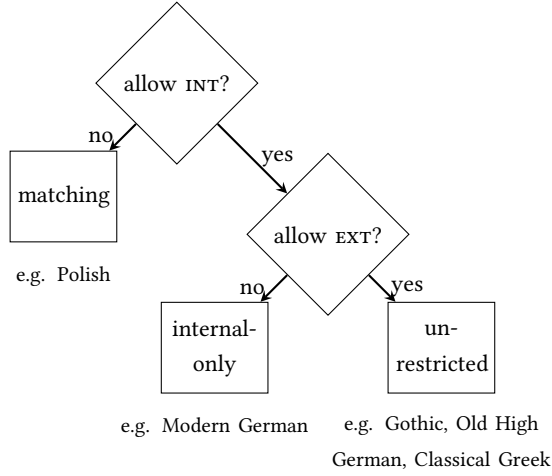


Figure 1.1: Two descriptive parameters generate three language types

1.1.1 Underlying assumptions

I start with my assumption that headless relatives are derived from light-headed relatives.¹ 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 absent. This happens under the following condition: a light head or a relative pronoun is absent when each of its constituents is contained in a constituent of the other element (i.e. the light head or the relative pronoun).

To see what a light-headed relative looks like, consider the light-headed relative in (2). *Thér* 'DEM.SG.M.NOM' is the light head of the relative clause. This is the element

¹The same is argued for headless relatives with D-pronouns in Modern German by Fuß and Grewendorf 2014; Hanink 2018 and for Polish by Citko 2004. A difference with Modern German and Polish is that one of the elements can only be absent when the cases match. In Section ?? I return to the point why Modern German does not have unrestricted headless relatives that look like Old High German, although it still has syncretic light heads and relative pronouns.

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.

that appears in the external case, the case that reflects the grammatical role in the main clause. *Then* ‘REL.SG.M.ACC’ is the relative pronoun in the relative clause. This is the element that appears in the internal case, the case that reflects the grammatical role within the relative clause.

- (2) eno nist thiz thér **then** **ir**
 now not be.3SG DEM.SG.N.NOM DEM.SG.M.NOM REL.SG.M.ACC 2PL.NOM
suochet zi arslahanne?
 seek.2PL to kill.INF.SG.DAT
 ‘Isn’t this now the one, who you seek to kill?’

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 and calling the relative pronoun is actually sometimes the light head and sometimes the relative pronoun. To reflect that, I call the surfacing element from now on the surface pronoun.

Table 1.1 lists the two options that I just laid out plus an additional one. The first option is that the relative pronoun, which bears the internal case, can appear as the surface pronoun. The second option is that the light head, which bears the external case, can appear as the surface pronoun. The third option is that there is no grammatical form for the surface pronoun.

Table 1.1: Options for the surface pronoun

surface pronoun
light head _{EXT}
relative pronoun _{INT}
*

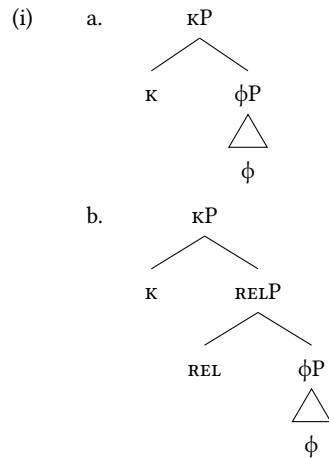
I propose that whether or the surface pronoun is the light head, the relative pronoun or none of them depends on whether one of the elements (i.e. the light

head or the relative pronoun) can delete the other. The light head appears as the surface pronoun when the light head can delete the relative pronoun. The relative pronoun appears as the surface pronoun when the relative pronoun can delete the light head. There is no grammatical surface pronoun possible when neither of them can delete the other one.

Whether or not one element can delete the other depends on the comparison between the two. Specifically, I compare the constituents within light heads and relative pronouns to each other. Light heads and relative pronouns do not only correspond to case features, but also to other features (having to do with number, gender, etc.). It differs per language how language organize these features into constituents. In this chapter, I illustrate how these different constituents within light heads and relative pronouns lead to the differences in whether or not the light head and the relative pronoun can be deleted, and therefore to different language types.

In order to be able to compare the light head and the relative pronoun, I zoom in on their syntactic structures. In Section 1.2 to 1.4 I give arguments to support the structures I am assuming here. Figure 1.2 gives a simplified representation of them.² The light head and the relative pronoun partly contain the same syntactic

²The structures in Figure 1.2 are not base structures but derived ones. I assume the base structure of the light head to be as in (ia) and the base structure of the relative pronoun to be as in (ib).



The structure for the relative pronoun in Figure 1.2 cannot be derived from the base structures in (ib). It is a simplification of a more complex situation for which I only give the intuition here.

features. The features they have in common are case (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 in addition has a relative feature (REL).

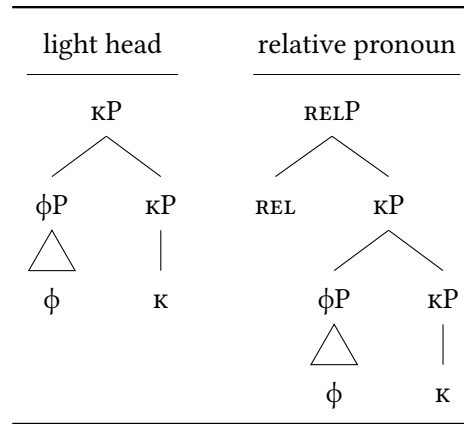


Figure 1.2: Light head and relative pronoun

I compare the light head and the relative pronoun in terms of containment. The relative pronoun can delete the light head because the relative pronoun contains all constituents the light head contains. I illustrate this in Figure 1.3. I draw a dashed circle around the constituent that is a constituent in both the light head and the relative pronoun. The KP is contained in the RELP , so the relative pronoun can delete the light head. I illustrate this by marking the content of the dashed circle for the KP gray.

The light head cannot delete the relative pronoun, because it does not contain all constituents of the relative pronoun. The light head has a constituent KP , but it does not contain the feature REL to make it an RELP .

With the set of assumptions I introduced in this section, I can account for the internal-only type of language. Moreover, the system I set up excludes the external-only type of language. An external-only type of language would be one in which the light head can delete the relative pronoun, but the relative pronoun cannot delete the light head. In my proposal, an element can delete the other one if it contains

In Section 1.2 I show the actual decomposition of the light head and the relative pronoun and how I reach the derived structure. I work with the derived structure in the main text because this is the configuration in which the containment relations under discussion hold.

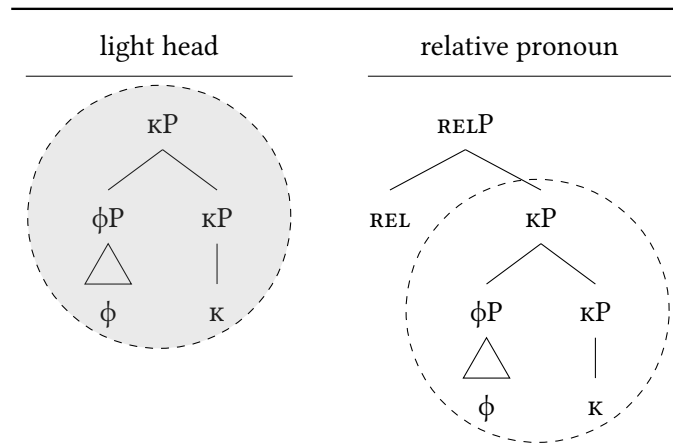


Figure 1.3: Light head and relative pronoun

all of the other's constituents. Relative pronouns always contain one more feature than light heads: *REL*. From that it follows that the light head does not contain all features that the relative pronoun contains. Therefore, it is impossible for a light head to contain all constituents of the relative pronoun.

However, not all languages are of the internal-only type. I argue that the other two attested languages differ from the internal-only type in how light heads and relative pronouns are spelled out. Before I come back to how the different spell-out leads to different language types, I show how the internal-only type fares with differing internal and external cases.

1.1.2 The internal-only type

I start with the example in Figure 1.4, in which the relative pronoun bears a more complex case than the light head.

I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun. There are two separate constituents. I start with the right-most constituent of the light head: *NOMP*. This constituent is also a constituent in the relative pronoun, contained in the lower *ACCP*. I continue with the left-most constituent of the light head: the *φP*. This constituent is also a constituent in the relative pronoun, contained in the higher *ACCP*. As each constituent of the light head is also a constituent within the relative pronoun, the light head can be

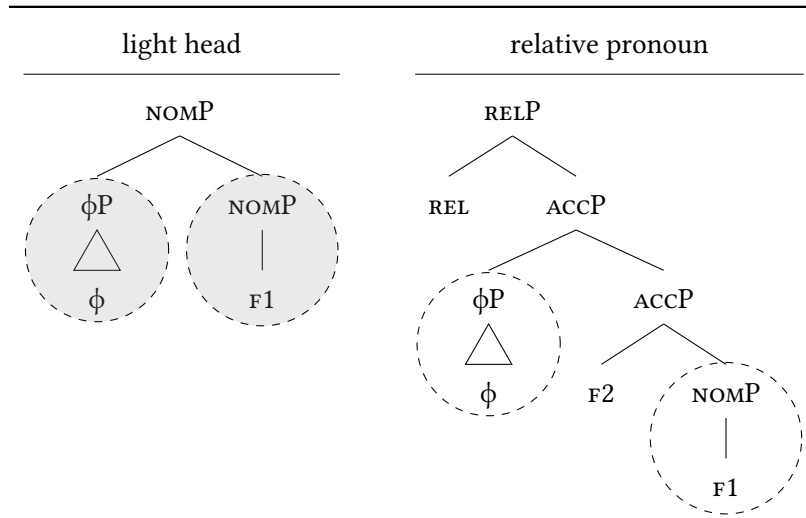


Figure 1.4: NOM extra light head and ACC relative pronoun

absent. I illustrate this by marking the content of the dashed circles for the light head gray.

I continue with the example in Figure 1.5, in which the light head bears a more complex case than the relative pronoun.

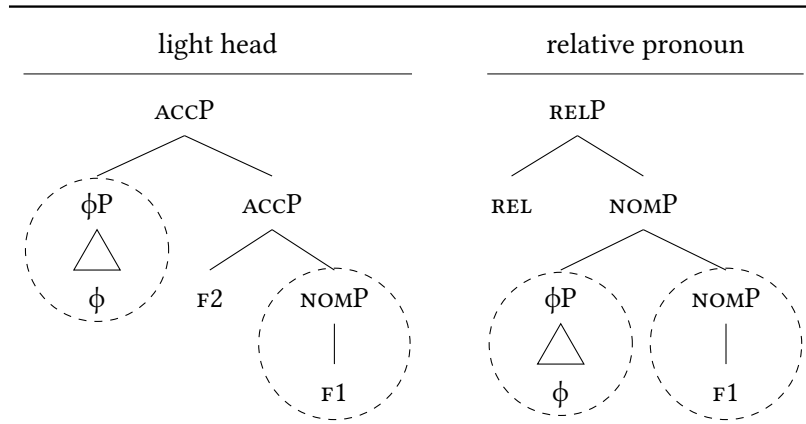


Figure 1.5: NOM relative pronoun and ACC extra light head

I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun. Different from the example in Figure 1.4,

neither of the elements contains all of the other's constituents. The relative pronoun has a constituent *NOMP*, but it lacks the *F2* to make it an *ACCP*. The light head has a constituent that is not a constituent in the relative pronoun, so the light head cannot be absent. The light head has a constituent *NOMP*, but it does not contain *REL* to make it a *RELP*. The relative pronoun has a constituent that is not a constituent in the light head, so the relative pronoun cannot be absent. As a result, none of the elements can be absent.

Now I return to the other two attested language types. The differences between the languages do not arise from changing the feature content of the light head and relative pronoun per language.³ Instead, the differences come from how the light heads and relative pronouns are spelled out.

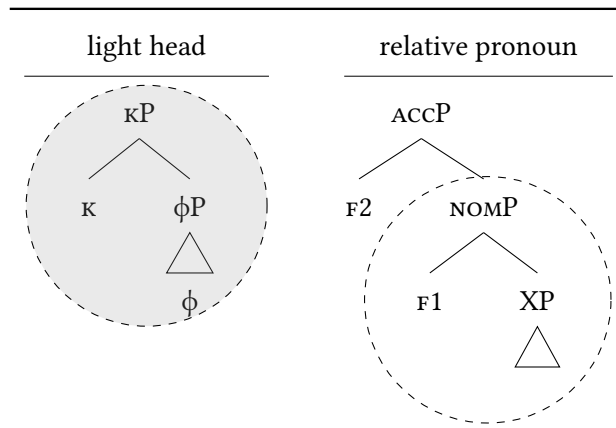
1.1.3 The matching type

In matching languages like Polish, the light head cannot delete the relative pronoun and the relative pronoun cannot delete the light head. The intuition for this type of language is that they package their features together differently from internal-only languages like Modern German. The packaging happens in such a way that the constituents of the relative pronoun do not contain the constituents of the light head. As a result, the relative pronoun cannot delete the light head anymore. This account crucially relies on constituent containment being the containment requirement that needs to be fulfilled. Feature containment is too weak of a requirement.

I illustrate the difference between feature and constituent containment with two structures. In Figure 1.6, I repeated the light head and relative pronoun from Figure 1.4.

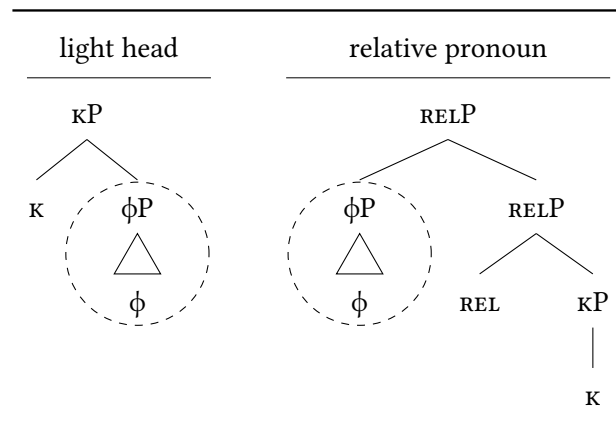
In Figure 1.6, two different types of containment hold: feature containment and constituent containment. I start with feature containment. Each feature of the *κP* (i.e. ϕ and κ) is also a feature within the *RELP*, so the *RELP* contains the *κP*. Constituent containment works as follows. Each constituent of the *κP* (i.e. ϕP and κP

³The feature content of the unrestricted languages differs slightly from that of the internal-only and matching languages. This is due to the fact that this language type uses a different type of relative pronoun. The basic idea of the relative pronoun having at least one more feature than the light head remains the same.

Figure 1.6: LH vs. REL \rightarrow REL (repeated)

that contains κ and ϕP) is also a constituent of the κP . Therefore, RELP contains contains the κP .

Constituent containment is a stronger requirement than feature containment. In Figure 1.7 I show a situation in which the feature containment requirement holds but the constituent containment requirement does not. It is the same picture as in Figure 1.6 except for that the ϕP has moved out of the RELP.

Figure 1.7: LH vs. REL after extraction \rightarrow REL

There is still feature containment: the κP contains ϕ and κ and so does the RELP. However, there is no longer constituent containment: the κP constituent containing

ϕP and κP that contains κ and ϕP is no longer a constituent within the RELP.

In Section 1.3 I show that only the stronger requirement of constituent containment is able to distinguish the internal-only from the matching type of language, and that the weaker requirement of feature containment is not.

Constituent containment is also what seems to be crucial in the deletion of nominal modifiers. Cinque argues that nominal modifiers can only be absent if they form a constituent with the NP (Cinque, 2020). If they are not, they can also not be interpreted.

In (3), I give an example of a conjunction with two noun phrases in Dutch. The first conjunct consists of a demonstrative, an adjective and a noun, and the second one only of a demonstrative.

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

The adjective *witte* ‘white’ forms a constituent with *huizen* ‘houses’. I showed this in Figure 1.8 under first conjunct. In the second conjunct, the constituent with the adjective and the noun in it is deleted. The adjective can still be interpreted in (3), because it forms a constituent with the noun.

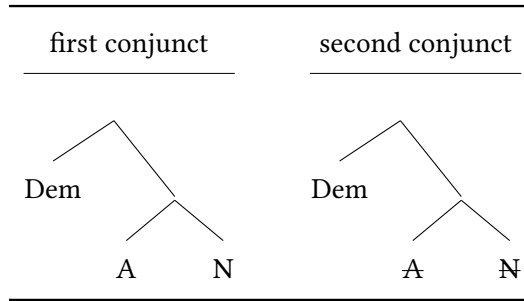


Figure 1.8: Nominal ellipsis in Dutch

The situation is different in Kipsigis, a Nilotic Kalenjin language spoken in Kenya. In (4), 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 (Cinque, 2020).

- (4) 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 adjective *leel* ‘white’ does not form a constituent with *kaarii* ‘houses’. I showed this in Figure 1.9 under first conjunct. In the second conjunct, the adjective and the noun are deleted. Different from the Dutch example in 1.8, this is not a single constituent. The adjective cannot be interpreted in (4), because it does not form a constituent with the noun.

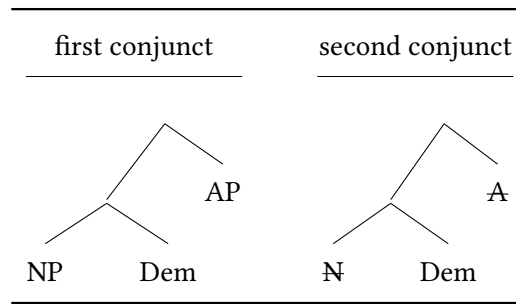


Figure 1.9: Nominal ellipsis in Kipsigis

To sum up, the comparison between light heads requires constituent containment. Feature containment is not enough.

1.1.4 The unrestricted type

In unrestricted languages like Old High German, the light head can delete the relative pronoun and the relative pronoun can delete the light head. The property of unrestricted languages that I connect to this behavior is that their light heads and relative pronoun are syncretic. I suggest that if there is no constituent containment, but the two forms are spelled out by the same morpheme, one element can still delete the other. Consider Figure 1.10, in which the relative pronoun deletes the light head.

The ϕ P in the light head is spelled out as α , illustrated by the circle around the ϕ P and the α under it. The RELP in the relative pronoun is spelled out as α too,

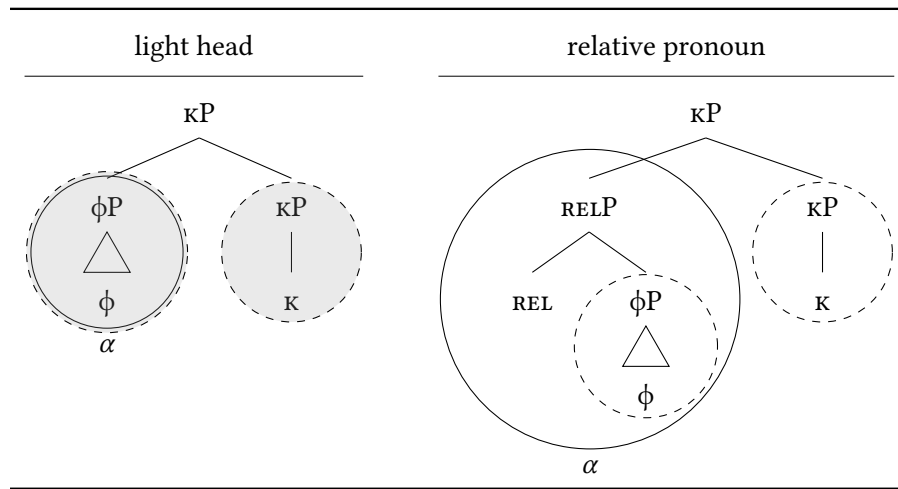


Figure 1.10: Syncretism: relative pronoun deletes light head

illustrated in the same way. I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun.

I start with the right-most constituent of the light head: κP . This constituent is also a constituent in the relative pronoun. I continue with the left-most constituent of the light head: the ϕP . This constituent is also a constituent in the relative pronoun, contained in the RELP. As each constituent of the light head is also a constituent within the relative pronoun, the light head can be absent. I illustrate this by marking the content of the dashed circles for the light head gray.

Consider Figure 1.11, in which the light head deletes the relative pronoun.

Just as in Figure 1.10, the ϕP in the light head is spelled out as α and the RELP in the relative pronoun is spelled out as α too. I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun.

I start with the right-most constituent of the relative pronoun: κP . This constituent is also a constituent in the relative pronoun. I continue with the left-most constituent of the relative pronoun: the RELP. This constituent is not contained in the light head. The ϕP lacks the REL to make it a RELP. However, the two constituents are syncretic: the ϕP is also spelled out as α . I suggest that this syncretism is also enough to license the deletion. I illustrate this by marking the content of the dashed circles for the relative pronoun gray and the portion that is deleted by syncretism

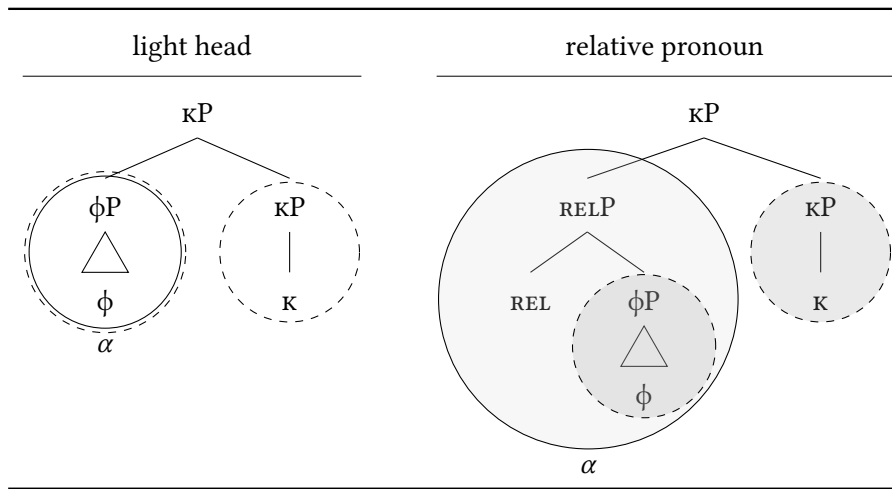


Figure 1.11: Syncretism: light head deletes relative pronoun

in a lighter shade of gray.

To sum up, each constituent of the relative pronoun is either also a constituent within the light head or it is syncretic with a constituent within the light head. Therefore, the relative pronoun can be absent. The fact that syncretism licenses deletion is not specific to the portion of the structure that corresponds to ϕ and REL. Syncretic cases can have the same effect, the inanimate nominative and inanimate accusative singular in Modern German being an instance of it. I give examples of this in Section 1.4.

1.1.5 Everything is constituent containment

In summing up this section, I return to the metaphor with the committee that I introduced in Chapter ?? . I wrote that first case competition takes place, in which a more complex case wins over a less complex case. This case competition can now be reformulated into a more general mechanism, namely constituent comparison. 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 ?? I wrote that the approval happens based on where the winning case comes from: from inside of the relative clause (inter-

nal) or from outside of the relative clause (external). I argued in this section that headless relatives are derived from light-headed relatives. The light head bears that external case and the relative pronoun bears the internal case. The ‘approval’ of an internal or external case relies on the same mechanism as case competition, namely constituent comparison. If each constituent of the light head is contained in a constituent of the relative pronoun, the relative pronoun can delete the light head. 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 each constituent of the relative pronoun is contained in a constituent of the light head, the light head can delete the relative pronoun. 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 several instances of constituent comparison. 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.

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. The operation that deletes the light head or the relative pronoun is the same for all language types. In this work, I do not specify on which larger syntactic structure and which deletion operation should be used. In Section 1.6 I discuss existing proposals on these topics and to what extent they are compatible with my account.

To conclude, in this section I introduced the assumptions that headless relatives are derived from light-headed relatives and that relative pronouns contain at least one more feature than light heads. A headless relative is grammatical when either the light head or the relative pronoun contains all constituents of 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.

1.2 Deriving the internal-only type

Internal-only languages can be summarized as in Table 1.2.

Table 1.2: The surface pronoun with differing cases in Modern German

	$K_{INT} > K_{EXT}$	$K_{EXT} > K_{INT}$	
internal-only	relative pronoun _{INT}	*	Modern German

A language of the internal-only type (like Modern German) allows only the internal case to surface when it wins the case competition. This means that the relative pronoun with its internal case can be the surface pronoun. A language of this type does not allow the external case to surface when it wins the case competition. This means that the light head with its external case cannot be the surface pronoun. The goal of this section is to derive these properties from the way light heads and relative pronouns are spelled out in Modern German.

The section is structured as follows. First, I discuss the relative pronoun. According to my assumptions in Section 1.1, relative pronouns are part of the relative clause. I confirm this independently for Modern German with data from extraposition. I decompose the relative pronouns into three morphemes, and I show which features each of the morphemes corresponds to. Then I discuss the light head. I argue that Modern German headless relatives are derived from a 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. Finally, I compare the constituents of the light head and the relative pronoun. When the internal and the external case match, the relative pronoun can delete the light head, because it contains all its constituents. When the internal case is more complex than the external case, the relative pronoun can still delete the light head, for the same reason: the relative pronoun contains all constituents of the light head. This is no longer the case when the external case is more complex than the internal case. The light head does not contain all constituents of the relative pronoun, and the relative pronoun does not

contain all constituents of the light head. As a result, there is no grammatical form to surface when the external case is more complex.

1.2.1 The relative pronoun

In this section I discuss the relative pronoun in Modern German headless relatives. First, I show, independent from case facts, that the surface pronoun is the relative pronoun. The evidence comes from extraposition data.

The sentences in (5) show that it is possible to extrapose a CP. In (5a), the clausal object *wie es dir geht* ‘how you are doing’, marked here in bold, appears in its base position. It can be extraposed to the right edge of the clause, shown in (5b).

- (5) a. Mir ist **wie es dir geht** egal.
 1SG.DAT is how it 2SG.DAT goes the same
 ‘I don’t care how you are doing.’
 b. Mir ist egal **wie es dir geht**.
 1SG.DAT is the same how it 2SG.DAT goes
 ‘I don’t care how you are doing.’ (Modern German)

(6) illustrates that it is impossible to extrapose a DP. The clausal object of (5) is replaced by the simplex noun phrase *die Sache* ‘that matter’. In (6a) the object, marked in bold, appears in its base position. In (6b) it is extraposed, and the sentence is no longer grammatical.

- (6) a. Mir ist **die Sache** egal.
 1SG.DAT is that matter the same
 ‘I don’t care about that matter.’
 b. *Mir ist egal **die Sache**.
 1SG.DAT is the same that matter
 ‘I don’t care about that matter.’ (Modern German)

The same asymmetry between CPs and DPs can be observed with relative clauses. A relative clause is a CP, and the head of a relative clause is a DP. The sentences in (7) contain the relative clause *was er gekocht hat* ‘what he has stolen’. This is

marked in bold in the examples. The (light) head of the relative clause is *das*.⁴ In (7a), the relative clause and its head appear in base position. In (7b), the relative clause is extraposed. This is grammatical, because it is possible to extrapose CPs in Modern German. In (7c), the relative clause and the head are extraposed. This is ungrammatical, because it is possible to extrapose DPs.

- (7) a. Jan hat **das, was er gekocht hat**, aufgegessen.
 Jan has that what he cooked has eaten
 'Jan has eaten what he cooked.'
- b. Jan hat **das** aufgegessen, **was er gekocht hat**.
 Jan has that eaten what he cooked has
 'Jan has eaten what he cooked.'
- c. *Jan hat aufgegessen, **das, was er gekocht hat**.
 Jan has eaten that what he cooked has
 'Jan has eaten what he cooked.' (Modern German)

The same can be observed in relative clauses without a head. (8) is the same sentence as in (7) only without the overt head. The relative clause is marked in bold again. In (8a), the relative clause appears in base position. In (8b), the relative clause is extraposed. This is grammatical, because it is possible to extrapose CPs in Modern German. In (8c), the relative clause is extraposed without the relative pronouns. This is ungrammatical, because the relative pronoun is part of the CP. This shows that the relative pronoun in headless relatives in Modern German are necessarily part of a CP, which is here a relative clause.

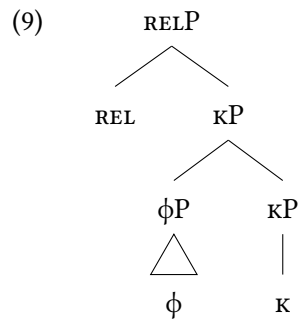
- (8) a. Jan hat **was er gekocht hat** aufgegessen.
 Jan has what he cooked has eaten
 'Jan has eaten what he cooked.'
- b. Jan hat aufgegessen **was er gekocht hat**.
 Jan has eaten what he cooked has
 'Jan has eaten what he cooked.'

⁴Not all speakers of Modern German accept the combination of *das* as a light head and *was* as a relative pronoun and prefer *das* as a relative pronoun instead. I use the combination of *das* and *was* to have a more minimal pair with the headless relatives (that uses the relative pronoun *was*).

- c. *Jan hat **was** aufgegessen **er gekocht hat**.
 Jan has what eaten he cooked has
 ‘Jan has eaten what he cooked.’ (Modern German)

In conclusion, extraposition facts show that the surface pronoun in Modern German headless relatives is the relative pronoun.

Now I turn to the internal structure of the relative pronoun. In Section 1.1 I gave the structure in (9) as a simplified representation of the relative pronoun.



In what follows, I give the non-simplified representation. It is important to carefully establish the feature content of the relative pronoun. This constituents that it forms are namely determining whether the relative pronoun can delete the light head or not. Moreover, the features that I introduce for Modern German are present in the same way in the other two language types.

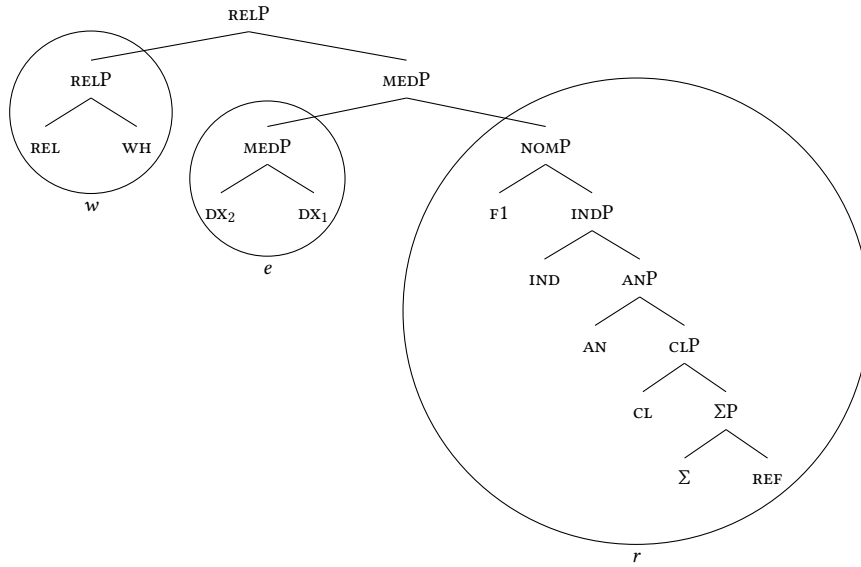
I discuss two relative pronouns: the animate nominative singular and in the animate accusative singular. These are the two forms that I compare the constituents of in Section 1.2.3. I show them in (10).

- (10) a. w-e-r
 ‘REL.AN.SG.NOM’
 b. w-e-n
 ‘REL.AN.SG.ACC’

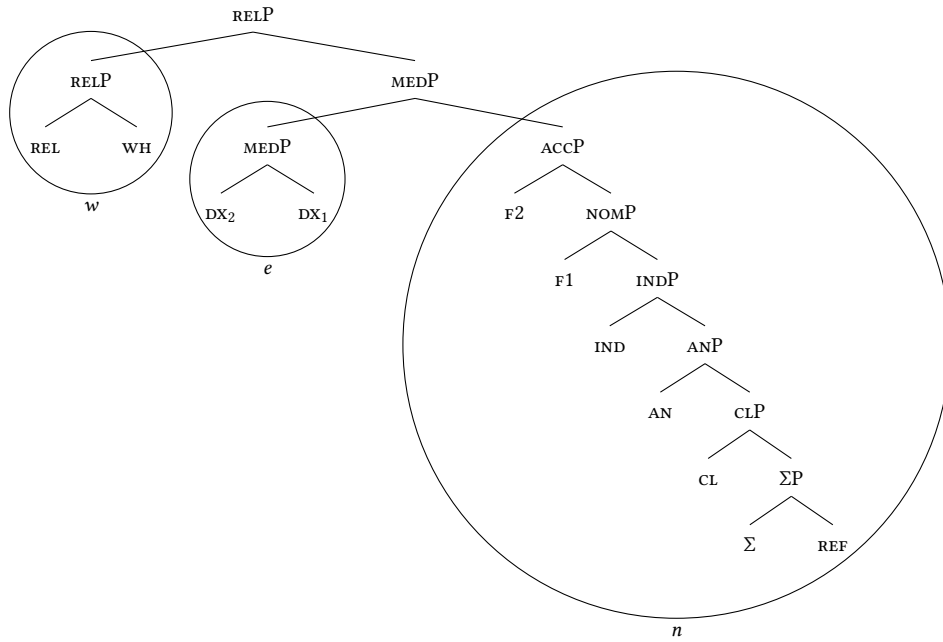
I decompose the relative pronouns in three morphemes: the *w*, the *e* and the final consonant. For each morpheme, I discuss which features they spell out, and I give their lexical entries. In the end, I derive the relative pronouns, given here in (11)

and (12).

(11)



(12)



I start with the morpheme *w* of the relative pronoun. Compare Table 1.3 and Table 1.4. The *w* combines with the same endings as the *d* does in demonstratives (or

relative pronouns in headed relatives).⁵

Table 1.3: Modern German relative pronouns (Durrell 2011: 5.3.3)

	AN	INAN
NOM	w-er	w-as
ACC	w-en	w-as
DAT	w-em	(w-em)

Table 1.4: Modern German demonstrative pronouns (Durrell 2011: 5.4.1)

	M	N	F
NOM	d-er	d-as	d-ie
ACC	d-en	d-as	d-ie
DAT	d-em	d-em	d-er

This identifies the *d* and, more importantly for the discussion here, the *w* as a separate morpheme. Two features that *w* spells out are important for the discussion here.

The first feature I refer to as *WH*. This is a feature that *WH*-pronouns, such as *WH*-relative pronouns and interrogatives, share. The *WH*-element triggers the construction of a set of alternatives in the sense of Rooth (1985, 1992) (Hachem, 2015). This contrasts with the *D* in Table 1.4, which is responsible for establishing a definite reference.

⁵Note here that the *WH*-relative pronouns, unlike the demonstratives, do not have a feminine form for the relative pronouns in Table 1.3. Demonstratives also have plural forms (which are not given here), 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, as well as always-external languages. In Chapter ?? I return to this observation in relation with the always-external languages.

The second relevant feature is REL, which establishes a relation. A language that overtly shows that WH-relative pronouns consist of two features is Hungarian. (13) gives three examples of WH-pronouns that combine with the marker *a* to become a WH-relative pronoun.

- (13) *a-mi,* *a-ki,* *a-melyik*
 REL-what REL-who REL-which

(Kenesei et al. 1998: 40)

In sum, the *w* spells out the features WH and REL, shown in (14).

- (14) RELP \Leftrightarrow *w*
 / \
 REL WH

I continue with the final consonants: *r* and *n*. They can be observed in several contexts besides relative pronouns. Table 1.5 gives an overview of the demonstrative *dieser* ‘this’ in Modern German in two numbers, three genders and three cases.⁶ Compare the final consonants in Table 1.6 and Table 1.5 (repeated from Table 1.3).

Table 1.5: Modern German demonstrative *dieser* ‘this’ (Durrell 2011: Table 5.2)

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

Table 1.5 and 1.6 show that the final consonants take different shapes depending on gender, number and case. I conclude from that that the consonant realizes features having to do with these three aspects.

⁶The vowel preceding the final consonant is written as *e*. I write it as *ə*, because this is how it is pronounced. I make this distinction to emphasize that this differs from the vowel used in the relative pronouns.

Table 1.6: Modern German relative pronouns (Durrell 2011: 5.3.3) (repeated)

	AN	INAN
NOM	w-e-r	w-a-s
ACC	w-e-n	w-a-s
DAT	w-e-m	(w-e-m)

Another context in which this consonant appears is in their use as a pronoun. More specifically, the final consonant corresponds to the weak pronoun in Modern German, which I illustrate in the following examples. I only give examples of the nominative and accusative masculine singular, because these are the forms used in the relative pronoun.

First, I show that the consonant is not a strong pronoun. The example in (15) illustrates this by showing that the weak pronoun cannot be coordinated.

- (15) a. Jan und er/ *r essen gerne Dampfnudeln.
 Jan und he.STR/ he.WK eat with pleasure *Dampfnudeln*
 ‘Jan and he like to eat *Dampfnudeln*.’
 b. Ich habe Jan und ihn/ n gesehen.
 I have Jan and him.STR/ him.WK seen
 ‘I saw Jan and him.’

The example in (16) illustrates the same point by showing that the weak pronoun cannot be focused.

- (16) a. Nur er/ *r isst gerne Saumagen.
 only he.STR/ he.WK eats with pleasure *Saumagen*
 ‘Only he likes *Saumagen*.’
 b. Ich habe nur ihn/*n gesehen.
 I have only him.STR/ him.WK seen
 ‘I saw only him.’

Second, I show that the consonant is not a clitic. The example in (17) illustrates this

by showing that the weak pronoun obligatorily follows dative objects.

- (17) a. .. dass Jan Ursel ihn/ n empfohlen hat.
 that Jan Ursel him.STR/ him.WK recommended has
 ‘that Jan recommended him to Ursel.’
 b. *.. dass Jan ihn/ n Ursel empfohlen hat.
 that Jan him.STR/ him.WK Ursel recommended has
 ‘that Jan recommended him to Ursel.’

The example in (18) illustrates the same point by showing that the weak pronoun can appear after prepositions (which clitics cannot).

- (18) a. Ich habe schon ein Geschenk für n gekauft.
 I have already a gift for him.WK bought
 ‘I already bought a gift for him.’
 b. Ich habe gestern gegen n gespielt.
 I have yesterday against him.WK played
 ‘Yesterday I played against him.’
 c. Ich habe ein schönen Brief an n geschrieben.
 I have a nice letter to him.WK written
 ‘I wrote a nice letter to him.’
 d. Ich bin schnell auf n zu gelaufen.
 I am fast on him.WK to walked
 ‘I walked toward him fast.’

In sum, besides gender, number and case features, the final consonant of relative pronoun spell out pronominal features.

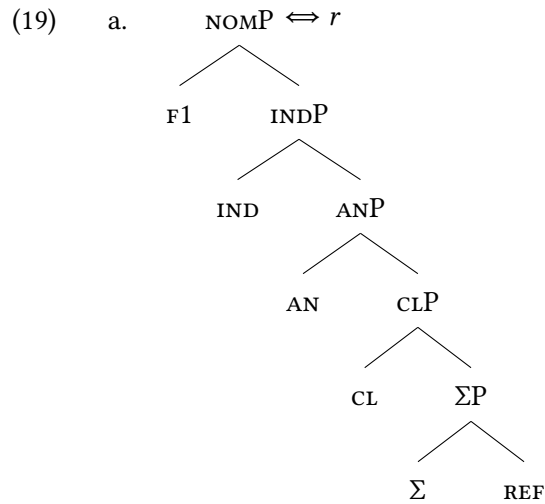
Since I discuss the animate nominative singular and in the animate accusative singular, I only introduce features that are realized by these morphemes. For case, I adopt the features of Caha (2009), already introduced in Chapter ?? . The feature F1 corresponds to the nominative, and the features F1 and F2 correspond to the accusative.

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.⁷ The feature IND corresponds to number, which is singular if it is not combined with any other features.

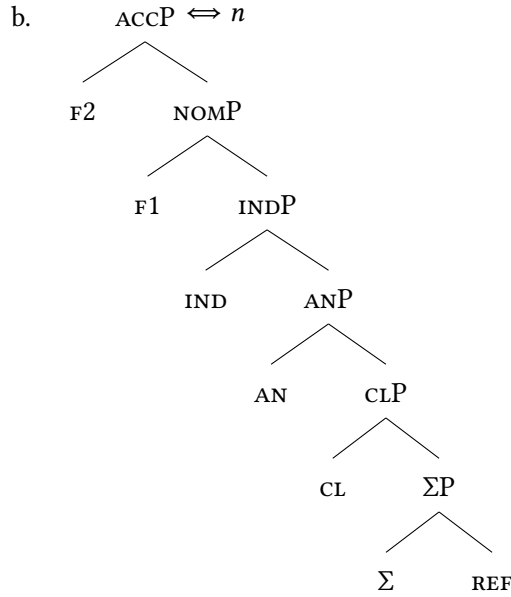
Regarding pronominal features, I assume the feature REF to be present. Harley and Ritter (2002) claim that all pronouns contain this feature, because they are referential expressions. In addition, the feature Σ is present because it is a weak pronoun (Cardinaletti and Starke, 1994).⁸

I give the lexical entries for *r* and *n* in (19a) and (19b). The *r* is the nominative masculine singular, so it spells out the features REF, Σ , CL, AN, IND and F1. The *n* is the accusative masculine singular, so it spells out the features that the *r* spells out plus F2.



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

⁸I assume that clitics lack the features REF (which corresponds to the LP in Cardinaletti and Starke 1994: 61) and the feature Σ . Strong pronouns have, in addition to REF and Σ , another feature (C in terms of Cardinaletti and Starke 1994: 61).



Note that the ordering of the features here is not random. I motivate this later on in this section.

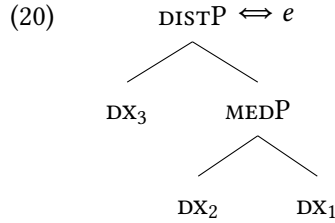
This leaves the *e* in the relative pronoun. This morpheme is present in elements such as demonstratives and (WH-)relative pronouns. It spells out features regarding deixis. In relative pronouns it does not express spatial deixis, but discourse deixis: it establishes a relation with an antecedent.

I assume that the WH-relative pronoun combines with the medial or the distal (when distinguishing between proximal, medial and distal). English has morphological evidence for this claim. Demonstratives in English can combine with either the proximal (*this*) or this medial/distal (*that*). WH-pronouns combine with the medial/distal (*what*) and are ungrammatical when combined with the proximal (**whis*).

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 1.4.

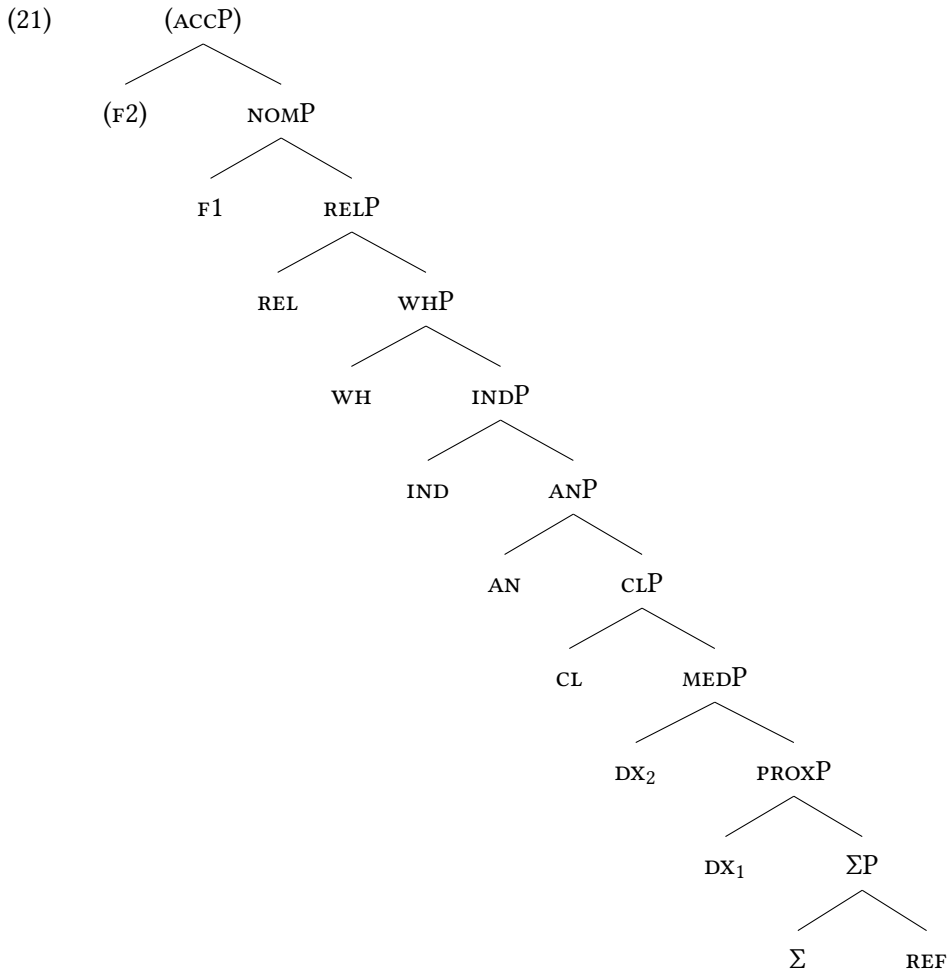


At this point, I gave lexical entries for each of the morphemes (in (14), (19a), (19b) and (20)) and I showed what the relative pronouns as a whole look like (in ?? and ??). What is still needed, is a theory for combining these morphemes into a relative pronoun. This theory should determine which morphemes should be combined with each other in which order. Ideally, the theory 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 1.2.2.

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 and their order in which they are merged are specified, 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.

(21) shows the functional sequence for relative pronouns. It gives all features it

contains and their hierarchical ordering.



Starting from the bottom, these are pronominal features (REF and Σ) and features having to do with deixis (DX₁ and DX₂), gender features (CL and AN), number features (IND), ?? features (WH and REL) and case features (F1 and F2). This order is independently supported by work in the literature. Both Picallo and Kramer argue that number is hierarchically higher than gender. Case is agreed to be higher than number (cf. Bittner and Hale).

REF, Σ , DEIX, WH/REL?

Features are merged one by one according to the functional sequence, starting

from the bottom. Spellout is cyclic, as stated in (22).

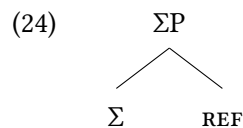
- (22) Cyclic phrasal spellout. Caha:declension
 Spellout must successfully apply to the output of every Merge F operation.
 After successful spellout, the derivation may terminate, or proceed to another round of Merge F.

After each instance of merge, the constructed phrase must be spelled out. Spellout happens according to the spellout algorithm, given in (23).

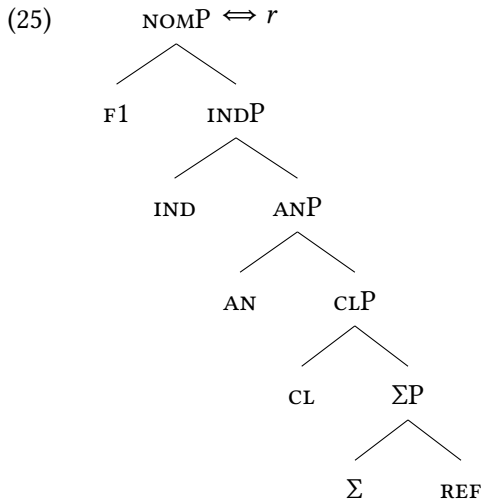
- (23) **Spellout Algorithm:**
- a. Merge F and spell out.
 - b. If (23a) fails, move the Spec of the complement and spell out.
 - c. If (23b) fails, move the complement of F and spell out.

I informally reformulate what is in (23). I start with the first line in (23a). This says that a feature F is merged, and the newly created phrase FP is attempted to spell out. The next two lines, (23b) and (23c), describe two types of rescue movements that take place when the spellout in (23a) fails (i.e. when there is no match in the lexicon). In the discussion about Modern German, only the first line leads to matching lexical entries. The second and third line do not lead to a match in the Modern German derivations I run. I introduce these two steps here anyway, because they will lead to successful matched in Polish.

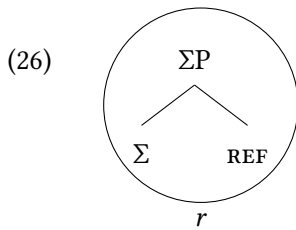
I illustrate this by merging REF and Σ , creating a ΣP .



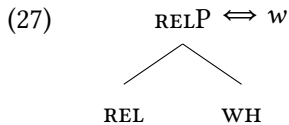
The syntactic structure is contained in the lexical tree in ??, repeated from (19a), which corresponds to the *r*.



Therefore, the ΣP is spelled out as r . As usual, I mark this by circling the part of the structure that corresponds to the lexical entry, and placing the corresponding phonology under it.



The next point of interest arises when the feature DX_1 is merged. This feature cannot spell out together with all features merged so far (as the option in (23a)). There is no spec, so the second option is impossible. Finally, it is impossible for WH to be spelled out as part of a suffix (as the option in (23b)). This last option is impossible, because the lexical entry that contains the feature WH has a binary bottom. I repeat the lexical entry from (14) in (27).



The derivation turns to the last resort option, which is to build a complex left branch.

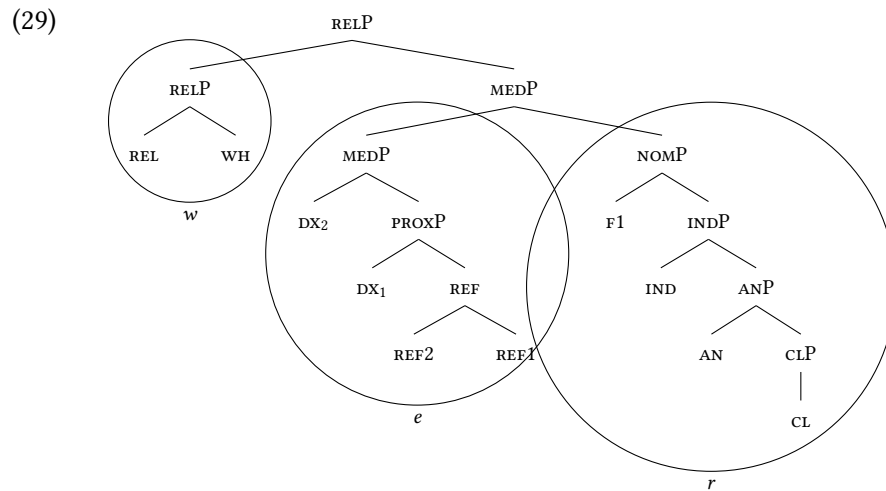
(28) **Spec Formation** (Starke, 2018):

If Merge F has failed to spell out, try to spawn a new derivation providing the feature F and merge that with the current derivation, projecting the feature F at the top node.

.. but the WH is on its own.. is REL merged right away?

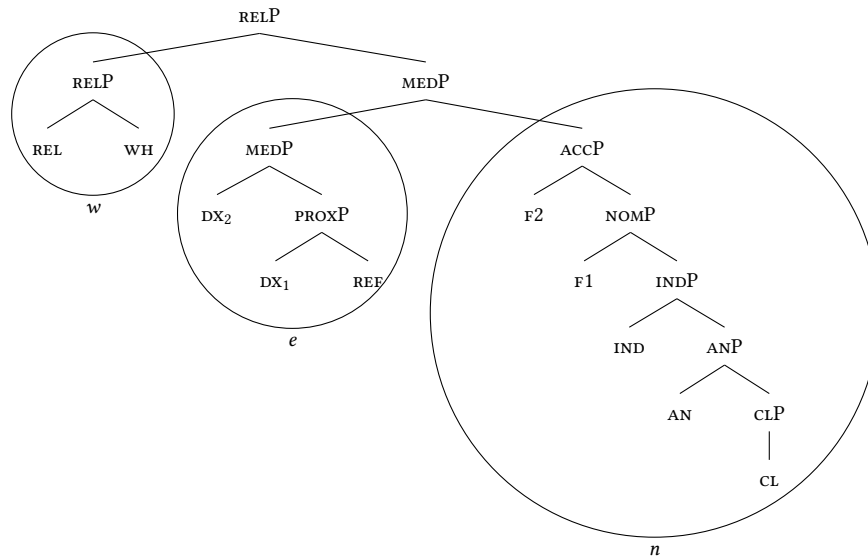
The last problem is the case feature. What happens then is backtracking + elements are split up, merged onto both of them, case can be spelled out with suffix.

The final result is given in (29).



The final result is given in (30).

(30)



To summarize, I showed independent evidence that the surface pronoun in Modern German is the relative pronoun. I decomposed the relative pronoun into the three morphemes *w*, *e* and the final consonant (*r* and *n*). I showed which features each of the morphemes spells out, and in which constituents the features are combined. It is these constituency that determine whether the relative pronoun can delete the light head or not.

1.2.2 The light head

In Section 1.1, I argued that headless relatives are derived from light-headed relatives. The relative pronoun can delete the light head when the relative contains all constituents of the light head. I suggested that this holds in Modern German, as long as the external case is not more complex than the internal case. In the previous section, I gave the internal structure of the relative pronoun, i.e. which constituents the relative pronoun consists of. In this section, I first need to identify the light head, as it does not surface in headless relatives. Then I show what its internal structure looks like: it is a constituent within the relative pronoun.

In this section, I consider two kinds of light-headed relatives as the source of the headless relative. First, the light-headed relative is derived from an existing light-headed relative, and the deletion of the light head is optional. Second, the

light-headed relative is derived from a light-headed relative that does not surface in Modern German, and the deletion of the light head is obligatory. I consider the first option first, and I give two reasons against it. 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 (31).⁹

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

In (31), the relative pronoun is the WH-pronoun *wen* ‘REL.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 (31) and that the headless relative in (32) remains.¹⁰ For easy reference, I call this headless relative the *wen* relative.

⁹Modern 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 REL.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 REL.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.

¹⁰This is exactly what Hanink (2018) argues for. She claims that the feature content of the light head matches the feature content of the relative pronoun. Therefore, the light head is by default deleted. Only if the light head carries an extra focus feature it surfaces.

- (32) Jan umarmt **wen** **er** mag.
 Jan hugs REL.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 (33).

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

Light-headed relatives do not allow this morpheme to be inserted, illustrated in (34).

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

I assume that the headless relative is not derived from an ungrammatical structure.¹¹

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 1.7.

Table 1.7: 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: Jan hugs the person that he likes. The interpretation is available for the *wen* relative and for the *den-wen* relative. The

¹¹I am aware that such an analysis is common for sluicing.

second interpretation of the *wen* relative is a universal-like one. This interpretation corresponds to a universal quantifier: 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.

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 which facilitates a definite-interpretation and the repeated *den-wen* relative in (35a).

- (35) a. Context: Yesterday Jan met with two friends. He likes one of them.
The other one he does not like so much.
- b. Jan umarmt den **wen** **er mag**.
Jan hugs DEM.M.SG.ACC REL.AN.ACC he likes
'Jan hugs the man that he likes.'

The demonstrative *den* in the *den-wen* relative refers back to the friend of Jan that he likes.

Consider the context which facilitates a universal-interpretation and the repeated *den-wen* relative in (36a).

- (36) 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 REL.AN.ACC he likes
 ‘Jan hugs the man that he likes.’

In this case, there is no antecedent for the demonstrative *den* to refer back to.

I zoom in on the internal structure of the demonstrative *den* to investigate what it is about the demonstrative that forces the definite-like interpretation. The demonstrative consists of the three morphemes *d*, *e* and *n*. Two of its morphemes are identical to the WH-relative pronoun: (1) *n*, which spells out pronominal, number, gender and case features, and (2) the *e* which spells out deictic features. One morpheme differs: the *d*, which establishes a definite reference. The two morphemes that force the definite-interpretation are the *d* and the *e*. The *e* establishes a reference, and the *d* makes this reference a definite one.

I propose that the light head is the element that is left once the morphemes *d* and *e* are abandoned. This is the morpheme that is the final consonant of the relative pronoun.¹² I give the light-headed relative from which the *wen*-relative is derived

¹²The two light heads 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
 Hans has today a friend to the dinner with to home brought he has us
 vorher ein Foto von dem Freund gezeigt.
 beforehand 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.’

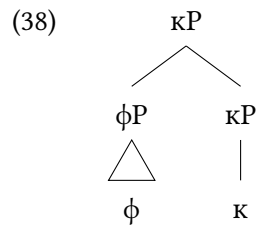
Weak definites are used when situational uniqueness is involved. This uniqueness can be global or within a restricted domain. I give two examples in (ii). In (iia), the dog is unique in this specific situation of the break-in. In (iib), the moon is unique for us people on the planet.

- (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.’

in (37). The brackets around the light head indicate that it is obligatorily deleted.

- (37) Jan umarmt [n] **wen** **er mag**.
 Jan hugs LH.AN.ACC REL.AN.ACC he likes
 ‘Jan hugs who he likes.’

In Section 1.1, I gave the simplified structure of the light head, repeated here in (38).



The idea was that the structures of the relative pronoun and the light heads match, but that the relative pronoun contains at least one feature more. I just argued that the light head has four feature less: WH, REL, DX₁ and DX₂.

I discuss two light heads: the animate nominative singular and in the animate accusative singular. These are the two forms that I compare the constituents of in Section 1.2.3. I show them in (39).

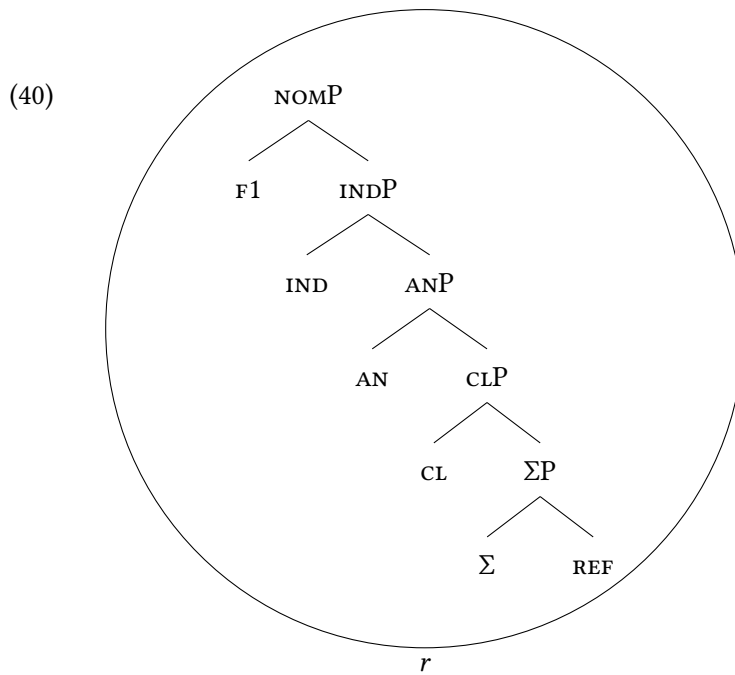
- (39) a. r
 ‘LH.AN.SG.NOM’
 b. n
 ‘LH.AN.SG.ACC’

-
- 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 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.

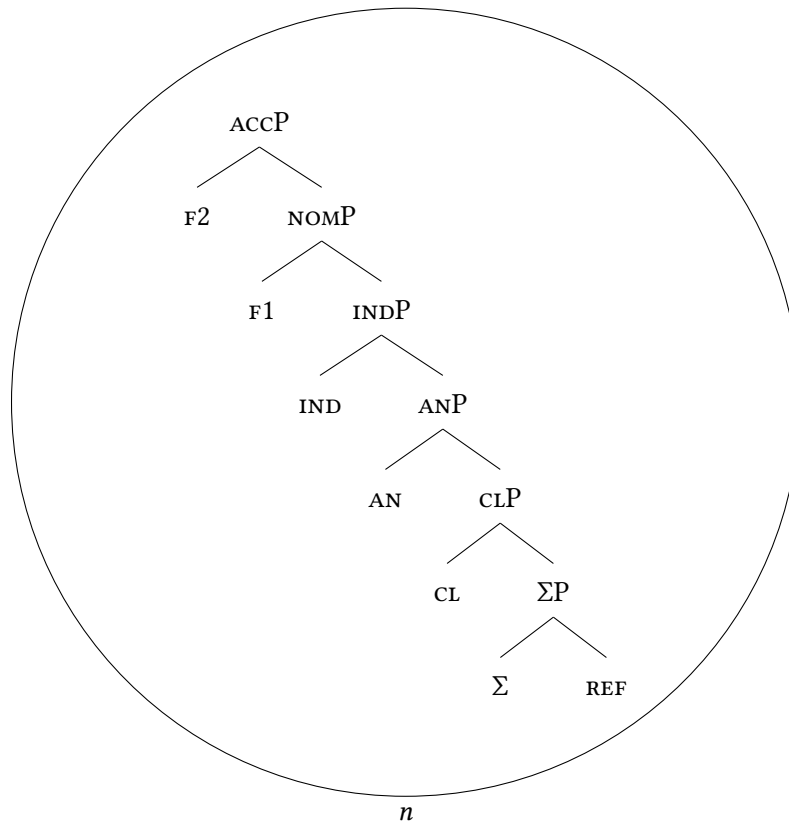
The derivations of the light heads are simple ones. The features are merged one by one, and after each new phrase is created, it is spelled out as a whole.

I give the structures of the animate nominative singular light head in (40).



I give the structures of the animate accusative singular light head in (41).

(41)



1.2.3 Comparing constituents

Consider the example in (42), in which the internal nominative case competes against the external nominative case. The relative clause is marked in bold, and the light head and the relative pronoun are underlined. The internal case is nominative, as the predicate *mögen* ‘to like’ takes nominative subjects. The relative pronoun *wer* ‘REL.AN.NOM’ appears in the nominative case. This is the element that surfaces. The external case is nominative as well, as the predicate *besuchen* ‘to visit’ also takes nominative subjects. The light head *er* ‘DEM.AN.NOM’ appears in the nominative case. It is placed between square brackets because it does not surface.

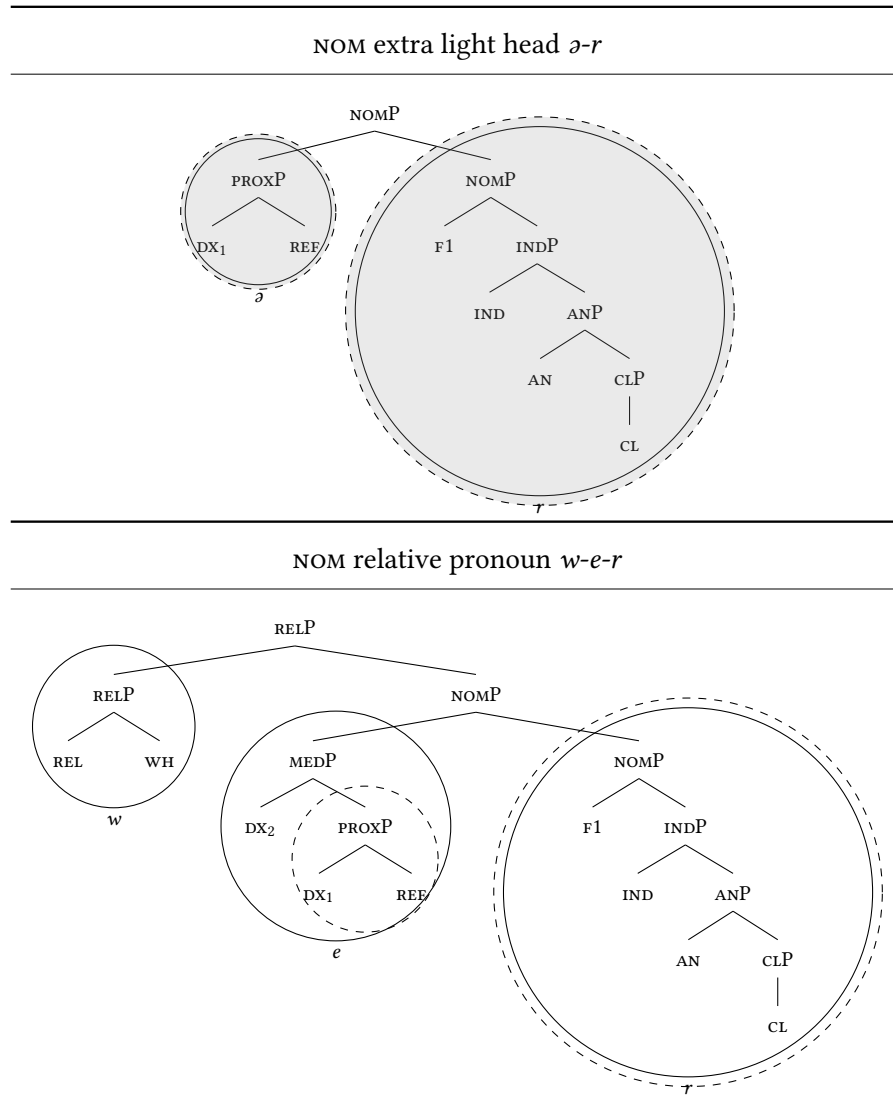
- (42) Uns besucht [r], wer **Maria**
 2PL.ACC visit.PRES.3SG_[NOM] ELH.AN.NOM REL.AN.NOM Maria.ACC
mag.
 like.PRES.3SG_[NOM]
 ‘Who visits us likes Maria.’
 (Modern German, adapted from Vogel 2001: 343)

In Figure 1.12, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *w*, *e* and *r*. The light head consists of two morphemes: *a* and *r*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it. I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun. As each constituent of the light head is also a constituent within the relative pronoun, the light head can be absent. I illustrate this by marking the content of the dashed circles for the light head gray.

I explain this constituent by constituent. I start with the right-most constituent of the light head that spells out as *r* (NOMP). This constituent is also a constituent in the relative pronoun. I continue with the left-most constituent of the light head that spells out as *a* (PROXP). This constituent is also a constituent in the relative pronoun, contained in MEDP. Both constituent of the light head are also a constituent within the relative pronoun, and the light head can be absent.

Consider the example in (43), in which the internal accusative case competes against the external nominative case. The relative clause is marked in bold, and the light head and the relative pronoun are underlined. 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 nominative, as the predicate *besuchen* ‘to visit’ takes nominative subjects. The light head *ar* ‘DEM.AN.NOM’ appears in the nominative case. It is placed between square brackets because it does not surface.

Figure 1.12: Modern German EXT_{NOM} vs. $\text{INT}_{\text{NOM}} \rightarrow \textit{wer}$

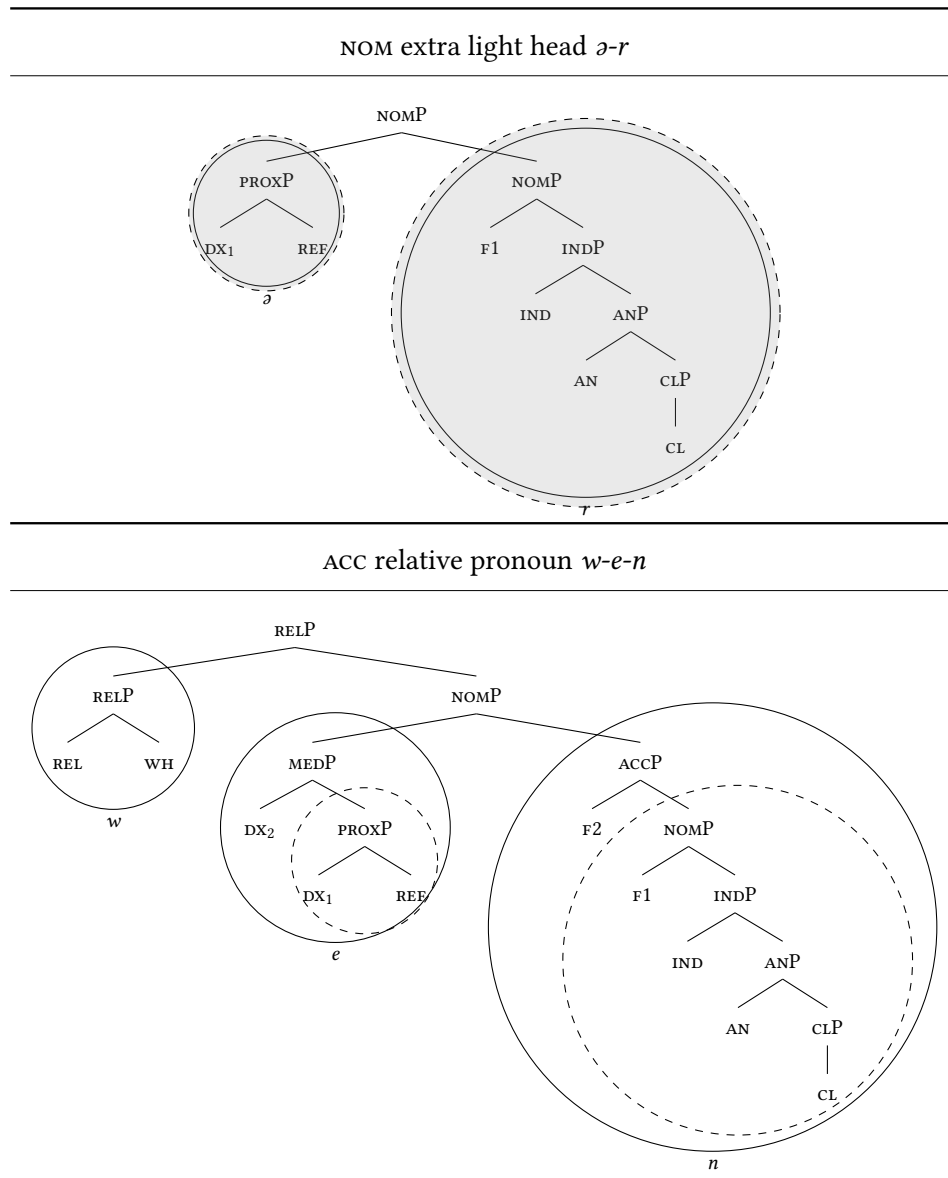
- (43) Uns besucht [ər] wen **Maria** mag.
 we.ACC visit.3SG_[NOM] DEM.NOM.AN REL.ACC.AN Maria.NOM like.3SG_[ACC]
 ‘Who visits us, Maria likes.’ (adapted from Vogel 2001: 343)

In Figure 1.13, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *w*, *e* and *n*. The light head consists of two morphemes: *a* and *r*. Again, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it. I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun. As each constituent of the light head is also a constituent within the relative pronoun, the light head can be absent. I illustrate this by marking the content of the dashed circles for the light head gray.

I explain this constituent by constituent. I start with the right-most constituent of the light head that spells out as *r* (NOMP). This constituent is also a constituent in the relative pronoun, contained in ACCP. I continue with the left-most constituent of the light head that spells out as *a* (PROXP). This constituent is also a constituent in the relative pronoun, contained in MEDP. Both constituent of the light head are also a constituent within the relative pronoun, and the light head can be absent.

Consider the examples in (44), in which the internal nominative case competes against the external accusative case. The relative clauses are marked in bold, and the light heads and the relative pronouns are underlined. It is not possible to make a grammatical headless relative in this situation. The internal case is nominative, as the predicate *sein* ‘to be’ takes nominative subjects. The relative pronoun *wer* ‘REL.AN.NOM’ appears in the nominative case. The external case is accusative, as the predicate *einladen* ‘to invite’ takes accusative objects. The light head *a*n ‘DEM.AN.ACC’ appears in the accusative case. (44a) is the variant of the sentence in which the light head is absent (indicated by the square brackets) and the relative pronoun surfaces, and it is ungrammatical. (44b) is the variant of the sentence in which the relative pronoun is absent (indicated by the square brackets) and the light head surfaces, and it is ungrammatical too.

Figure 1.13: Modern German EXT_{NOM} vs. $\text{INT}_{\text{ACC}} \rightarrow \text{wen}$

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

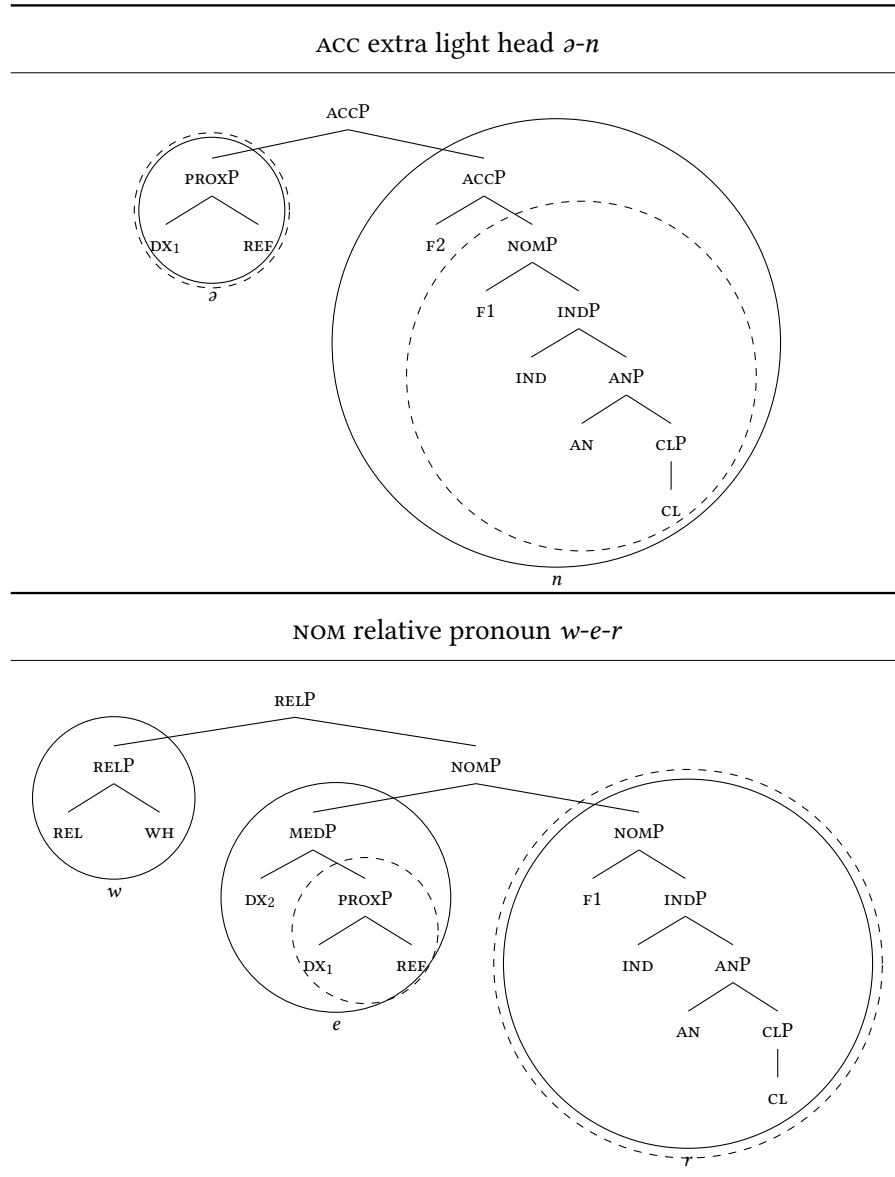
In Figure 1.14, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *w*, *e* and *r*. The light head consists of two morphemes: *ə* and *n*. Again, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it. I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun. Neither of the elements contains all constituents that the other element contains. The relative pronoun does not contain all constituents that the light head contains, and the light head does not contain all constituents that the relative pronoun contains. As a result, none of the elements can be absent.¹³

I explain this constituent by constituent. I start by showing that the light head cannot be absent. Consider the right-most constituent of the light head that spells out as *n* (ACC_P). This constituent is not a constituent in the relative pronoun: the relative pronoun has a constituent *NOMP*, but it does not contain *F2* to make it an ACC_P. The light head has a constituent that is not a constituent in the relative pronoun, so the light head cannot be absent.

The relative pronoun can also not be absent. Consider the middle constituent of the relative pronoun that spells out as *e* (MED_P). This constituent is not a constituent in the light head: the light head has a constituent *MED_P*, but it does not contain

¹³Why do we not see this result surface? Very good question.

Figure 1.14: Modern German EXT_{ACC} VS. INT_{NOM} \nrightarrow w - e - r

DX_3 to make it an MEDP. The same hold for the left-most constituent of the relative pronoun that spells out as w (RELP). The light head lacks the features WH and REL that form the RELP. The relative pronoun has constituents that are not constituents in the light head, so the relative pronoun cannot be absent. In sum, neither of the elements contains all constituents that the other element contains, and none of the elements can be absent, so none of them is marked gray.

1.3 Deriving the matching type

Matching languages can be summarized as in Table 1.8.

Table 1.8: The surface pronoun with differing cases in Polish

	$K_{INT} > K_{EXT}$	$K_{EXT} > K_{INT}$	
matching	*	*	Polish

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. This means that neither the relative pronoun with its internal case nor the light head with its external case can be the surface pronoun. The goal of this section is to derive these properties from the way light heads and relative pronouns are spelled out in Polish.

The section is structured as follows. First, I discuss the relative pronoun. I decompose the relative pronouns into three morphemes, and I show which features each of the morphemes corresponds to. Then I discuss the light head. I argue that Polish headless relatives are derived from a light-headed relative clause that does not surface in the language. I show that the features of the light head are spread over two morphemes.

Finally, I compare the constituents of the light head and the relative pronoun. When the internal and the external case match, the relative pronoun can delete the light head, because the light head forms a single constituent within the relative pronoun. When the internal case is more complex than the external case, the light head is not a single constituent within the relative pronoun anymore. The relative pronoun contains all features of the light head, but they are spread over separate

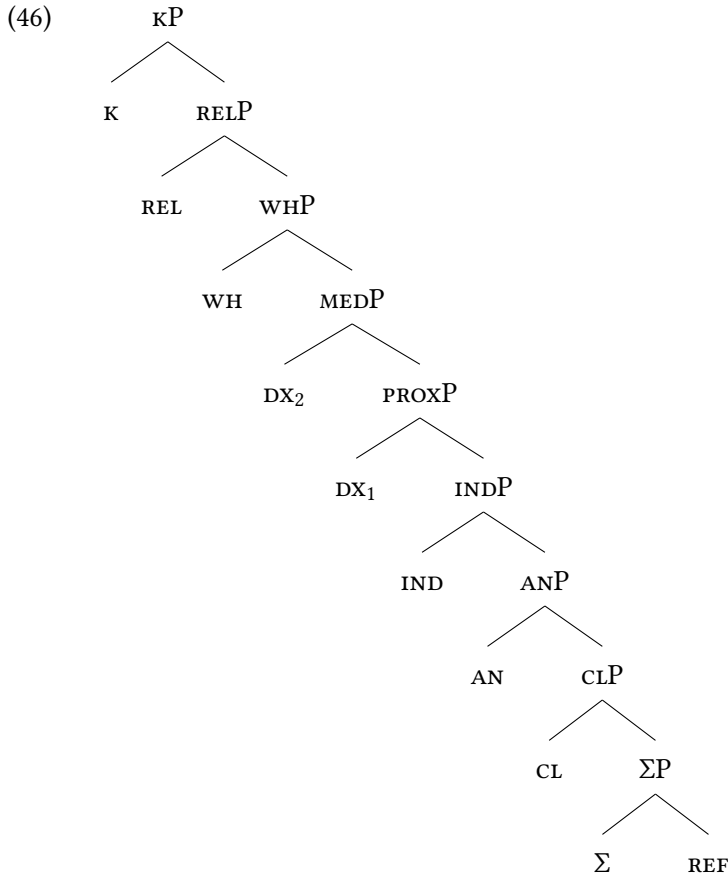
constituents. That is, the weaker feature containment requirement is met, but the stronger constituent containment requirement is not. As a result, there is no grammatical form to surface when the internal case is more complex. When the external case is more complex than the internal case, the relative pronoun is not a single constituent within the light head. The relative pronoun contains features that are not part of the light head. Since the weaker feature containment requirement is not met, the stronger constituent requirement cannot be met either. As a result, there is no grammatical form to surface when the internal case is more complex.

1.3.1 The relative pronoun

In this section I discuss the relative pronoun in Polish headless relatives.

- (45) Jan zobaczył tego, kogo Maria zobaczyła.
 Jan saw this who Maria saw
 ‘John saw the one Mary saw.’

Now I turn to the internal structure of the Polish relative pronoun. In Section 1.2.1 I argued that Modern German relative pronouns consist of the features given in the functional sequence in (46).

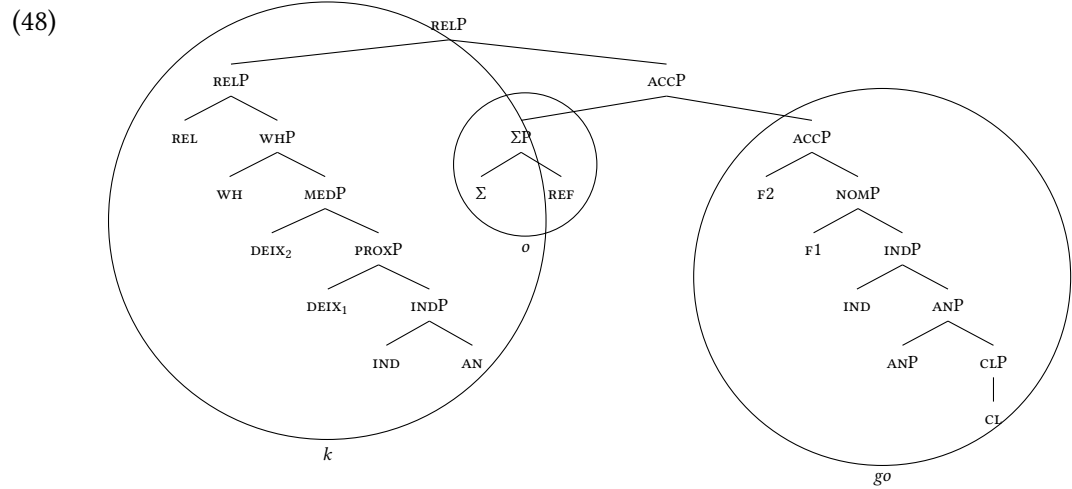


As I pointed out in Section 1.1, I propose that the difference between Modern German and Polish headless relatives comes from whether the relative pronoun can delete the light head. This depends on whether the light head forms a constituent within the relative pronoun. That, in turn, depends on which constituents are formed in the spellout of the relative pronoun and the light head. The difference in spellout is the only difference between Modern German and Polish: the features that are spelled out are the same ones.

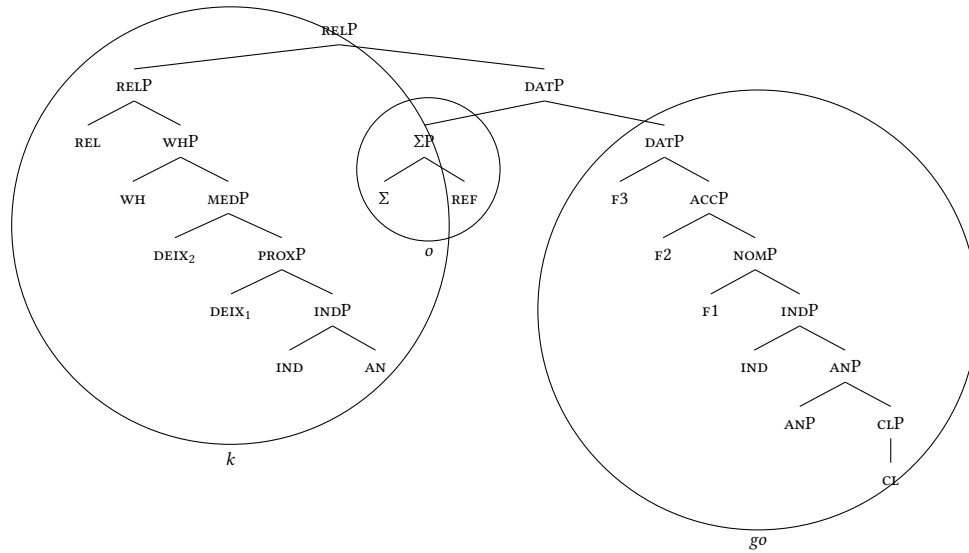
I discuss two relative pronouns: the animate accusative singular and the animate dative singular. These are the two forms that I compare the constituents of in Section 1.3.3. I show them in (47).

- (47) a. k-o-go
 ‘REL.AN.SG.ACC’
 b. k-o-mu
 ‘REL.AN.SG.DAT’

I decompose the relative pronouns in three morphemes: the *k*, the *o* and the final suffix (*go* and *mu*). For each morpheme, I discuss which features they spell out, and I give their lexical entries. In the end, I derive the relative pronouns, given here in (48) and (49).



(49)



I start with the morpheme *k*. Consider Table 1.9. Leaving the vowel that follows the initial consonant aside (which I return to shortly), the *k* and the *t* combine with the same endings, which identifies both of them as a morpheme.

Table 1.9: Polish relative pronoun Swan, p. 171

	REL.AN	DEM.M
NOM	kto	t-en
ACC	k-ogo	t-ego
GEN	k-ogo	t-ego
DAT	k-omu	t-emu

I argue that *k* spells out six features: WH, REL, IND, MASC DX₁ and DX₂. I go through them one by one.

The relative pronouns listed in Table 1.9 are WH-pronouns, and they are also used as interrogatives in Polish. Therefore, just like the Modern German *w*, the Polish *k* spells out the features WH and REL.

Before I continue with the other four features, I briefly return to the change in the vowel in Table 1.9. The *k* /k/ combines with the *o* /ɔ/, and the *t* /t/ combines

with the e / ε /. I analyze this change as a phonological process, in which the vowel changes depending on the consonant (cluster). Specifically, I argue that there is an underlying / ε / changes into a / ɔ / when it follows the k . I describe the situation in (50).

- (50) a. $v \Leftrightarrow \text{ɔ } k_$
 b. $v \Leftrightarrow \varepsilon t_$

The vowel is an / ɔ / when it follows the / k /, and it is an / ε / when it follows the / t /. In phonological terms, back vowel / ɔ / follows a the dorsal / k /, which is both back. The front vowel / ε / follows the coronal / t /, which are both front.

- (51) a. $v \Leftrightarrow \text{ɔ } [\text{DORS}]_$
 b. $v \Leftrightarrow \varepsilon [\text{COR}]_$

The vowel / ε / is attested in another paradigm, namely in the genitive and dative of the inanimate relative pronouns. I put them besides the animate relative pronouns in Table (47).

Table 1.10: Polish relative pronoun Swan, p. 171

	REL.AN	REL.N
NOM	kto	c-o
ACC	k-ogo	c-o
GEN	k-ogo	cz-ego
DAT	k-omu	cz-emu

Here the / ε / follows the / ʦ /, which is also a coronal consonant, confirming my hypothesis. However, in the nominative and the accusative, the vowel does not comply with the preceding consonant. The coronal / ʦ / precedes the back vowel / ɔ /.¹⁴ What sets this instance apart is that nothing follows this vowel, where there is always a consonant following in the other instances. I summarize the phonological

¹⁴I assume that the palatalization is a consequence of the combination of / ʦ / and / ε /.

process I propose in (52). When there is a closed syllable, the vowel is /ɔ/ following a dorsal and it is /ɛ/ following a coronal.¹⁵

- (52) a. $v \Leftrightarrow \text{ɔ} [\text{DORS}]_C$
 b. $v \Leftrightarrow \text{ɛ} [\text{COR}]_C$

I come back to the feature content of the vowel later. First I continue with the feature specification of *k*.

Table 1.11 shows that the first consonant (cluster) alternates depending on gender: the animates start with a *k* and the inanimates start with a *c(z)*. I conclude from this that the *k* contains the feature AN (and the *c(z)* the feature CL). Additionally, since the relative pronouns do not have a morphological plural, I assume that *k* contains the feature IND.

This leaves the deixis features to be connected to *k*. Unlike Modern German, Polish demonstratives are not marked for definiteness (evidence?). The demonstratives I gave in Table 1.9 are used as proximal and medial. I give an example in (53a).

¹⁵Another possibility is that the /ɔ/ in *co* is a ‘different /ɔ/’. It namely spells out case features, which I argue later in this section the other vowel does not do.

Under that view, the phonological conditioning could also work the other way around: there is an underlying /k/ that changes into a /t͡ʂ/ when it precedes an /ɛ/. An indication into this direction comes from the fact that WH-pronouns in Polish often start with a /k/.

- (i) g-dzie, k-iedy, k-tory
 where at, when, which one

If this is the right way of looking at it, then it is the masculine demonstrative and the inanimate relative pronoun patterning together to the exclusion of the animate relative pronoun. At first sight, this might seem counterintuitive. This changes when zooming in on the difference between WH-pronouns and demonstratives regarding the concept of gender. Demonstratives get their gender from the (possibly phonologically empty) head noun, and the gender is syntactic (i.e. it depends on the grammatical gender of the head noun). WH-pronouns (at least the ones in Table 1.9) do not combine with a noun, so they get their gender from themselves, and their gender is semantic. Possibly, syntactic masculine gender contains one feature less than semantic animate gender: MASC vs. MASC + AN. If the inanimate lacks both of these features, it can pattern with the masculine demonstrative to the exclusion of the animate relative pronoun.

Since this type of analysis requires a thorough investigation into gender systems, I leave investigating this options further for future research.

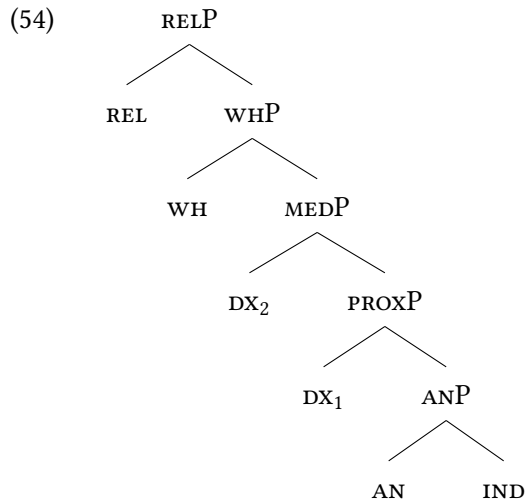
There is a separate marker for the distal, as shown in (53b).

- (53) a. to auto
DEM.PROX/MED car.N.NOM
- b. tam-to auto
DEM.DIST car.N.NOM

(Polish, Wiland 2019: 93)

The *t* in (53a) spells out deixis features: DX_1 and DX_2 features. As the *t* is not present in the relative pronoun (compare e.g. *temu* and *komu* in Table 1.9), I assume that *k* spells out the deixis features itself.¹⁶

In sum, the morpheme *k* realizes the features IND, AN, DX_1 , DX_2 , WH and REL.



I continue with the vowel, which is *e*. Another place for the *e* is *jego*.

I continue with the morphemes *go* and *mu*. Consider the Polish demonstratives and relative pronouns in Table x and y.

Notice that the morpheme *mu* does not only appear as the dative suffix in the masculine, but also in the neuter. The morpheme *go* appears as the accusative and

¹⁶Wiland (2019) proposes that *t* spells out a nominal base. I do not discuss the demonstrative any further, but I assume that the morpheme *t* only corresponds to the feature IND (and possibly PL) in addition to DX_1 and DX_2 .

Table 1.11: Polish relative pronoun Swan, p. 171

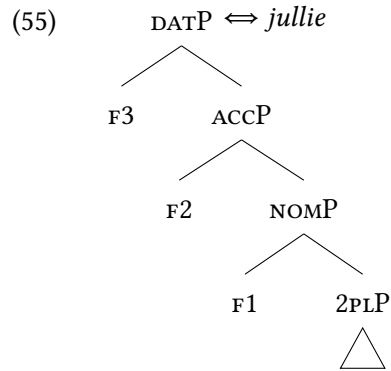
	REL.AN	REL.INAN
NOM	kto	c-o
ACC	k-o-go	c-o
GEN	k-o-go	cz-e-go
DAT	k-o-mu	cz-e-mu

Table 1.12: Polish demonstratives Swan, p. 171

	DEM.M	DEM.N
NOM	t-e-n	t-o
ACC	t-e-go	t-o
GEN	t-e-go	t-e-go
DAT	t-e-mu	t-e-mu

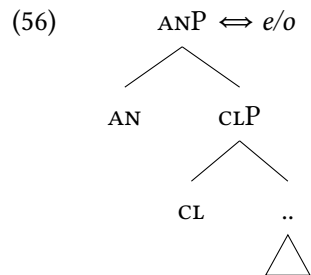
genitive suffix in the masculine and as the genitive suffix in the neuter. Moreover, the vowel preceding the suffixes is identical too, as can be observed in Table 1.12 and is what I argued for earlier in this section. I leave the initial consonants *k/cz/t* aside for now, and only work with the vowel and the suffixes. I set up a system that can derive the syncretism between the two genders. Doing this allows me to establish which features the morphemes *go* and *mu* spell out.

I discussed in Chapter ?? 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 (55).

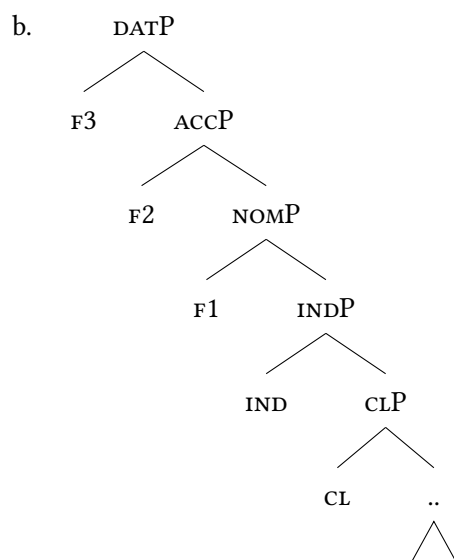
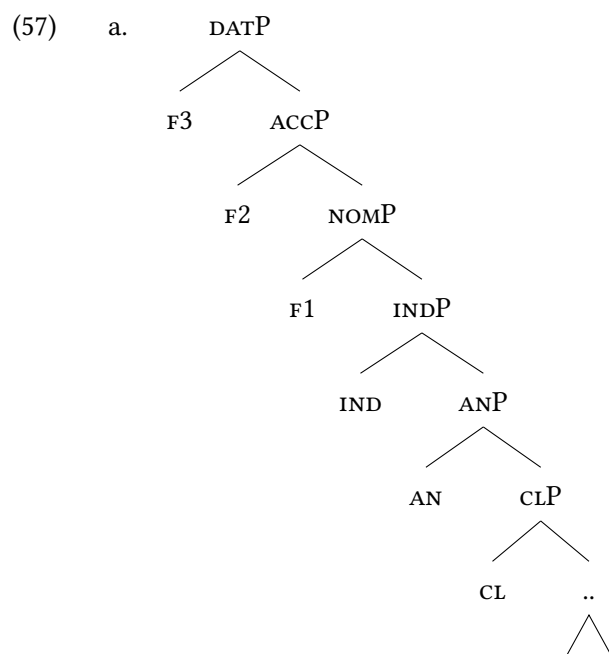


jullie is syncretic between nominative, accusative and dative. It is specified for dative in the lexicon, because the dative contains the accusative and the nominative. The nominative and accusative second person plural in Dutch is spelled out as *jullie* as well, because the DATP contains the ACCP which contains NOMP (Superset Principle), and there is no more specific lexical entry available in Dutch (Elsewhere Condition). It is important that the potentially unused features (so the F3 or F3 and F2) are at the top, so that the constituent that needs to be spelled out is still contained in the lexical tree.

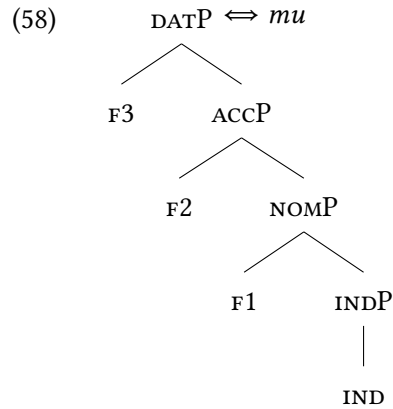
Here we have a lexical entry syncretic between the neuter and the masculine, so these features need to be ones at the top.



This fseqs for a dative animate singular and a dative inanimate singular are:

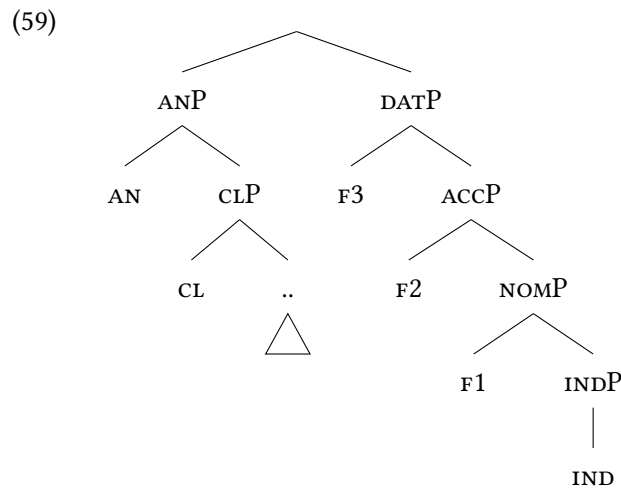


This means that the morpheme *mu* spells out case features up to the dative and IND.



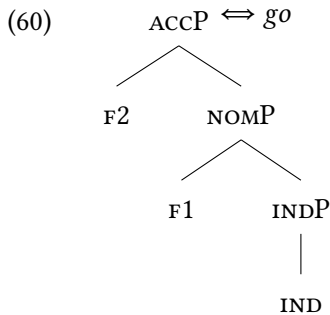
Notice here that *mu* has a unary bottom. this is how we get the right order between the vowel and *mu*

The syntactic structure of a dative animate singular:



There are two constituents. The first constituent contains a number feature and case features up to the dative and corresponds to the morpheme *mu*. The second constituent gender features up to the animate.

The morpheme *go* is not used in the accusative neuter, but it is in the genitive. What I take away from that is that the morpheme *go* needs to have IND as its bottom feature too, so that it can combine with the feature AN if that is present and with the feature CL if AN is absent.



what about dxs, ref and sigma?

bartosz has arguments for dx being the t and that c overrides t

jego is evidence for sigma and ref being in the vowel

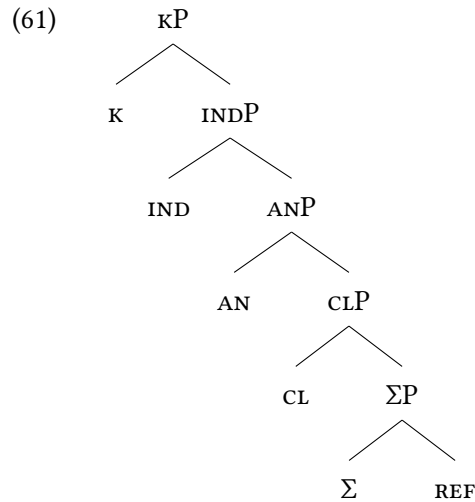
1.3.2 The (extra) light head

In my proposal, headless relatives are derived from light-headed relatives. The relative pronoun can delete the light head when the relative contains the light head as a single constituent. I suggest that this only holds for Polish when the internal and the external case match. In the previous section, I gave the internal structure of the Polish relative pronoun, i.e. which constituents the relative pronoun consists of. In this section, I show the internal structure of the Polish light head.

I take the functional sequence of the extra light head in Modern German, and I show how these features are spelled out in Polish. In Modern German the extra light head spells out as a single constituent, in Polish it consists of two constituents. This is what leads Polish to be of a different language type than Modern German. Just like for Modern German, the extra light head is not attested in existing light-headed relatives in Polish. For Modern German, I gave two reasons for not taking the existing light-headed relative as source of the headless relative. I show both of them hold for Polish too.

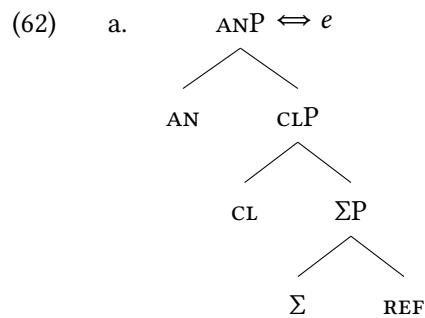
In Section 1.2.2, I argued for a particular feature content of the extra light head in Modern German. In my proposal, the difference in spellout is the only difference between Modern German and Polish: the features that are spelled out are the same ones. Therefore, I assume that the extra light head in Polish spells out the same features as the extra light head in Modern German. I give the functional sequence

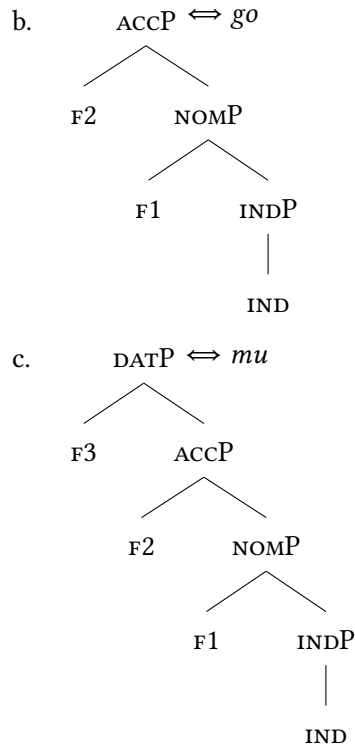
for the extra light head in (61).



The κP is a placeholder for multiple case projections. When the extra light head is the accusative, the κP consists of the features $F1$ and $F2$, and they form the $ACC P$. When the extra light head is the dative, the κP consists of the features $F1$, $F2$ and $F3$, and they form the $DAT P$.

Three lexical entries are needed to spell out the accusative and dative extra light heads. I motivated their feature content in Section 1.3.1. The morpheme *e* spells out the features REF , Σ , CL and AN , as shown in (62a). The morpheme *go* spells out the features IND , $F1$ and $F2$, as shown in (62b). The morpheme *mu* spells out the features that *go* spells out plus the feature $F3$, as shown in (62c).



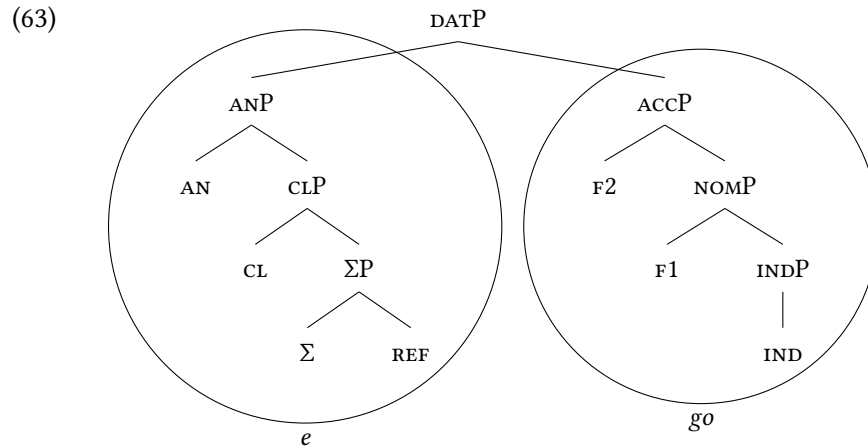


The accusative extra light head is derived as follows. The feature REF is merged with the feature Σ , forming the ΣP . This phrase is contained in the lexical tree in (62a), so it is spelled out as *e*. The feature CL is merged with the ΣP , forming the CLP . This phrase is contained in the lexical tree in (62a), so it is spelled out as *e*. The feature AN is merged with the CLP , forming the ANP . This phrase is contained in the lexical tree in (62a), so it is spelled out as *e*.

The feature IND is merged with the ANP , forming the $INDP$. This phrase (an $INDP$ containing more features besides IND) is not contained in any of the lexical entries in (62). There is no specifier to move, so the first movement in the spellout algorithm is irrelevant. The second movement is tried: the complement of IND, the ANP , is moved to the specifier of $INDP$. This phrase is contained in the lexical tree in (62b), so it is spelled out as *go*. The feature F1 is merged with the $INDP$, forming an $NOMP$. This phrase is not contained in any of the lexical entries in (62). The first movement is tried: the specifier of the $INDP$, the ANP , is moved to the specifier of $NOMP$. This phrase is contained in the lexical tree in (62b), so it is spelled out as *go*. The feature

f2 is merged with the NOMP, forming an ACCP. This phrase is not contained in any of the lexical entries in (62). The first movement is tried: the specifier of the NOMP, the ANP, is moved to the specifier of ACCP. This phrase is contained in the lexical tree in (62b), so it is spelled out as *go*.

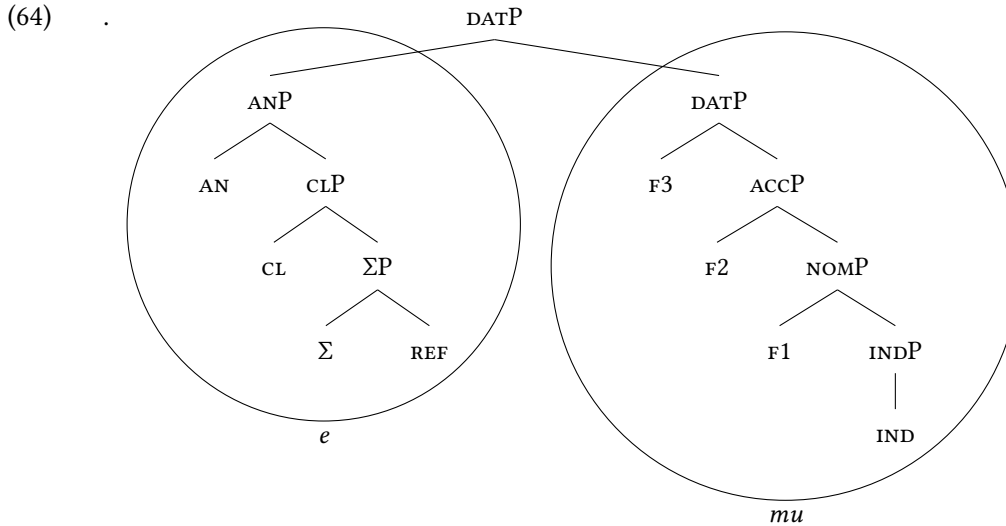
The accusative animate extra light head is shown in (63).



The dative animate extra light head is built as its accusative counterpart, except for that the feature f3 is added to create a dative.

The feature f3 is merged with the ACCP, forming a DATP. This phrase is not contained in any of the lexical entries in (62). The first movement is tried: the specifier of the ACCP, the ANP, is moved to the specifier of DATP. This phrase is contained in the lexical tree in (62c), so it is spelled out as *mu*.

The dative animate extra light head is shown in (64).



So, the light-headed relative that headless relatives are derived from is:

- (65) Jan lubi [ego] kogo -kolkwiek Maria lubi.
 Jan like.3SG_[ACC] ELH.ACC.AN REL.ACC.AN ever Maria like.3SG_[ACC]
 'Jan likes whoever Maria likes.'
 (Polish, adapted from Citko 2013 after Himmelreich 2017: 17)

For Modern German, I considered two kinds of light-headed relatives as the source of the headless relative. First, the light-headed relative is derived from an existing light-headed relative, and the deletion of the light head is optional. Second, the light-headed relative is derived from a light-headed relative that does not surface in Modern German, and the deletion of the light head is obligatory. For Modern German I concluded it was the second, and I proposed which features should be in there. Taking these features, I observe that the same holds for Polish: the extra light head is not attested as a light head in an existing light-headed relative in Polish.

For Modern German, I gave two reasons for not taking the existing light-headed relative as source of the headless relative. I show that only one of them holds for Polish, and I discuss why the other one does not hold in the same way.

to co cannot combine with *kolkwiek* 'ever'.

- (66) a. Jan śpiewa co -kolwiek Maria śpiewa.
 Jan sings what ever Maria sings
 ‘Jan sings everything Maria sings.’
 b. Jan śpiewa to, co -kolwiek Maria śpiewa.
 Jan sings DEM what ever Maria sings
 ‘John sings what Mary sings.’ (Polish, Citko 2004: 116)

Going after citko’s translation, one would assume that the meaning is also slightly different, just like it is in Modern German.

however, for a closely related language, Czech,

Difference between *ego* and *tego* is only the feature DX, so that’s why people say it has the same meaning.

1.3.3 Comparing consituents

In this section, I compare the constituents of extra light heads to those of relative pronouns in Polish. I give three examples, in which the internal and external case vary. I start with an example with matching cases: the internal and the external case are both accusative. Then I give an example in which the internal case is more complex than the external case: the internal case is the dative and the external case is the accusative. I end with an example in which the external case is more complex than the internal case: the internal case is the accusative and the external case is the dative. In Polish, a matching language, only the first example is grammatical. I derive this by showing that only in this situation the relative pronoun can delete the light head. When the cases match, the light head forms namely a constituent that is contained in the structure of the relative pronoun.

I start with the matching cases. Consider the example in (67), 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* ‘REL.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 *ego* ‘ELH.AN.ACC’ appears in the accusative case. It is placed between square brackets because it does not surface.

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

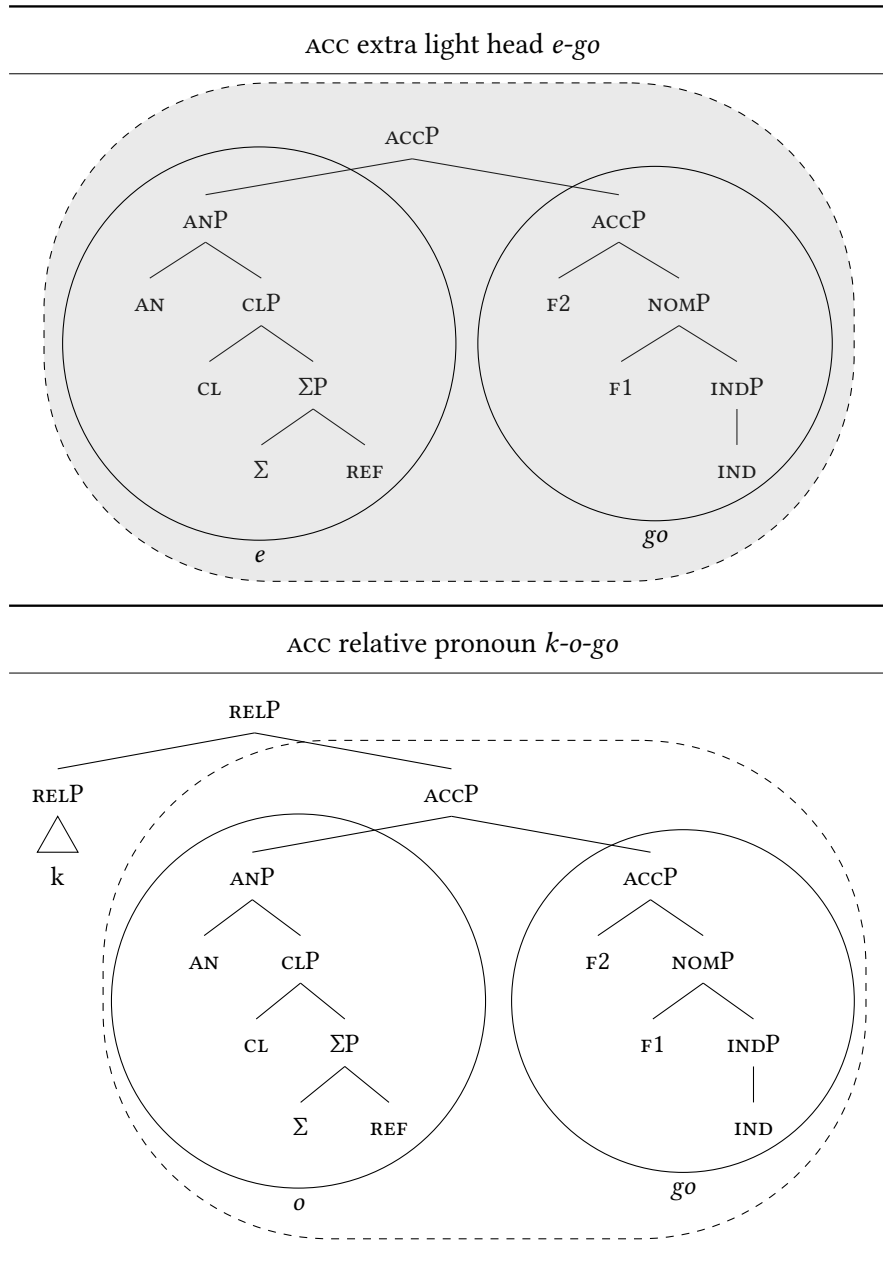
In Figure 1.15, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *k*, *o* and *go*. The extra light head consists of two morphemes: *e* and *go*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it. I draw a dashed circle around each constituent that is a constituent in both the extra light head and the relative pronoun.

The extra light head consists of two constituents: the ANP and the (lower) ACCP. Together they form the (higher) ACCP. This ACCP is also a constituent within the relative pronoun. Therefore, the relative pronoun can delete the extra light head. I signal the deletion of the extra light head by marking the content of its circle gray.

I continue with the example in which the internal case is more complex than the external case. Consider the examples in (68), 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* ‘REL.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 *ego* ‘ELH.AN.ACC’ appears in the accusative case. (68a) is the variant of the sentence in which the extra light head is absent (indicated by the square brackets) and the relative pronoun surfaces, and it is ungrammatical. (68b) is the variant of the sentence in which the relative pronoun is absent (indicated by the square brackets) and the extra light head surfaces, and it is ungrammatical too.

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

Figure 1.15: Polish EXT_{ACC} vs. $\text{INT}_{\text{ACC}} \rightarrow kogo$

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

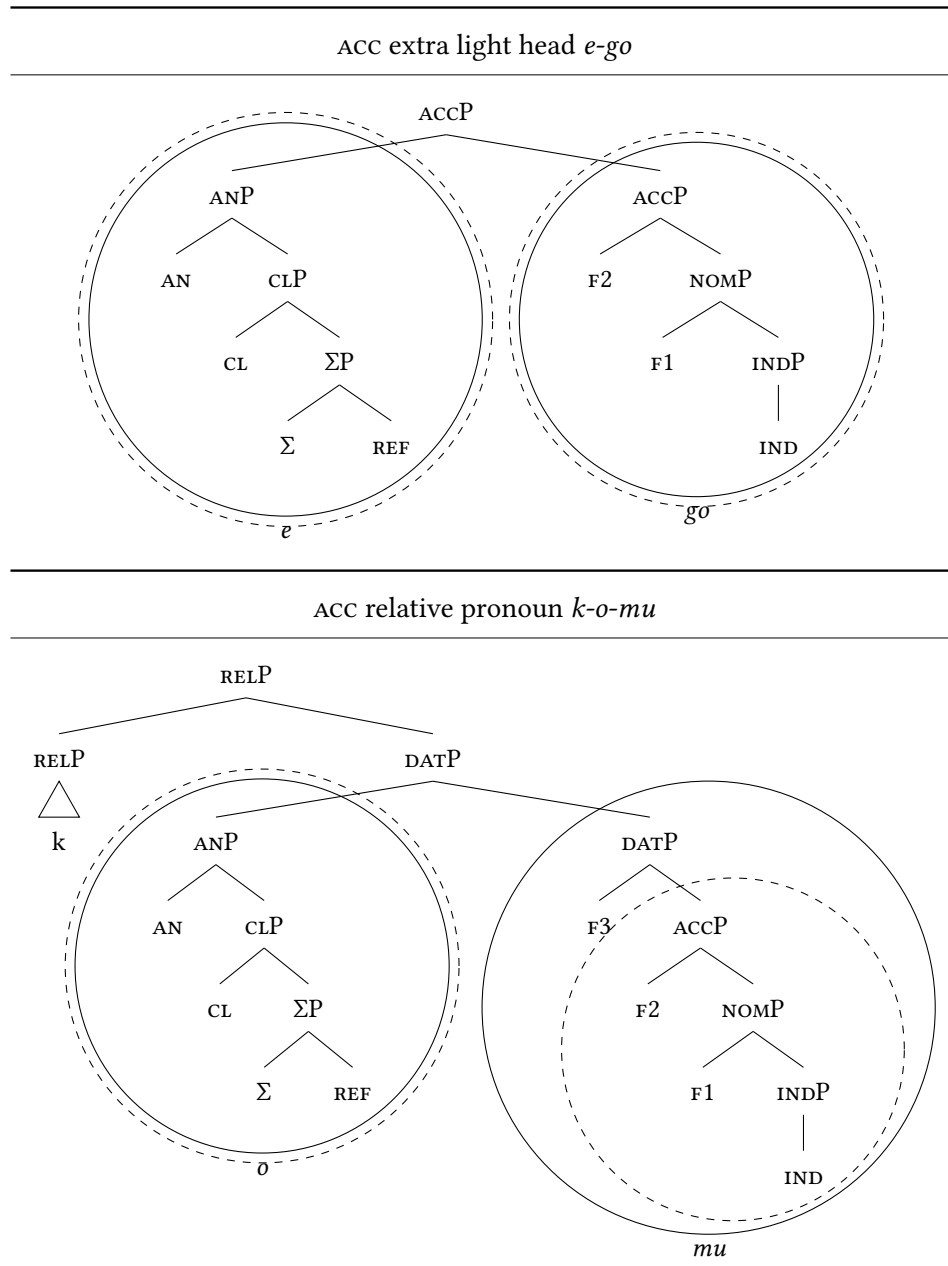
In Figure 1.16, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *k*, *o* and *mu*. The light head consists of two morphemes: *e* and *go*. Again, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it. I draw a dashed circle around each constituent that is a constituent in both the extra light head and the relative pronoun.

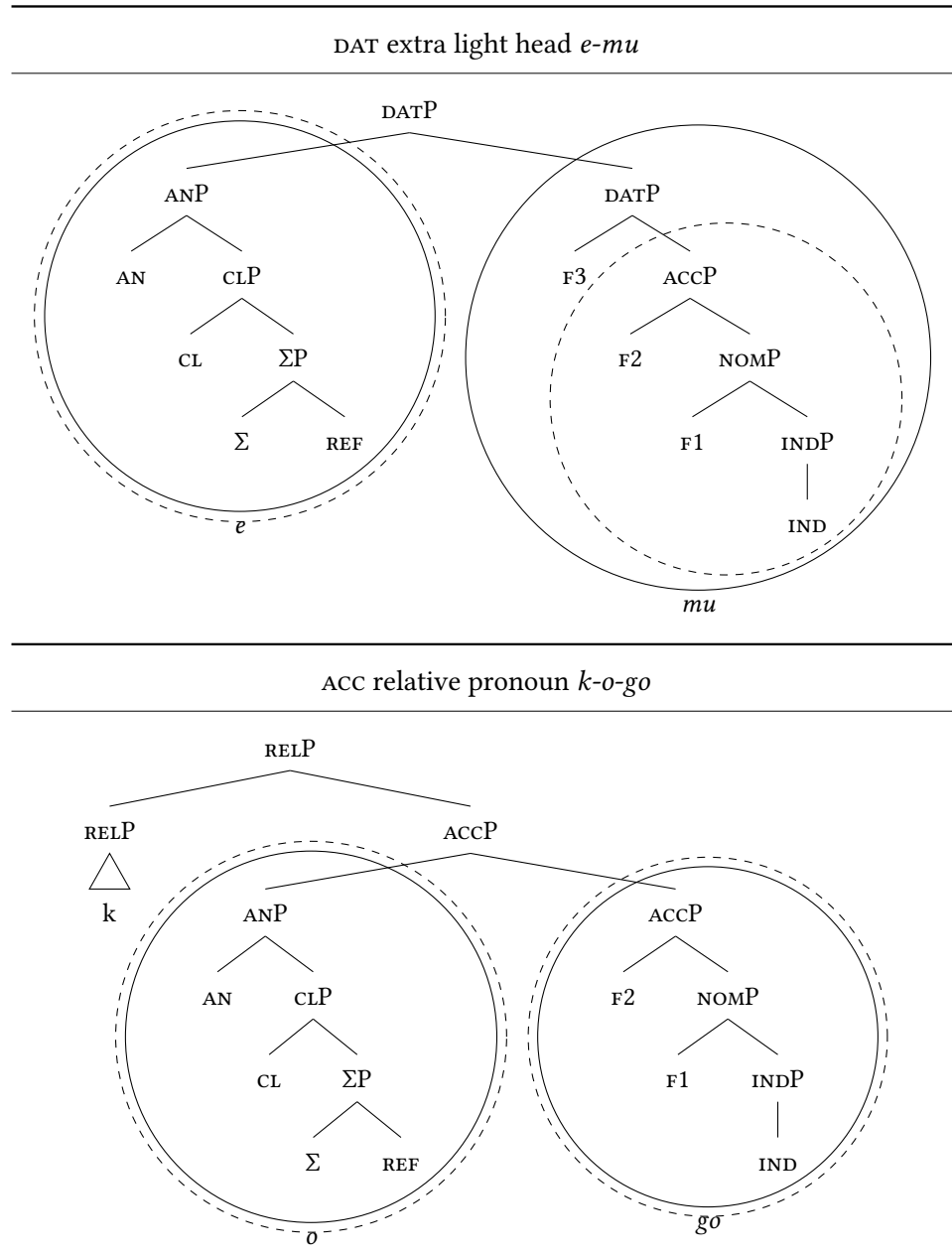
The extra light head consists of two constituents: the ANP and the (lower) ACCP. Together they form the (higher) ACCP. Both of these constituents are also constituents within the relative pronoun. However, the (higher) ACCP is not a constituent within the relative pronoun. The constituent in which the ACCP is contained namely also contains the feature F3 that makes it a DATP. In other words, each feature and even each constituent of the extra light head is contained in the relative pronoun. However, they are not contained in the relative pronoun as a single constituent. Therefore, the relative pronoun cannot delete the extra light head.

Recall from Section 1.2.3 that this is the crucial example in which Modern German and Polish differ. The contrast lies in that the extra light head in Modern German forms a single constituent and in Polish it forms two constituents. In Modern German, relative pronouns in a more complex case contain extra light heads in a less complex case as a single constituent. In Polish, they do not. Relative pronouns in a complex case still contain all features of an extra light head in a less complex case, but the extra light head is not a single constituent within the relative pronoun. This shows the necessity of formulating the proposal in terms of containment as a single constituent.

I continue with the example in which the external case is more complex than the internal case. Consider the examples in (69), 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.

Figure 1.16: Polish EXT_{ACC} vs. INT_{DAT} \rightarrow *ego/komu*

The extra light head consists of two constituents: the ANP and the (lower) DATP. In this case, the relative pronoun does not contain both these constituents. The relative pronoun only contains the ACCP, and it lacks the F3 that makes a DATP. Since the weaker requirement of feature containment is not met, the stronger requirement

Figure 1.17: Polish EXT_{DAT} vs. $\text{INT}_{\text{ACC}} \rightarrow \text{emu/kogo}$

of single constituent cannot be met either. The extra light head also does not contain all constituents or features that the relative pronoun contains, because it lacks the RELP. Therefore, the relative pronoun cannot delete the extra light head, and the extra light head can also not delete the relative pronoun.

1.4 Deriving the unrestricted type

Unrestricted languages can be summarized as in Table 1.13.

Table 1.13: The surface pronoun with differing cases in Polish

	$K_{INT} > K_{EXT}$	$K_{EXT} > K_{INT}$	
unrestricted	relative pronoun _{INT}	light head _{EXT}	Old High German

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. The goal of this section is to derive this from the way light heads and relative pronouns are spelled out in Old High German.

The section is structured as follows. Old High German differs from the other two languages I discussed in that its headless relatives have a different interpretation: they have a individuating or definite reading. This leads me to argue for slightly different functional sequences in Old High German. I argue that Old High German headless relatives are derived from regular light-headed relatives. I decompose the light heads and relative pronouns into smaller morphemes, and I show which features each of the morphemes corresponds to. Then I compare the constituents of the light head and the relative pronoun. When the internal and the external case match, the relative pronoun can delete the light head, because it contains all its constituents. When the internal case is more complex than the external case, the relative pronoun can still delete the light head, for the same reason: the relative pronoun contains all constituents of the light head. The situation becomes a bit more complicated when the external case is more complex than the internal case. The

light head does not contain all constituents of the relative pronoun. However, the constituent that is not contained in a constituent of the light head is syncretic with a constituent of the light head. I suggest that this syncretism is also enough to license the deletion of the relative pronoun. Finally, I show that the effect of syncretism is not limited to Old High German and the part of the light head and relative pronoun that does not involve case. I give examples from Modern German that show that syncretism can also license the deletion of a more complex case by a less complex case.

1.4.1 The relative pronoun

What is different here, is that the relative pronoun is a D-pronoun instead of a WH.

Relative and demonstrative pronouns are syncretic in Old High German (Braune 2018: 338). Table 1.14 gives an overview of the forms in singular and plural, neuter, masculine and feminine and nominative, accusative and dative. The pronouns consist of two morphemes: a *d* and suffix that differs per number, gender and case.^{17,18}

Table 1.14: Relative/demonstrative 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

¹⁷*d* can also be written as *dh* and *th*, *ē* and *ē* can also be *e* and *é* (Braune 2018: 339).

¹⁸The suffix could also be further divided into a vowel and a suffix. As this is not relevant for the discussion here, I refrain from doing that.

The suffixes that combine with the *d* in demonstrative and relative pronouns also appear on adjectives. This is illustrated in Table 1.15.

Table 1.15: 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

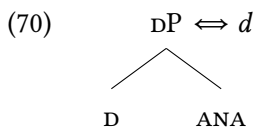
I conclude from this that the suffix expresses features that are specific to being nominal, like number, gender and case. Not part of the suffix are features that are specific to being a demonstrative or relative pronoun, like anaphoricity and definiteness. I assume that these are expressed by the morpheme *d*.

split the suffix up in two morphemes

In this section, I only discuss two forms: the nominative and accusative masculine singular relative and demonstrative pronoun. The nominative is *dēr* and the accusative is *dēn*. In what follows, I discuss the feature content of the morphemes *d*, *ēr* and *ēn*. I start with the features that are expressed by the suffixes *ēr* and *ēn*.

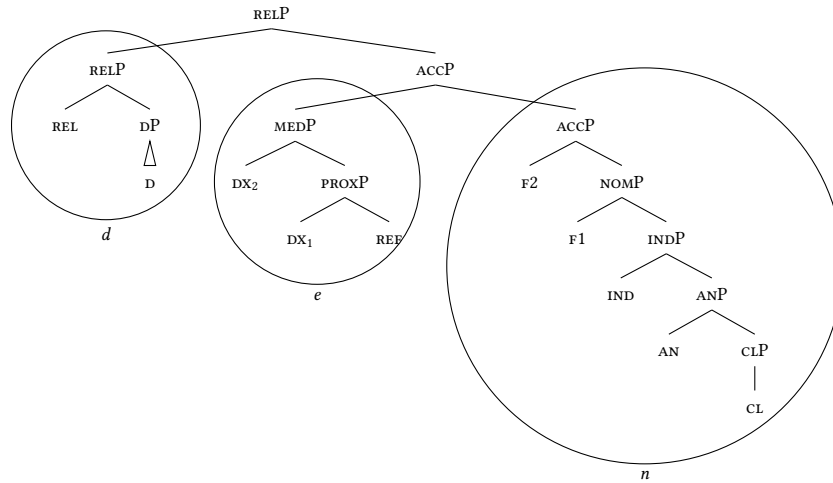
This allows me to propose the following lexical entries for the two suffixes.

The *d* morpheme corresponds to definiteness and anaphoricity. Anaphoricity establishes a relation with another element in the (linguistic) discourse. Definiteness encodes that the referent is specific.

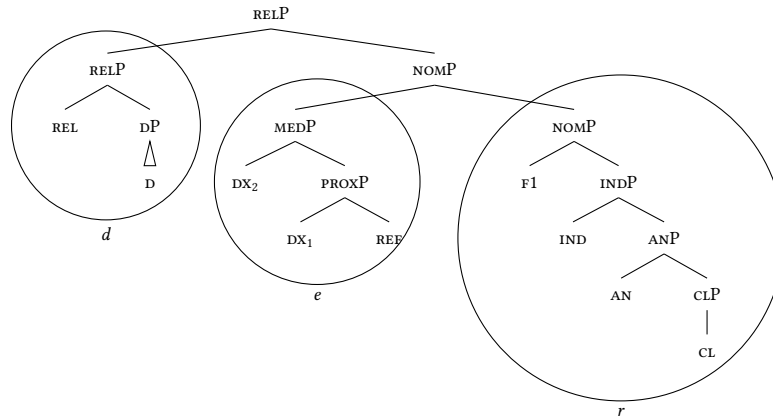


So, the two relative pronouns look like this.¹⁹

(71)



(72) Old High German: INT NOM



1.4.2 The light head

Headless relatives in which the relative pronoun starts with a *d*, such as in Old High German, seem to be linked to individuating or definite readings and not to generalizing or indefinite readings (cf. Fuß, n.d.). I illustrate this with the two examples I repeat from Chapter ??.

¹⁹A question that arises here is how the case features can form a constituent to the exclusion of definiteness and anaphoricity. I come back to this issue in Chapter ??.

Consider the example in (73), repeated from Chapter ?? . 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.

- (73) Thíz ist **then** **sie** **zéllent**
 DEM.SG.N.NOM be.PRES.3SG_[NOM] REL.SG.M.ACC 3PL.M.NOM tell.PRES.3PL_[ACC]
 ‘this is the one whom they talk about’
 not: ‘this is whoever they talk about’ (Old High German, Otfrid III 16:50)

Consider also the example in (73), repeated from Chapter ?? . 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.

- (74) enti aer ant uurta demo **zaimo**
 and 3SG.M.NOM reply.PST.3SG_[DAT] REL.SG.M.DAT to 3SG.M.DAT
sprah
 speak.PST.3SG_[NOM]
 ‘and he replied to the one who spoke to him’
 not: ‘and he replied to whoever spoke to him’
 (Old High German, Mons. 7:24, adapted from Pittner 1995: 199)

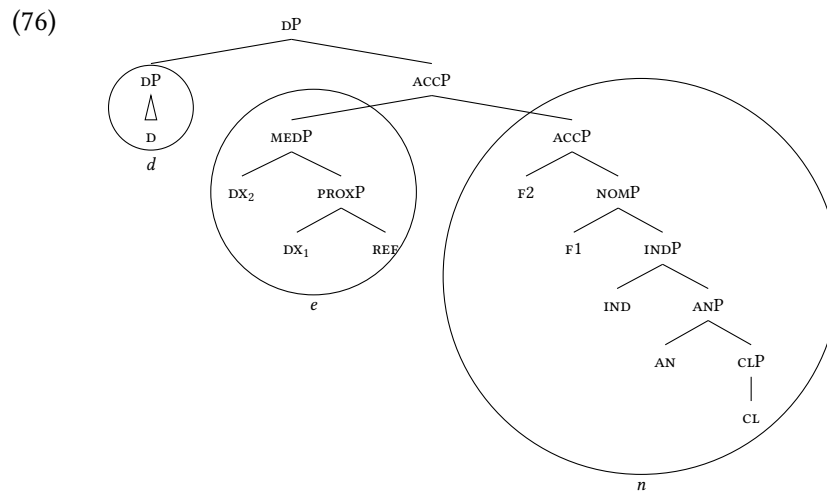
Consider the light-headed relative in (75). *Thér* ‘DEM.SG.M.NOM’ is the head of the relative clause, which is the external element. *Then* ‘REL.SG.M.ACC’ is the relative pronoun in the relative clause, which is the internal element.

- (75) eno nist thiz thér then ir
 now not be.3SG DEM.SG.N.NOM DEM.SG.M.NOM REL.SG.M.ACC 2PL.NOM
 suochet zi arslahanne?
 seek.2PL to kill.INF.SG.DAT
 ‘Isn’t this now the one, who you seek to kill?’

The difference between a light-headed relative and a headless relative is that in headless relatives, either the internal or the external is absent. The absent element is the one that has the least complex case. This shows the presence of two elements

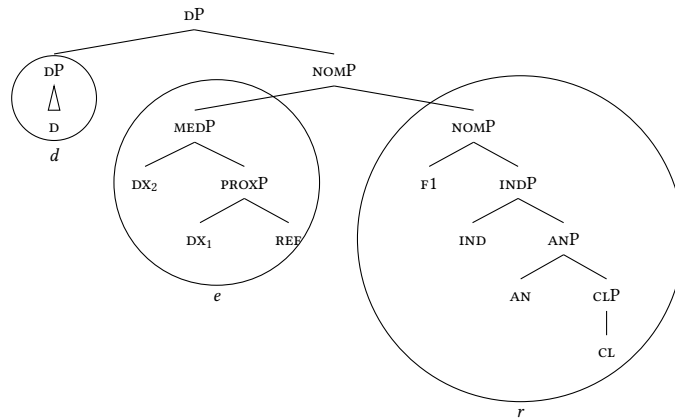
in Old High German is optional.²⁰ In Old High German, there are three possible constructions: the internal and external element can both surface, only the internal element can surface and only the external element can surface. If only one of the two elements surfaces, this is the element that bears the most complex case, which is either the internal or the external one, as I have shown in Chapter ???. I assume that whether both or only one of the elements surfaces is determined by information structure. In (75), the external element *thér* ‘DEM.SG.M.NOM’ is the candidate to be absent. However, it seems plausible that this is emphasized in this sentence and that it, therefore, cannot be absent.

The light head in a light-headed relative is a demonstrative pronoun.



(77) Old High German: EXT NOM

²⁰This sharply contrasts with headless relatives in Modern German, which are always ungrammatical when both the internal and external elements surface. I come back to this in Section 1.2.



1.4.3 Comparing constituents

Consider the examples in (78), in which the internal nominative case competes against the external nominative case. The relative clauses are marked in bold, and the light heads and the relative pronouns are underlined. As the light head and the relative pronoun are identical it is impossible to see which of them surfaces. The internal case is nominative, as the predicate *senten* ‘to send’ takes nominative subjects. The relative pronoun *dher* ‘REL.SG.M.NOM’ appears in the nominative case. The external case is nominative as well, as the predicate *queman* ‘to come’ also takes nominative subjects. The light head *dher* ‘DEM.SG.M.NOM’ appears in the nominative case. (78a) is the variant of the sentence in which the light head is absent (indicated by the square brackets) and the relative pronoun surfaces. (78b) is the variant of the sentence in which the relative pronoun is absent (indicated by the square brackets) and the light head surfaces.

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

scolda uuerdhan

should.PST.3SG become.INF

‘the one, who should have been sent, came’

(Old High German, Isid. 35:5)

In Figure 1.18, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

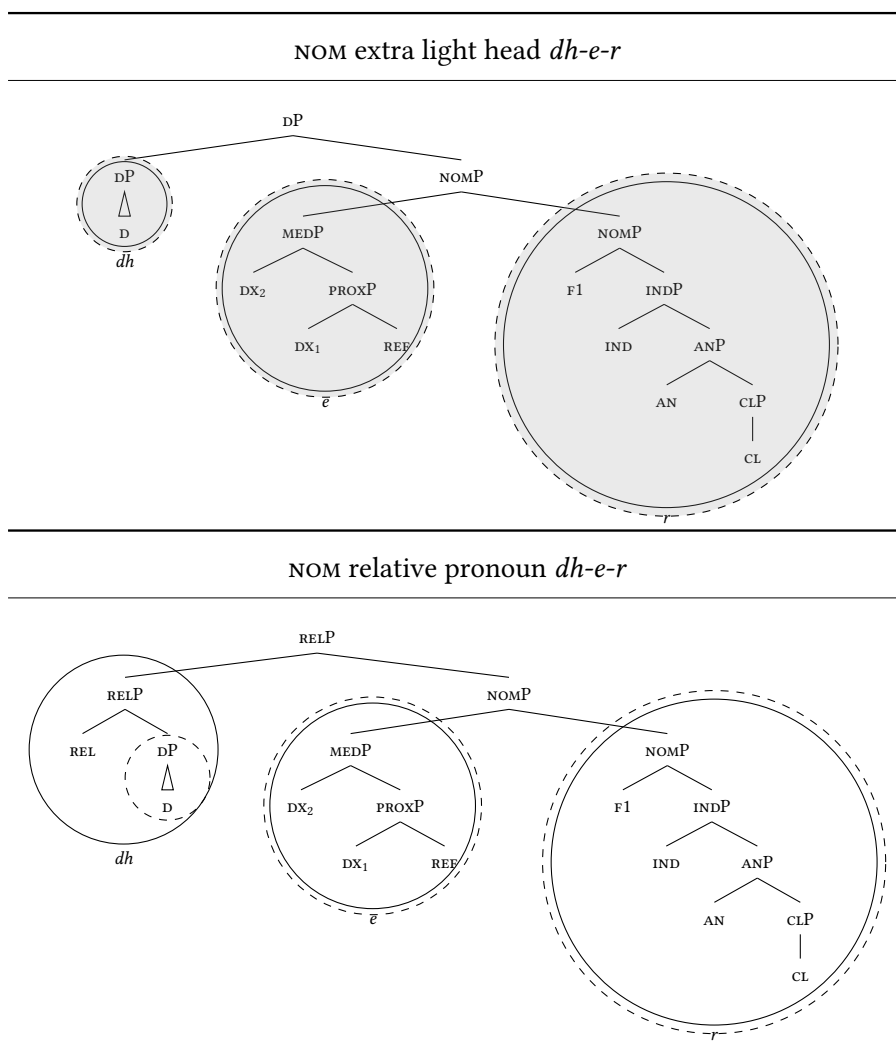


Figure 1.18: Old High German EXT_{NOM} vs. $\text{INT}_{\text{NOM}} \rightarrow \text{dher}$

The relative pronoun consists of three morphemes: *dh*, *e* and *r*. The light head consists of three morphemes: *dh*, *e* and *r*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it. I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun. As each constituent of the light head is also a constituent within the relative pronoun, the light head can be absent. I illustrate this by marking the content of the dashed circles for the light head gray.

I explain this constituent by constituent. I start with the right-most constituent of the light head that spells out as *r* (NOMP). This constituent is also a constituent in the relative pronoun. I continue with the middle constituent of the light head that spells out as *e* (MEDP). This constituent is also a constituent in the relative pronoun. I end with the left-most constituent of the light head that spells out as *d* DP. This constituent is also a constituent in the relative pronoun, contained in RELP. All three constituent of the light head are also a constituent within the relative pronoun, and the light head can be absent.

Consider the example in (79), in which the internal accusative case competes against the external nominative case. The relative clause is marked in bold, and the light head and the relative pronoun are underlined. The internal case is accusative, as the predicate *zellen* ‘to tell’ takes accusative objects. The relative pronoun *then* ‘REL.SG.M.ACC’ appears in the accusative case. This is the element that surfaces. The external case is nominative, as the predicate *sin* ‘to be’ takes nominative objects. The light head *ther* ‘DEM.SG.M.NOM’ appears in the nominative case. It is placed between square brackets because it does not surface.

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

In Figure 1.19, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *th*, *e* and *n*. The light head

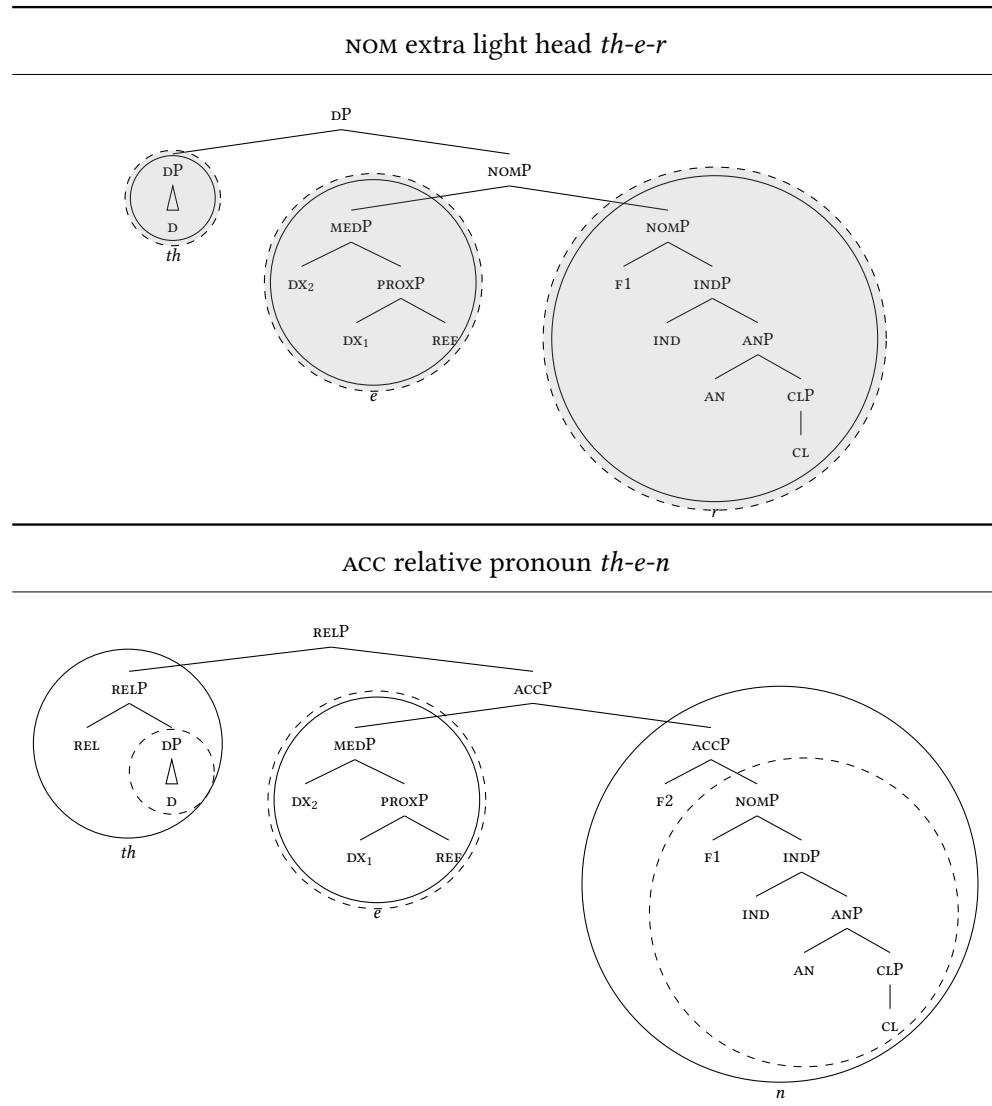


Figure 1.19: Old High German EXT_{NOM} VS. $\text{INT}_{\text{ACC}} \rightarrow \textit{then}$

consists of three morphemes: *th*, *e* and *r*. Again, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it. I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun. As each constituent of the light head is also a constituent within the relative pronoun, the light head can be absent. I illustrate this by marking the content of the dashed circles for the light head gray.

I explain this constituent by constituent. I start with the right-most constituent of the light head that spells out as *r* (NOMP). This constituent is also a constituent in the relative pronoun, contained in ACCP. I continue with the middle constituent of the light head that spells out as *e* (MEDP). This constituent is also a constituent in the relative pronoun. I end with the left-most constituent of the light head that spells out as *d* DP. This constituent is also a constituent in the relative pronoun, contained in RELP. All three constituent of the light head are also a constituent within the relative pronoun, and the light head can be absent.

Consider the examples in (80), in which the internal nominative case competes against the external accusative case. The relative clauses are marked in bold, and the light heads and the relative pronouns are underlined. The internal case is nominative, as the predicate *gisizzen* ‘to possess’ takes nominative subjects. The relative pronoun *dher* ‘REL.SG.M.NOM’ appears in the nominative case. It is placed between square brackets because it does not surface. The external case is accusative, as the predicate *bibringan* ‘to create’ takes accusative objects. The light head *dhen* ‘DEM.SG.M.ACC’ appears in the accusative case. This is the element that surfaces.

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

(Old High German, Isid. 34:3)

In Figure 1.20, I give the syntactic structure of the light head at the top and the syntactic structure of the relative pronoun at the bottom.

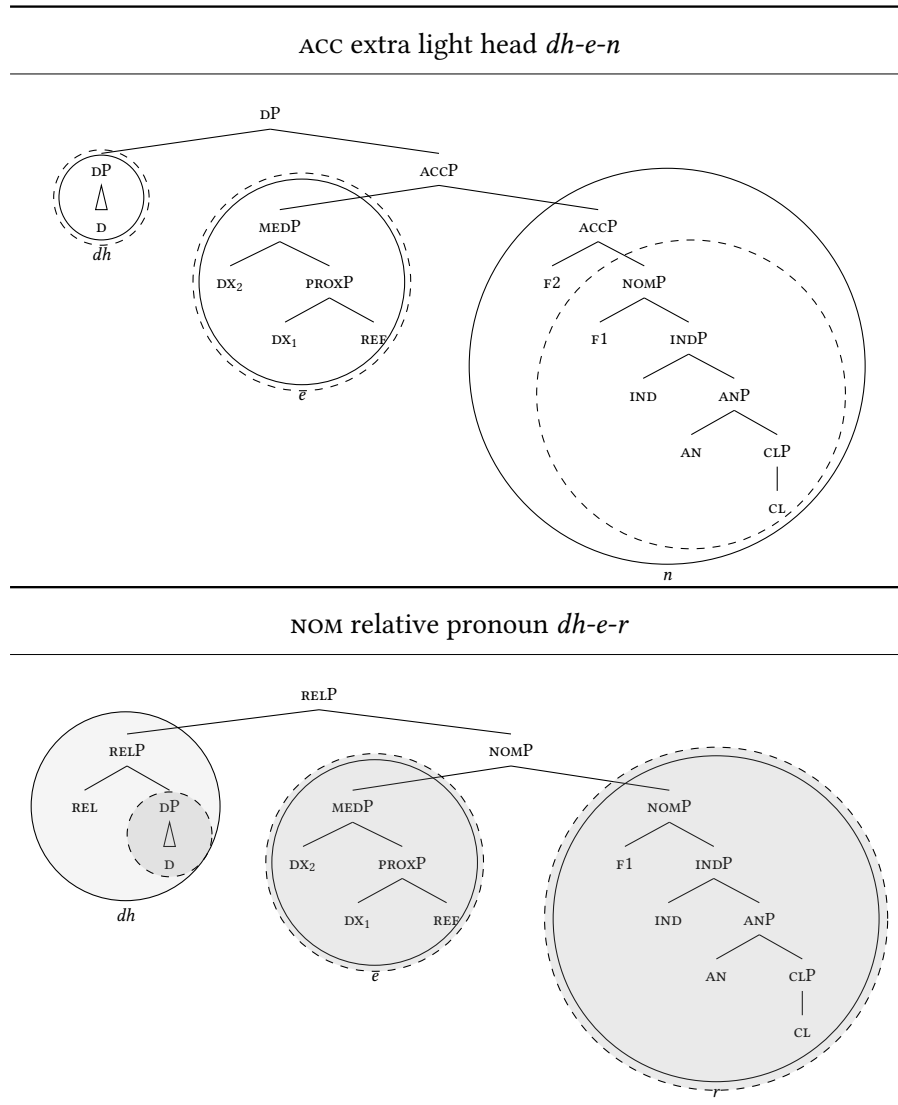


Figure 1.20: Old High German EXT_{ACC} vs. INT_{NOM} → *dhen*

The relative pronoun consists of three morphemes: *dh*, *e* and *r*. The light head consists of three morphemes: *dh*, *e* and *n*. Again, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology

under it. I draw a dashed circle around each constituent that is a constituent in both the light head and the relative pronoun. As each constituent of the light head is also a constituent within the relative pronoun or is syncretic with one, the relative pronoun can be absent. I illustrate this by marking the content of the dashed circles for the relative pronoun gray.

I explain this constituent by constituent. I start with the right-most constituent of the relative pronoun head that spells out as *r* (NOMP). This constituent is also a constituent in the light head, contained in ACCP. I continue with the middle constituent of the relative pronoun that spells out as *e* (MEDP). This constituent is also a constituent in the light head. I end with the left-most constituent of the relative pronoun that spells out as *d* RELP. This constituent is not contained in the light head, but it is syncretic with it. The DP is also spelled out as *d*. All three constituent of the light head are also a constituent within the relative pronoun or are syncretic with them, and the relative pronoun can be absent.

1.5 Summary

Table 1.16 shows per language type which of the three options in Table 1.1 is chosen when the internal and external case differ.

Table 1.16: 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.²¹ 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 1.1 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 1.21.

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).

²¹This holds for the situation in which the internal and external case differ. In Section 1.3, I show that the relative pronoun surfaces in matching contexts.

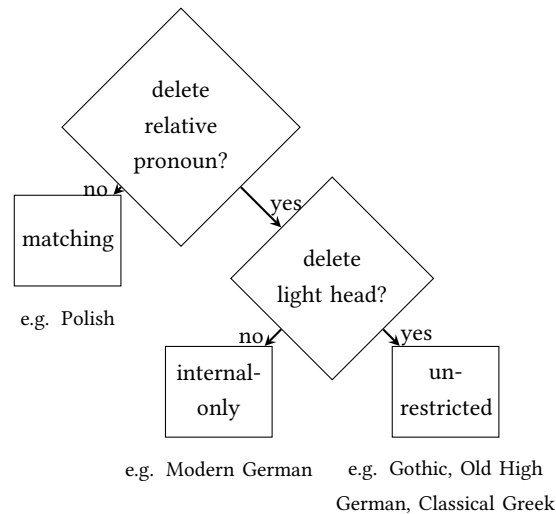


Figure 1.21: Delete relative pronoun/light head as parameters

1.6 Aside: a larger syntactic context

If you talk about different patterns, there can be different locations to put your parameters. Himmelreich put her parameters in the structure. I put my parameters in the elements themselves. I show what an analysis like Himmelreich looks like, and I show then that it is difficult to reduce that then to differences in the lexicon (because it has to do with agree?).

So what I do is keep the parameters that she was differing stable. I change the things that she kept constant, the internal and external element. Does her structure then work with what I want? Not entirely, because I have to do a c-command that is going in the wrong direction. Then I show a syntactic structure that could be compatible with mine, and I show why a grafting one is not.

In this dissertation I focus on when languages allow the internal and external case to win the case competition. In my proposal, this depends on the comparison between the internal and external base. The larger syntactic context in which this takes place should be kept stable. For concreteness, I show a possible implementation in Cinque's double-headed analysis of relative clause. I do by no means claim that claim this is the only or even correct implementation.

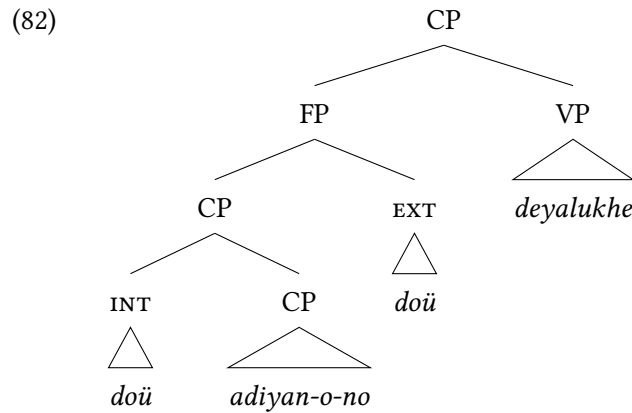
According to Cinque, every type of relative clause in every language is underly-

ingly double-headed. Evidence for this claim comes from languages that show this morphologically. An example from Kombai is given in (81). The head of the relative clause is *doü* ‘sago’, and it appears inside the relative clause and outside.

- (81) [**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)

The internal and external instances of *doü* correspond to the internal and external element I assume to be there in the headless relatives.

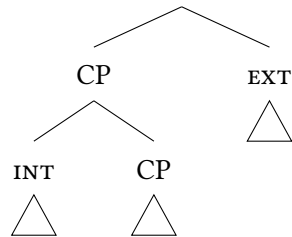
(82) shows the syntactic structure of the sentence in (81).



In most languages one of the two heads is deleted throughout the derivation.

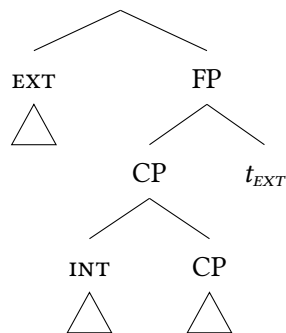
According to Cinque 2020, the internal element can delete the external element, because the internal element c-commands the external element. This is c-command according to Kayne’s definition of it: the internal element is in the specifier of the specifier of the FP.

(83)



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.²² From this position, the external element can delete the internal one, because the external element c-commands the internal one.

(84)



Also talk about D here, and that maybe Old High German deletes a thing without a D when the internal thing wins. does that also have a not so definite interpretation?

What does not work:

For this pattern a single element analysis seems intuitive, if you assume that case is complex and that syntax works bottom-up. First you built the relative clause, with the big case in there. Then you build the main clause and you let the more complex case in the embedded clause license the main clause predicate.

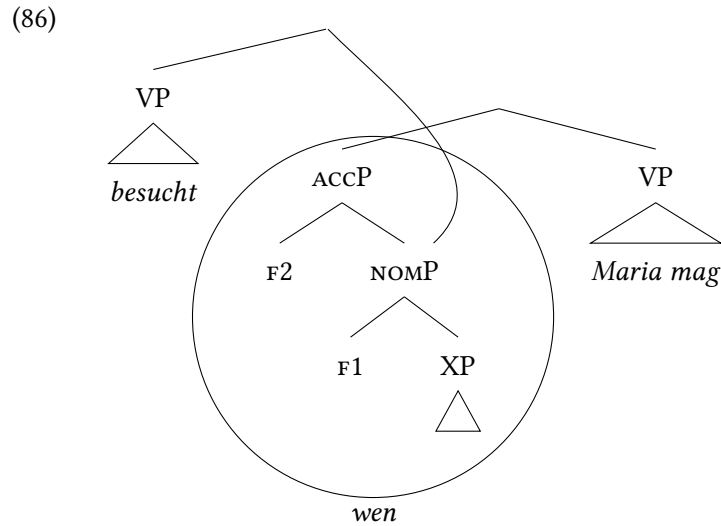
Consider the example in (85). Here the internal case is accusative and the ex-

²²What remains unclear is what the trigger is for the movement of the external element over relative clause is.

ternal one nominative.

- (85) Uns besucht **wen** **Maria** mag.
 we.ACC visit.3SG_[NOM] REL.ACC.AN Maria.NOM like.3SG_[ACC]
 ‘Who visits us, Maria likes.’ (adapted from Vogel 2001: 343)

The relative clause is built, including the accusative relative pronoun. Now the main clause predicate can merge with the nominative that is contained within the accusative.

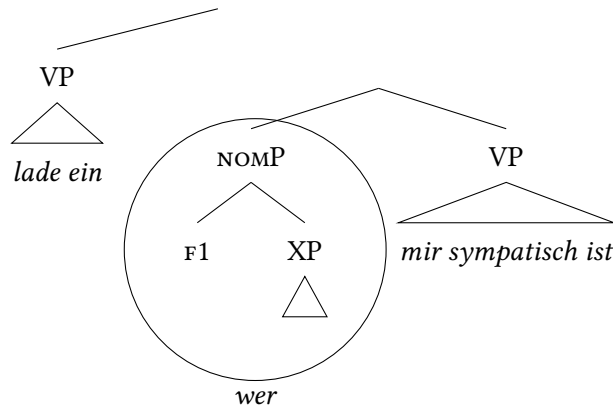


The other way around does not work. Consider (87). This is an example with nominative as internal case and accusative as external case.

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

Now the relative clause is built first again, this time only including the nominative case. There is no accusative node to merge with for the external predicate. Instead, the relative pronoun would need to grow to accusative somehow and then the merge could take place. This is the desired result, because the sentence is ungrammatical.

(88)



So, this seems to work fine. The assumptions you have to do in order to make this are the following. First, case is complex. Second, you can remerge an embedded node (grafting). For the first one I have argued in Chapter ???. The second one could use some additional argumentation. It is a mix between internal remerge (move) and external merge, namely external remerge. Other literature on multidominance and grafting, other phenomena. Problems: linearization, .. But even if fix all these theoretical problems, there is an empirical one.

That is, I want to connect this behavior of Modern German headless relatives to the shape of its relative pronouns. These pronouns are WH-elements. The OHG and Gothic ones are not WH, they are D. Their relative pronouns look different, and so their headless relatives can also behave differently.

Himmelreich

there are agree relations between - V_{EXT} and $EXT - V_{INT}$ and $INT - INT$ and EXT

three parameters: 1 relation between V_{EXT} and $EXT + V_{INT}$ and INT are symmetric or asymmetric 2 relation between EXT and INT are symmetric or asymmetric 3 if $EXT - INT$ is asymmetric, EXT or INT probes

I keep the parameters she has stable, the bigger syntactic context is the same everywhere. I vary the content of EXT

Primary texts

Isid. Der althochdeutsche Isidor

Mons. The Monsee fragments

Otfrid Otfrid's Evangelienbuch

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