

CASE COMPETITION IN HEADLESS RELATIVES

Inauguraldissertation

zur Erlangung des Grades eines Doktors der Philosophie

im Fachbereich Neuere Philologien

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zu Frankfurt am Main

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Acknowledgements

thanks

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List of abbreviations

ACC	accusative
AN	animate
DAT	dative
ELH	extra light head
F	feminine
NOM	nominative
PRES	present tense
REL	relative marker
SG	singular

Part I

Case competition

Part II

The typology

Part III

Deriving the typology

Chapter 7

Deriving the internal-only type

Languages of the internal-only type can be summarized as in Table 7.1.

Table 7.1: Grammaticality in the internal-only type

surface pronoun	
$K_{INT} = K_{EXT}$	$RP_{INT/EXT}$
$K_{INT} > K_{EXT}$	RP_{INT}
$K_{INT} < K_{EXT}$	*

When the internal and the external case match, and there is a tie, the relative pronoun surfaces in the this particular case (just like in all other language types). When the internal case wins the case competition, this type of language allows the internal case to surface. This means that the relative pronoun with a more complex internal case can be the surface pronoun. When the external case wins the case competition, this type of language does not allow the external case to surface. This means that the light head with a more complex external case cannot be the surface pronoun.

In Chapter 6, I suggested that the relative pronoun contains at least one feature more than the light head. In the internal-only type of language, these features are spelled out in such a way that they form the constituency shown in Figure 7.1.

When the internal and the external case match, the relative pronoun can delete

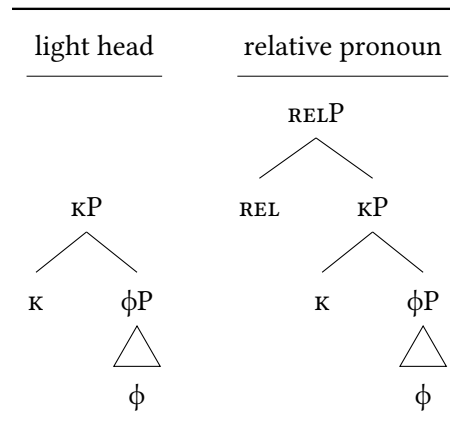


Figure 7.1: LH and RP in the internal-only type

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 relative pronoun can still delete the light head, because it still forms a constituent within the relative pronoun. 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. As a result, there is no grammatical form to surface when the internal case is more complex.

In this chapter, I show that Modern German light heads and relative pronouns have this type of structure. I give a compact version of the structures in Figure 7.2.

In what follows, I compare the light head and the relative pronoun in Figure 7.2 to the light head and the relative pronoun in Figure 7.1.

Consider the light head in Figure 7.2. Light heads in Modern German are spelled out by a single morpheme, which I indicate by circling the structure. I show the internal structure of κP to make clear that it contains the INDP (which is the highest feature of what corresponds to the ϕP). Therefore, the structure of the light head in Figure 7.2 is identical to the one in Figure 7.1.

Consider the relative pronoun in Figure 7.2. Relative pronouns in Modern German consist of three morphemes: the κP (which is the constituent that forms the light head) and the MEDP and the RELP , again indicated by the circles. This shows that the relative pronoun contains more a single feature more than the light head, namely whatever is in the MEDP and in the RELP . Besides that, the structure of the

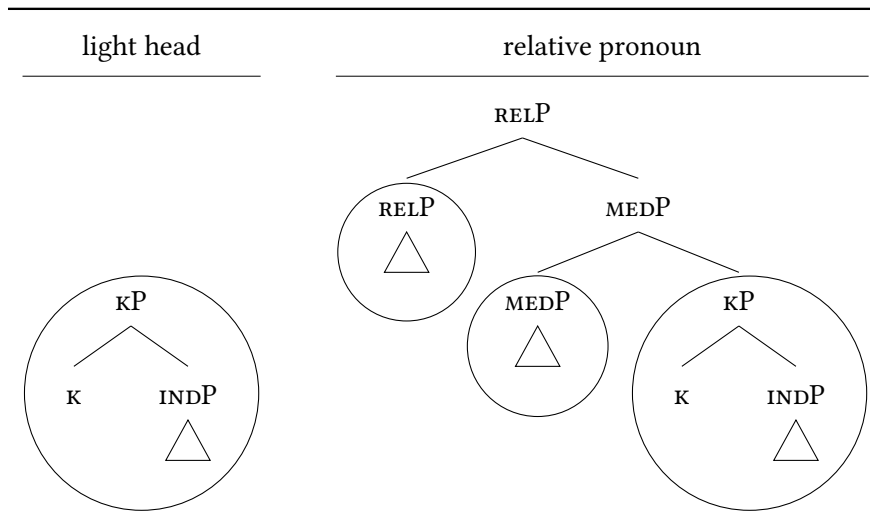


Figure 7.2: LH and RP in Modern German

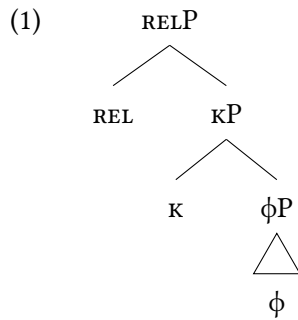
relative pronoun in Figure 7.2 is identical to the one in Figure 7.1.

Crucially, the constituency relevant for the deletion of the light head is the same in Figure 7.2 as it is in Figure 7.1. Throughout this chapter, I discuss what the exact feature content of relative pronouns and light heads is. I motivate that these features form the constituents shown in Figure 7.2.

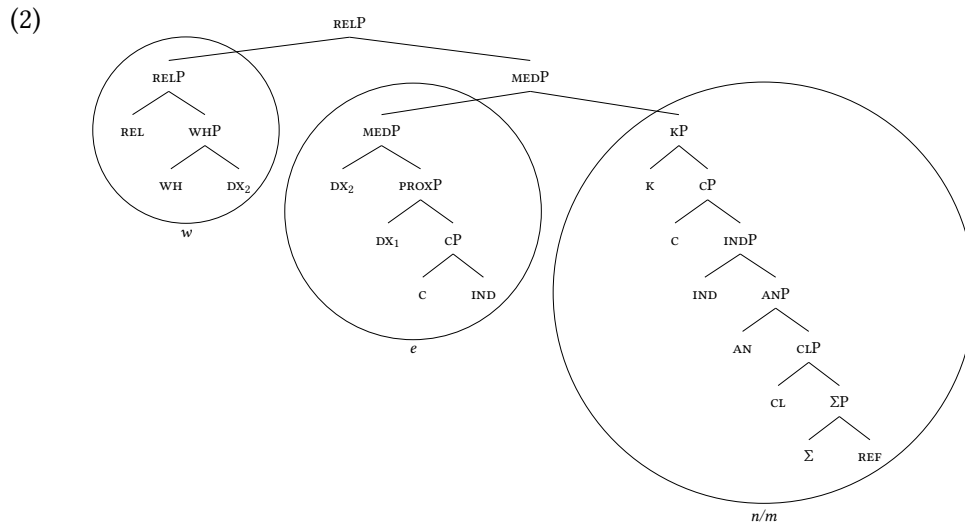
The chapter is structured as follows. First, I discuss the relative pronoun. I decompose the relative pronouns into the three morphemes I showed in Figure 7.2, and I show which features each of the morphemes corresponds to. I illustrate how different morphemes are combined using Nanosyntax. Then I discuss the light head. I argue that Modern German headless relatives are derived from a type of light-headed relative clause that does not surface in the language. I show that the light head corresponds to one of the morphemes of the relative pronoun (the κP in Figure 7.2). Finally, I compare the constituents of the light head and the relative pronoun. I show that the relative pronoun can delete the light head when the internal case matches the external case or when the internal case is more complex than the external one. When the external case is more complex, I show that none of the elements can delete the other one.

7.1 The relative pronoun

In Chapter 6, I argued that in the internal-only type, the features of the relative pronoun are spelled out in such a way that they form the constituency shown in Figure (1).



In this section, I give decompose the Modern German relative pronouns and I determine which features they correspond to. I carefully establish the feature content of the relative pronoun, because the features that I introduce for Modern German are present in the same way in the other two language types. In the end, I argue that Modern German relative pronoun have the structure shown in (2).



I discuss two relative pronouns: the animate accusative and the animate dative.

These are the two forms that I compare the constituents of in Section 7.4. I show them in (3).

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

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

I start with the final consonants: *n* and *m*. I argue that these consonants spell out gender features, number features, case features and pronominal features. Consider Table 7.2.

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

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

The final consonants depending on animateness and case.¹ The differing final consonant can be observed in several contexts besides relative pronouns. Table 7.3 gives an overview of the demonstrative *dieser* ‘this’ in Modern German in two numbers, three genders and three cases.^{2,3}

¹The vowel also differs between animateness. I return to this point when I discuss the feature content of the *e*.

²The vowel preceding the final consonant is written as *e*. I write it as *a*, because this is how it is pronounced. I make this distinction to emphasize that this differs from the vowel used in the relative pronouns.

³Notice that the animate forms in Table 7.2 are the masculine forms in Table 7.3 and that the inanimate forms in Table 7.2 are the neuter forms in Table 7.3. This is a pattern that appears more

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

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

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

I continue with the pronominal features. Another context in which the final consonants appear is in their use as a pronoun. More specifically, the final consonants correspond to the weak pronoun in Modern German. In (4), I give examples of the masculine accusative singular and masculine dative singular.

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

often.

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

Cardinaletti and Starke (1994) split pronouns in three classes: strong pronouns, weak pronouns and clitics. There are several tests that distinguish the types from each other. In what follows, I show that the pronouns in (4) are neither strong pronouns nor clitics, and therefore, should be classified as weak pronouns. The tests I am taken from Cardinaletti and Starke (1994).

First, I show that *n* and *m* are not strong pronouns because of how they behave under coordination and under focus. Strong pronouns can be coordinated. The examples in (5) illustrate that *n* and *m* cannot be coordinated.

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

Strong pronouns can be focused. The examples in (6) show that *n* and *m* cannot be focused.

- (6) a. *Ich wollte nur *n* anrufen.
 I wanted only 3SG.M.ACC.WK call
 'I wanted to call only him.'
- b. *Ich helfe nur *m* sein Fahrrad zu reparieren.
 I help only 3SG.M.DAT.WK his bike to repair
 'I help only him repairing his bike.'

Second, I show that the consonant is not a clitic because of how they behave with respect to following dative objects and combining with prepositions. Clitics can either follow a dative object or precede it. Strong and weak pronouns can only follow it. The examples in (7) and (8) show that *n* and *m* can only follow the dative object *Jan*.

- (7) a. .. dass Ursel Jan *n* empfohlen hat.
 that Ursel Jan 3SG.M.ACC.WK recommended has
 ‘that Ursel recommended him to Jan.’
 b. *.. dass Ursel *n* Jan empfohlen hat.
 that Ursel 3SG.M.ACC.WK Jan recommended has
 ‘that Ursel recommended him to Jan.’
- (8) a. .. dass Ursel *m* Jan empfohlen hat.
 that Ursel 3SG.M.DAT.WK Jan recommended has
 ‘that Ursel recommended Jan to him.’
 b. *.. dass Ursel Jan *m* empfohlen hat.
 that Ursel Jan 3SG.M.DAT.WK recommended has
 ‘that Ursel recommended Jan to him.’

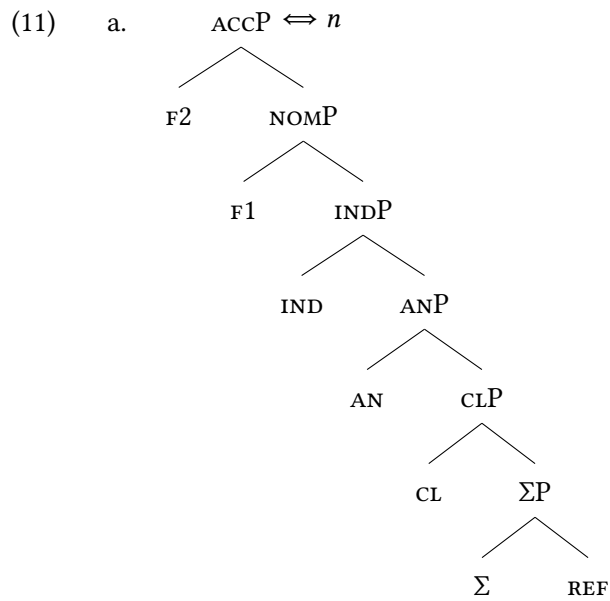
Clitics cannot combine with prepositions. The examples in (9) and (10) show that *n* and *m* can combine with prepositions.

- (9) a. Ich habe schon ein Geschenk für *n* gekauft.
 I have already a gift for 3SG.M.ACC.WK bought
 ‘I already bought a gift for him.’
 b. Ich bin schnell auf *n* zu gelaufen.
 I am fast on 3SG.M.ACC.WK to walked
 ‘I walked toward him fast.’
- (10) a. Ich war mit *m* im Wald wandern.
 I have already a gift for 3SG.M.DAT.WK bought
 ‘I was hiking with him in the woods.’
 b. Ich habe Blumen von *m* bekommen.
 I have flowers from 3SG.M.DAT.WK received
 ‘I received flowers from him.’

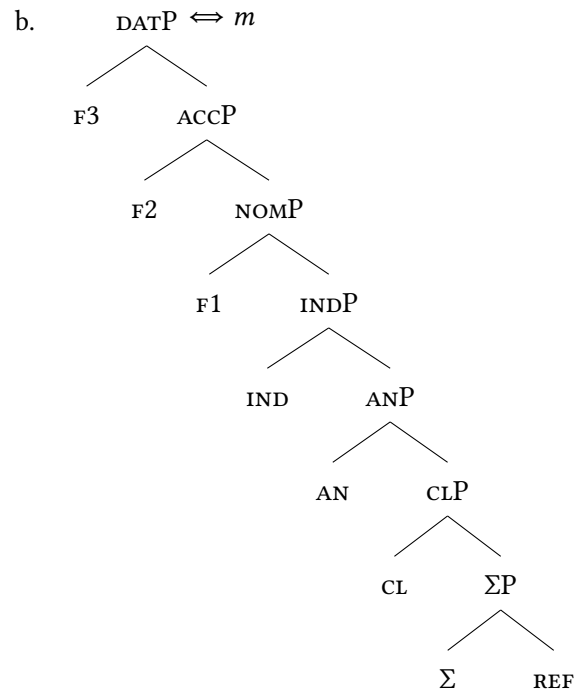
In sum, *n* and *m* are not strong pronouns and not clitics, so they are weak pronouns. This means that the forms also contain pronominal features. I propose that two pronominal features are present: REF and Σ . Harley and Ritter (2002) claim that all pronouns contain the feature REF, because they are referential expressions. The

feature Σ is present because the consonants are weak pronouns (Cardinaletti and Starke, 1994).⁵

I give the lexical entries for *n* and *m* in (11a) and (11b). The *n* is the nominative masculine singular, so it spells out the features REF, Σ , CL, AN, IND F1 and F2. The *m* is the accusative masculine singular, so it spells out the features that the *r* spells out plus F3.



⁵I 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.

I continue with the *e*. This morpheme is present (WH-)relative pronouns, but also in demonstratives, as shown in 7.4.⁶

⁶Note that WH-relative pronouns, unlike the demonstratives, do not have a feminine form for the relative pronouns in Table ???. Demonstratives also have plural forms, and WH-relative pronouns do not. As far as I know, this holds for all relative pronouns in languages of the internal-only type (cf. also for Finnish, even though it makes a lot of morphological distinctions) and of the matching type. Relative pronouns in languages of the unrestricted type do inflect for feminine, as well as always-external languages. In Chapter 11 I return to this observation in relation with the always-external languages.

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

	masculine	N	F	plural
NOM	d-e-r	d-a-s	d-ie	d-ie
ACC	d-e-n	d-a-s	d-ie	d-ie
DAT	d-e-m	d-e-m	d-e-r	d-e-n

I suggest that the morpheme *e* spells out deixis features, pronominal features and gender and number features. I start with the deixis features.

In relative pronouns it does not express spatial deixis, but discourse deixis: it establishes a relation with an antecedent. Generally, three types of deixis are distinguished: proximal, medial and distal. I argue that *e* in the relative pronoun corresponds to the medial. Generally speaking, WH-pronouns combine with the medial or the distal. English has morphological evidence for this claim. Demonstratives in English can combine with either the proximal or this medial/distal, as shown in (12).

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

WH-pronouns combine with the medial/distal and are ungrammatical when combined with the proximal, shown in (13).

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

The use of the medial in WH-pronouns can be understood conceptually if one connects spatial deixis to discourse deixis (cf. Colasanti and Wiltschko, 2019). The proximal is spatially near the speaker, and it refers to knowledge that the speaker pos-

sesses. The medial is spatially near the hearer, and it refers to knowledge that the hearer possesses. The distal is spatially away from the speaker and the hearer, and refers to knowledge that neither of them possess. In WH-pronouns, the speaker is not aware of the knowledge, so the use of the proximal is excluded. Since I do not have explicit evidence for the presence of the distal, I assume that it is the medial that combines with the WH-pronoun.

I adopt the features for deixis distinguished by Lander and Haegeman (2018). The feature DX_1 corresponds to the proximal, the features DX_1 and DX_2 correspond to the medial, and the features DX_1 , DX_2 and DX_3 correspond to the distal. The difference between the proximal, the medial and the distal cannot be observed in Modern German, because it is syncretic all of them (Lander and Haegeman 2018: 387), see Table 7.4.

I continue with gender and number features. Table 7.4 shows that the vowel changes depending on gender and number. The masculine singular uses the *e*, the neuter singular uses the *a*, the feminine singular uses the *ie* and the plural uses for all genders the *ie*.⁷ Therefore, I suggest that *e* spells out the features AN and IND.

Finally, I assume that the *e* corresponds to the feature *c*, a feature that strong pronouns have in addition to REF and Σ . Demonstratives, which contain the *e* can namely be coordinated and focused, which is typical for strong pronouns (Cardinaletti and Starke, 1994). I give an example of a coordinated demonstrative and a

⁷Note that the dative forms in all gender and numbers have the *e*, which I assigned to masculine gender. This holds for the genitive forms too, which I have not given here. I see these as arguments in favor the following analysis.

The phonological part of the lexical entries in ?? should not be *n* and *m* but *en* and *em*. Additionally, the lexical entry carries additional information: the lexical entries in ?? only bring a single slot for a single consonant. The lexical entry for the neuter singular nominative and accusative is *as* but only the *s* surfaces due the single consonant slot. The feminine singular and the plurals do not have a weak pronoun and they do not have a marker in forms like *diese* ‘this’ (see Table 7.3), because their lexical entry does not contain a consonant.

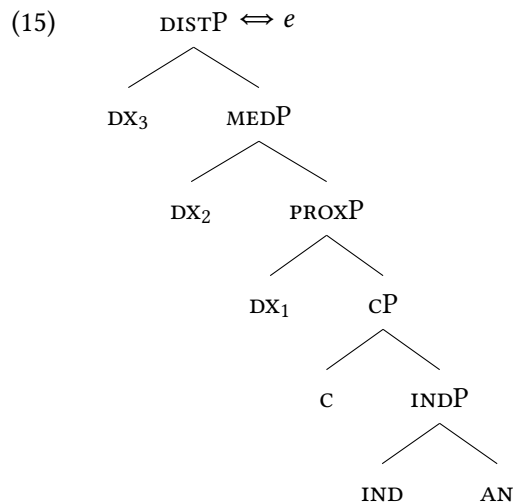
Under this analysis, the lexical entry does not correspond to the phonology *e*. Its phonological contribution is to bring a slot for a vowel. The lexical entry is then also not specified for gender, which correctly captures the observation that *e* appears outside of the masculine.

As this matter is not relevant for the core of my analysis, I put it aside for now. For ease of exposition I assign a phonological exponent to each lexical entry.

focused demonstrative in (14).⁸

- (14) a. Ich wollte Jan und den gestern schon anrufen.
 I wanted Jan and DEM.SG.M.ACC. yesterday already call
 'I already wanted to call Jan and him yesterday.'
- b. Ich helfe nur dem sein Fahrrad zu reparieren.
 I help only DEM.SG.M.DAT his bike to repara
 'I help only him repairing his bike.'

In sum, the *e* spells out the features AN, IND, C, DX₁, DX₂ and DX₃, as shown in (15).



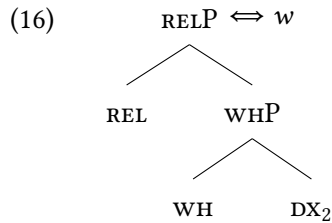
This leaves the morpheme *w* of the relative pronoun. I showed in this section that *w* combines with the same endings as the *d* does in demonstratives (or relative pronouns in headed relatives). This identifies the *d* and, more importantly for the discussion here, the *w* as a separate morpheme. I suggest that the morpheme *w* spells out three features: WH, REL and DX₂.

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 7.4, which is responsible for establishing a

⁸The feature *c* could in principle also be contained in the morpheme *d*.

definite reference. The second relevant feature is REL, which establishes a relation. The third feature is DX_2 , which ?

In sum, the *w* spells out the features WH REL and DX_2 , as shown in (16).

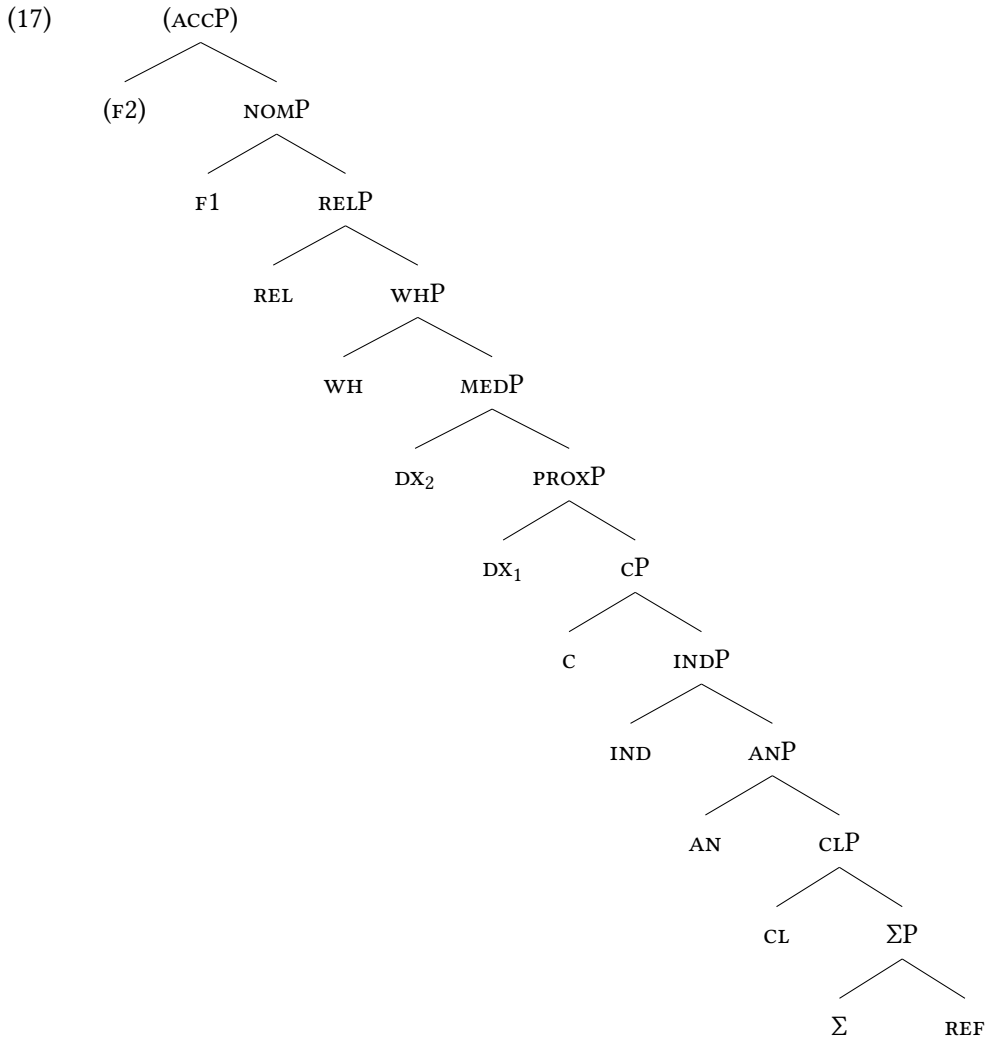


At this point, I gave lexical entries for each of the morphemes (in (11a), (11b), (15) and (16)) and I showed what the relative pronouns as a whole look like (in (2)). What is still needed, is a theory for combining these morphemes into a relative pronoun. This theory should determine which morphemes 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 7.3.

7.2 Combining morphemes in Nanosyntax

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

(17) 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), deixis features (DX₁ and DX₂), gender features (CL and AN), a number feature (IND), the strong pronoun feature (c), operator features (WH and REL) and case features (F1 F2 and F3). 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).

(18) a. of those children

- b. of which children

Before I derive construct the relative pronouns, I explain how the spellout procedure in Nanosyntax works. Features (Fs) are merged one by one according to the functional sequence, starting from the bottom. After each instance of merge, the constructed phrase must be spelled out, as stated in (19).

(19) **Cyclic phrasal spellout** (Caha, 2020)

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

Spellout is successful when the phrase that contains the newly merged feature forms a constituents in a lexical tree that is part of the language's lexicon. When the new feature is merged, it forms a phrase with all features merged so far. If this created phrase cannot be spelled out successfully (i.e. when it does not form a constituent in a lexical tree), there are two movement operations possible that modify the syntactic structure in such a way that the newly merged feature becomes part of a different syntactic structure. These movements are triggered because spellout needs to successfully apply, and, therefore, they are called spellout-driven movements. A Spellout Algorithm specifies which movement operations apply and in which order this happens. I give it in (20).

(20) **Spellout Algorithm** (as in Caha 2020, based on Starke 2018)

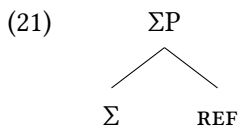
- a. Merge F and spell out.
- b. If (a) fails, move the Spec of the complement and spell out.
- c. If (b) fails, move the complement of F and spell out.

I informally reformulate what is in (20). I start with the first line in (20a). This says that a feature F is merged, and the newly created phrase FP is attempted to spell out. The next two lines, (20b) and (20c), describe the two types of rescue movements that take place when the spellout in (20a) fails (i.e. when there is no match in the lexicon). In the discussion about Modern German, only the first line leads to successful spellout. In the next section in which I discuss Polish derivations, second

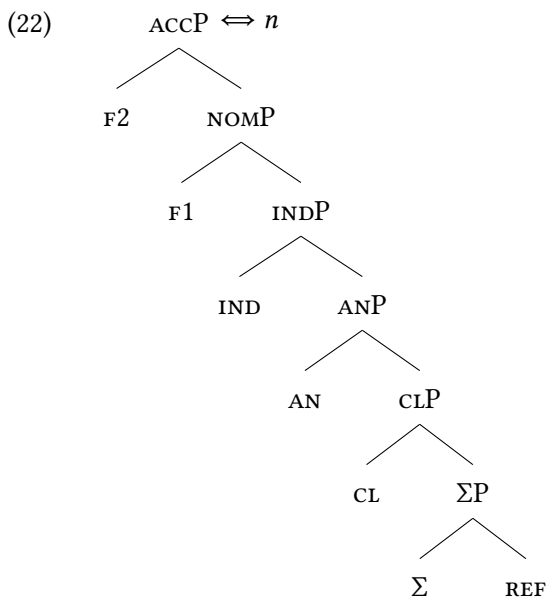
and third line also lead to successful spellouts. I give the full algorithm here to give the complete picture from the start.

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

I start constructing the nominative relative pronoun. Starting from the bottom of the functional sequence, the first two features that are merged at REF and Σ , creating a ΣP .

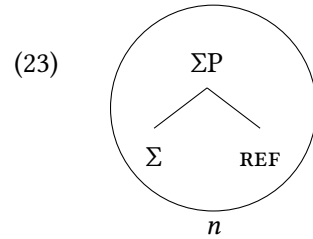


The syntactic structure forms a constituent in the lexical tree in (22), repeated from (11a), which corresponds to the *n*.

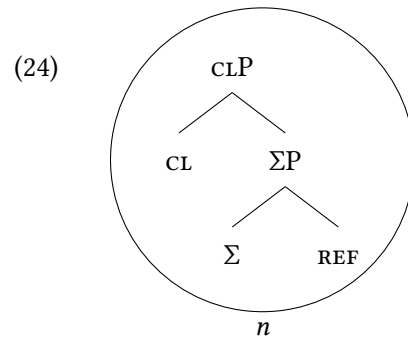


Therefore, the ΣP is spelled out as *n*. As usual, I mark this by circling the part of the structure that corresponds to the lexical entry, and placing the corresponding

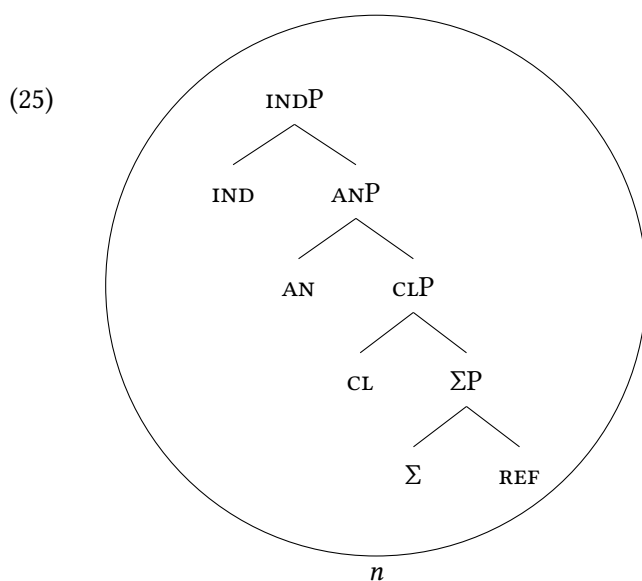
phonology under it. This spellout option corresponds to (20a) in the Spellout Algorithm.



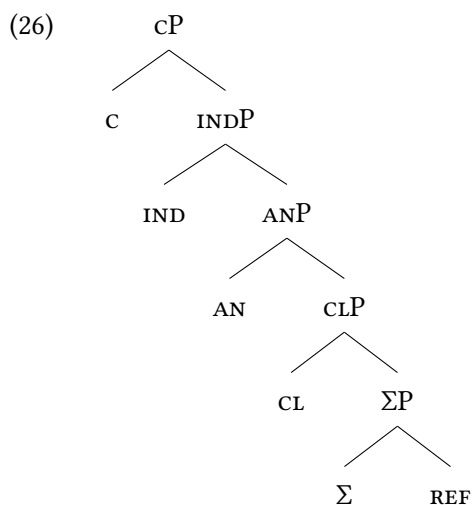
There are more features in the functional sequence, so the next feature is merged. This next feature is the feature CL, and a CLP is created. The syntactic structure forms a constituent in the lexical tree in (22). Therefore, the CLP is spelled out as n , shown in (24).



The features AN and IND are merged and spelled out in the same way. First, the feature AN is merged, and a ANP is created. The syntactic structure forms a constituent in the lexical tree in (22). Therefore, the ANP is spelled out as n . Then, the feature IND is merged, and a INDP is created. The syntactic structure forms a constituent in the lexical tree in (22). Therefore, the INDP is spelled out as n , shown in (25).



The next feature in the functional sequence is the feature *c*. This feature can not be spelled out as the other ones before. I show that in what follows. The feature *c* is merged, and a *cP* is created, as shown in (26)



This syntactic structure does not form a constituent in the lexical tree in (22). There is also no other lexical tree that contains the structure in (26) as a constituent. Therefore, there is no successful spellout for the syntactic structure in the derivational

step in which the structure is spelled out as a single phrase ((20a) in the Spellout Algorithm).

The first movement option in the Spellout Algorithm is moving the specifier, as described in (20b). As there is no specifier in this structure, so the first movement option is irrelevant. The second movement option in the Spellout Algorithm is moving the complement, as described in (20c). In this case, the complement of *c*, the INDP, is moved to the specifier of INDP. As this movement option does not lead to a successful match, I do not discuss it here. I come back to it in Chapter 8, in which it does lead to a successful match.

As I mentioned earlier, there are two more derivational options possible: Backtracking and Spec Formation. Derivationally, Backtracking comes first. However, since this does not lead to a successful spellout here I first introduce Spec Formation first and I return to Backtracking later. Spec Formation is a last resort operation, when the feature cannot be spelled out by any of the preceding options. It is formalized as in (27).

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

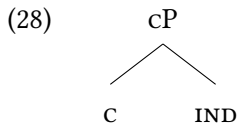
If Merge *F* has failed to spell out (even after Backtracking), try to spawn a new derivation providing *F* and merge that with the current derivation, projecting *F* to the top node.

To reformulate this informally, if none of the preceding spellout options led to a successful spellout, a last resort operation applies. The feature that has not been spelled out yet, is merged with some other features (to which I come back next) in a separate workspace. Crucially, the phrase that is created is contained in a lexical tree in the language's lexicon. Finally, the feature is spelled out successfully. The newly created phrase (the spec) is merged as a whole with the already existing structure.

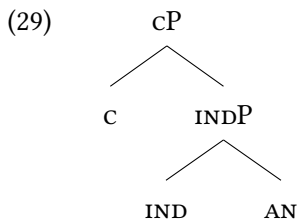
Now I come back to the 'other' features that the feature is merged with to create a phrase that can be spelled out. This cannot be just any feature. What is crucial here again is the functional sequence. The newly merged feature is merged with features that precede it in this sequence. This can be a single feature or more than one. I illustrate this with the Modern German relative pronouns.

For *c* this means that it is merged with *IND*. Then, the lexicon is checked for a

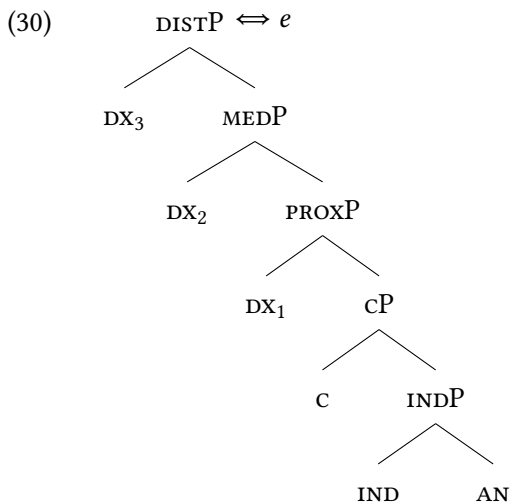
lexical tree that contains the phrase cP that contains c and IND, as shown in (28).



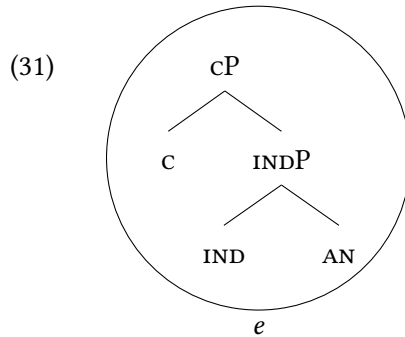
This syntactic structure does not form a constituent in any of the lexical trees in the language's lexicon. Therefore, the feature c combines not only with the feature merged before it, but with a phrase that consists of the two features merged before it: IND and AN. I give the phrase this creates in (29).



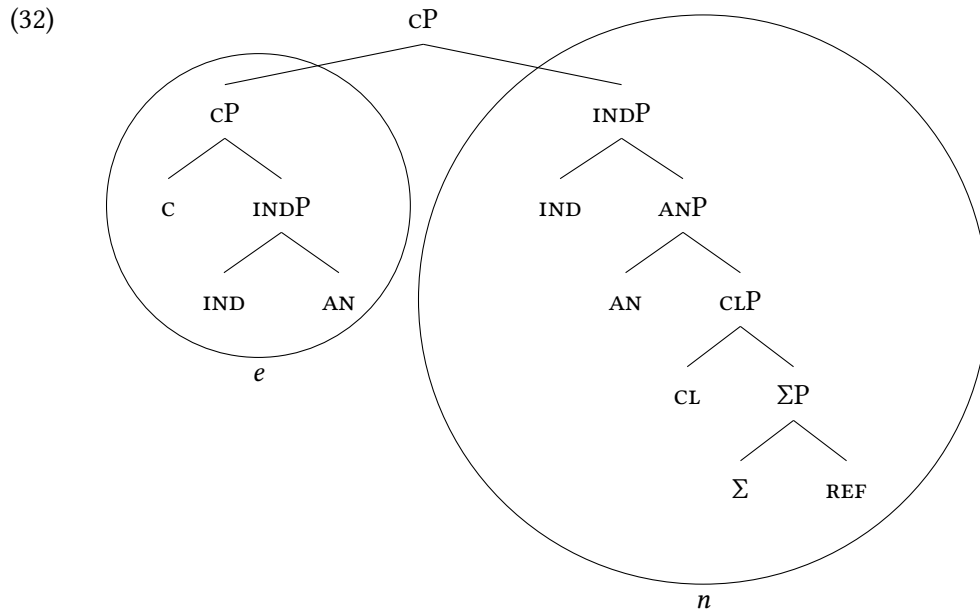
This syntactic structure forms a constituent in the lexical tree in (30), repeated from (15), which corresponds to the *e*.



Therefore, the cP is spelled out as *e*, as shown in (31).



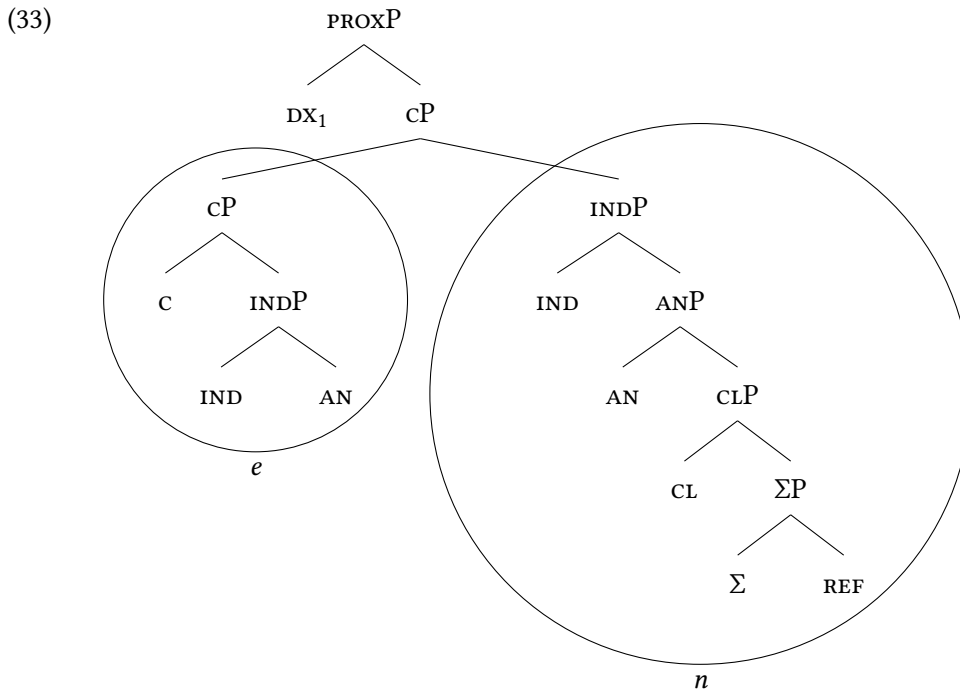
The newly created phrase is merged as a whole with the already existing structure. As specified in (27), the feature *c* projects to the top node. I show the results in (32).



Notice here that there is an overlap of multiple features between the phrase on the right and the phrase on the left.⁹

⁹There are three different proposals on Spec Formation. Caha (2019) argue that there can only be a single feature overlap between the two phrases. De Clercq and Vanden Wyngaerd (2018) argue that there cannot be any overlap at all. The features that used in the second workspace are removed from the structure in the main workspace. In this dissertation, I work with the proposal in Starke (2018), in which the the overlap between the phrase on the left and the phrase on the right can also be more than a single feature. This is the only proposal of the three that allows me to derive all the forms I

The next feature in the functional sequence is the feature dx_1 . As always, it merged to the existing syntactic structure, which is now the cP. The result is the PROXP shown in (33).



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

Consider the syntactic structure in (33) again. The feature DX_1 is merged with the highest cP. In this position it cannot be spelled out. Consider now the lexical entry in (30). This is a lexical tree that contains DX_1 . This means that the feature DX_1 somehow needs to end up in the Spec that has just been merged. I follow Caha (2019) who proposes that this happens via Backtracking. He argues that the main

encounter.

idea of Backtracking is that a feature is merged with a different tree than the one it was merged with before, as stated in (34).¹⁰

(34) **The logic of backtracking** (Caha 2019: 198)

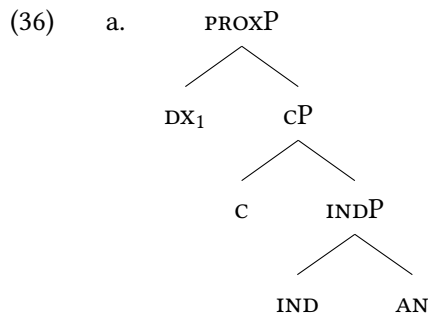
When spellout of F fails, go back to the previous cycle, and provide a different configuration for Merge F.

Imagine a situation in which the previous feature was spelled out with a complex specifier and the next feature reaches the derivational option Backtracking. This is exactly the situation that arises after DX_1 is merged. Providing a different configuration means splitting up the two phrases, and then merging the feature again. Specifically, I adopt the proposal in which the features is merged in both workspaces, as stated in (35).

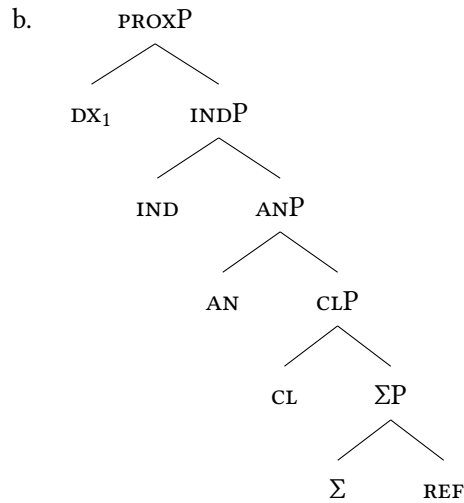
(35) **Multiple Merge** (Caha 2019: 227)

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

For the example under discussion, the situation looks as in (36).



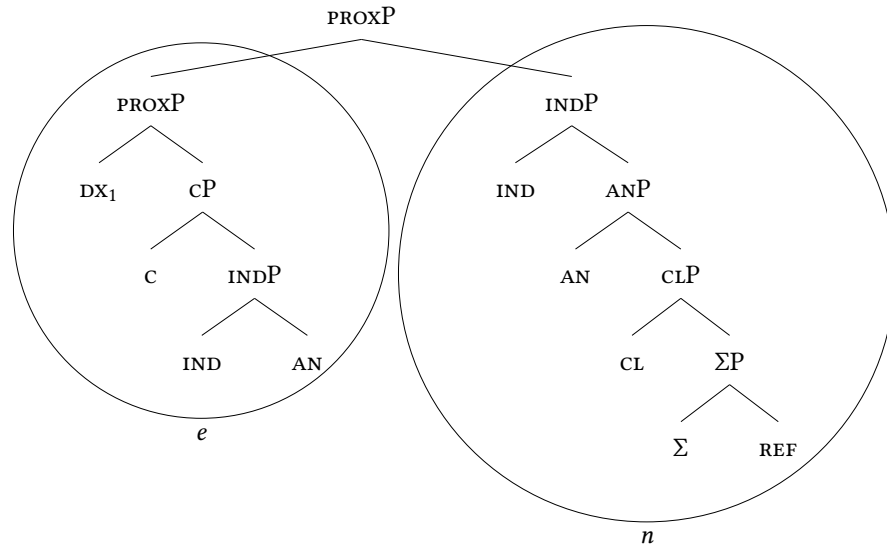
¹⁰In this dissertation I do not discuss the effect that Backtracking ‘normally’ has, namely to try a different spellout option at the previous cycle. That does not mean that I assume it is not part of the derivation: I actually assume it a step that attempted is. I refrain from mentioning it, because this does not lead to a successful spellout in any of the derivations I discuss.



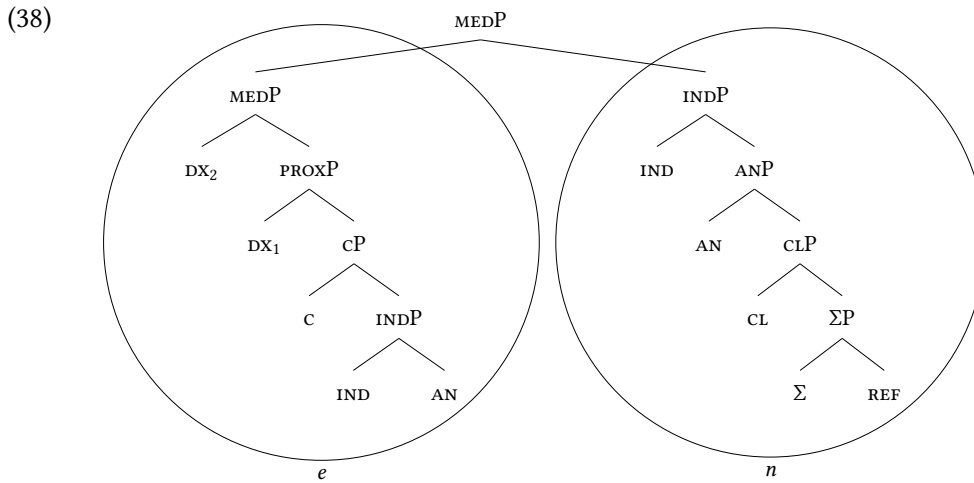
The feature DX_1 is merged in both workspaces, so it combines with the cP in (36a) and with the INDP (36b). Spellout has to be successful in at least one of the two workspaces. From here on, the derivation proceeds, as usual, according to the Spellout Algorithm, with the only difference that it happens in two workspaces simultaneously.

In the case of (36), the spellout of DX_1 is successful in the syntactic structure in (36a). This syntactic structure namely forms a constituent in the lexical tree in (30), which corresponds to the e . As spellout has succeeded, the workspaces can be merged back together. The result is shown in (37).

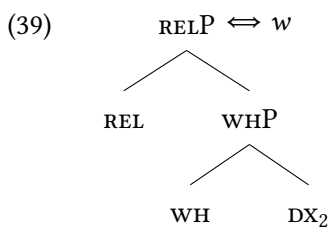
(37)



The next feature on the functional sequence is dx_2 . The derivation for dx_2 resembles the derivation of dx_1 . The feature is merged with the existing syntactic structure, creating a MEDP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads splitting up the PROXP from the the INDP. The feature dx_2 is merged in both workspaces, so with PROXP and and with INDP. The spellout of dx_2 is successful when it is combined with the PROXP. It namely forms a constituent in the lexical tree in (30), which corresponds to the e . The MEDP is spelled out as e , and the MEDP is merged back to the existing syntactic structure, as shown in (38).

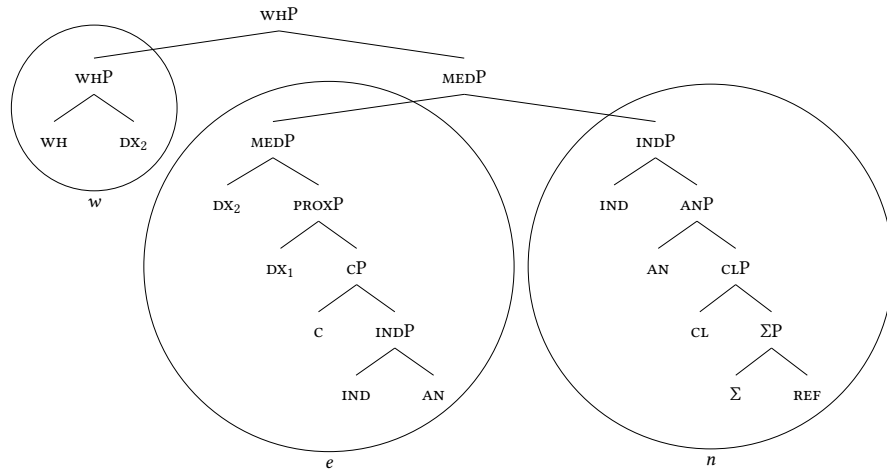


The next feature on the functional sequence is *WH*. The derivation for *WH* resembles the derivation of *DX*₁. The feature is merged with the existing syntactic structure, creating a *WHP*. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking also does not lead to a successful spellout. Therefore, in a second workspace, the feature *WH* is merged with the feature *DX*₂ (the previous syntactic feature on the functional sequence) into a *WHP*. This syntactic structure forms a constituent in the lexical tree in (39), repeated from (16), which corresponds to the *w*.



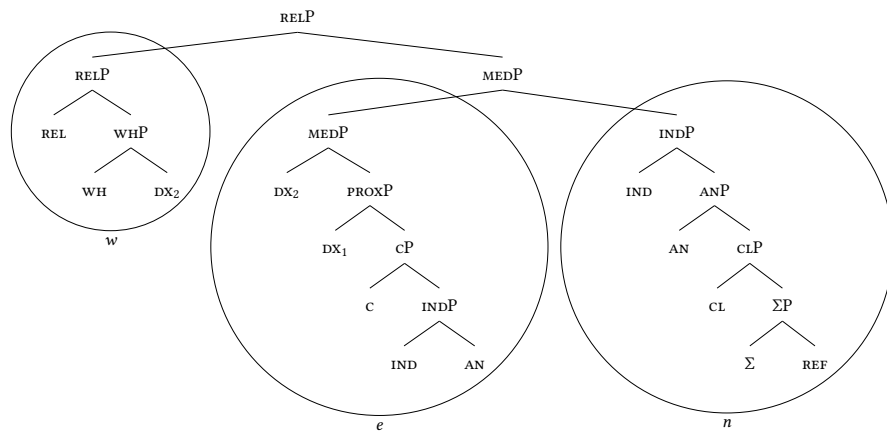
Therefore, the *WHP* is spelled out as *w*, and *WHP* is merged back to the existing syntactic structure, as shown in (40).

(40)



The next feature on the functional sequence is REL. The derivation for REL resembles the derivation of DX_1 and DX_2 . The feature is merged with the existing syntactic structure, creating a RELP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads splitting up the WHP from the (higher) MEDP (which contains the lower MEDP and the INDP). The feature REL is merged in both workspaces, so with WHP and and with MEDP. The spellout of REL is successful when it is combined with the WHP. It namely forms a constituent in the lexical tree in (39), which corresponds to the w . The RELP is spelled out as w , and the RELP is merged back to the existing syntactic structure, as shown in (41).

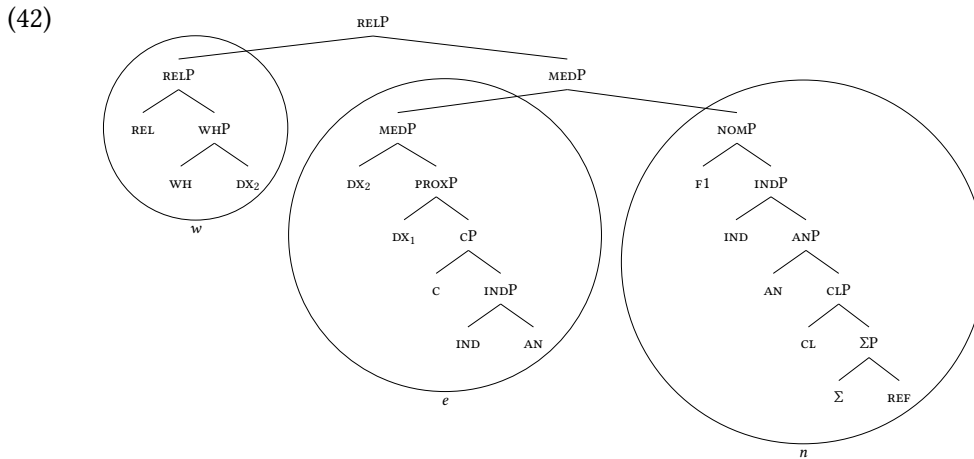
(41)



The next feature on the functional sequence is F1. This feature should somehow end up merging with INDP, because it forms a constituent in the lexical tree in (22), which corresponds to the *n*. This is achieved via two instances of Backtracking in which phrases are split up. I go through the derivation step by step.

The feature F1 is merged with the existing syntactic structure, creating a NOMP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads splitting up the RELP from the (higher) MEDP (which contains the lower MEDP and the INDP). The feature F1 is merged in both workspaces, so with the RELP and and with the MEDP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout.

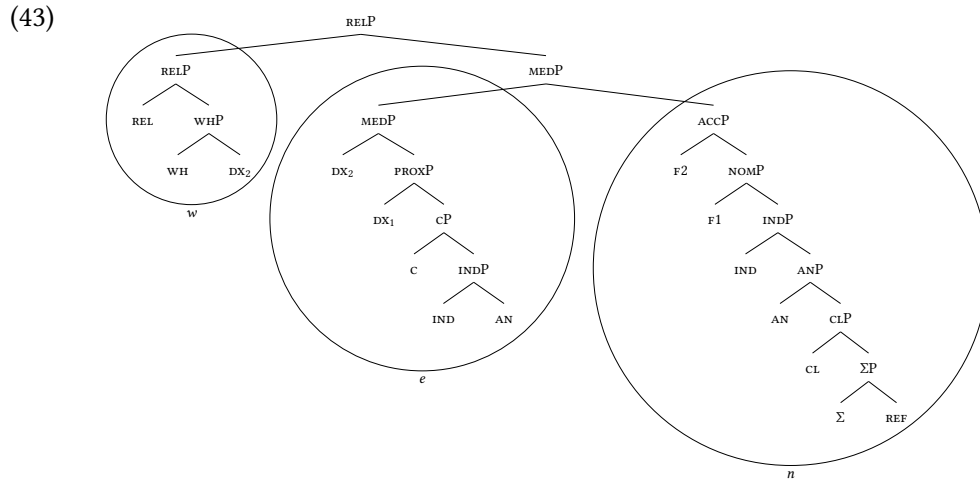
Further Backtracking leads to splitting up the MEDP from the INDP. The feature F1 is merged in both workspaces, so with the MEDP and and with the INDP. The spellout of F1 is successful when it is combined with the INDP. It namely forms a constituent in the lexical tree in (22), which corresponds to the *n*. The NOMP is spelled out as *r*, and all constituents are merged back into the existing syntactic structure, as shown in (42).



For the accusative relative pronoun, the last feature is merged: the F2. The derivation for F2 resembles the derivation of F1. The feature is merged with the existing syntactic structure, creating a ACCP. This structure does not form a constituent in

any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads splitting up the RELP from the (higher) MEDP (which contains the lower MEDP and the NOMP). The feature f_2 is merged in both workspaces, so with the WHP and and with the MEDP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout.

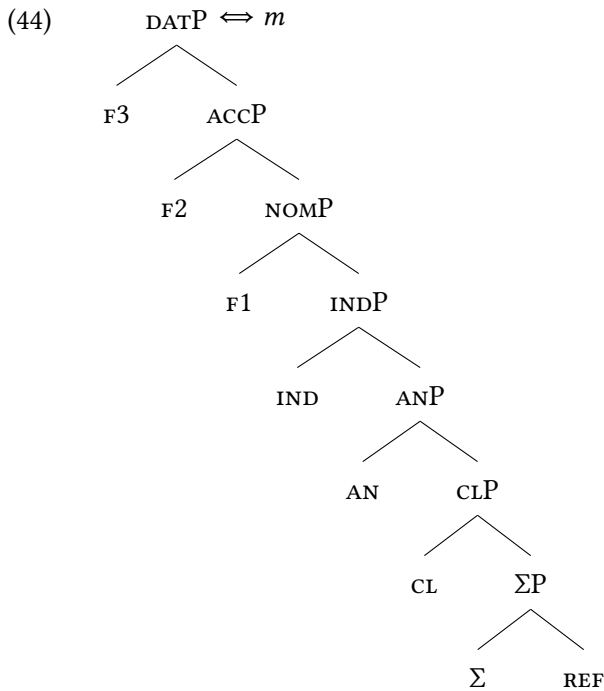
Further Backtracking leads to splitting up the MEDP from the NOMP. The feature f_2 is merged in both workspaces, so with the MEDP and and with the NOMP. The spellout of f_2 is successful when it is combined with the NOMP. It namely forms a constituent in the lexical tree in (22), which corresponds to the n . The ACCP is spelled out as n , and all constituents are merged back into the existing syntactic structure, as shown in (43).



For the dative relative pronoun, one more feature is merged: the f_3 . The derivation for f_3 resembles the derivation of f_1 and f_2 . The feature is merged with the existing syntactic structure, creating a DATP. This structure does not form a constituent in any of the lexical trees in the language's lexicon, and neither of the spellout driven movements leads to a successful spellout. Backtracking leads splitting up the RELP from the (higher) MEDP (which contains the lower MEDP and the ACCP). The feature f_3 is merged in both workspaces, so with the WHP and and with the MEDP. None of these phrases form a constituent in any of the lexical trees in the language's lexicon,

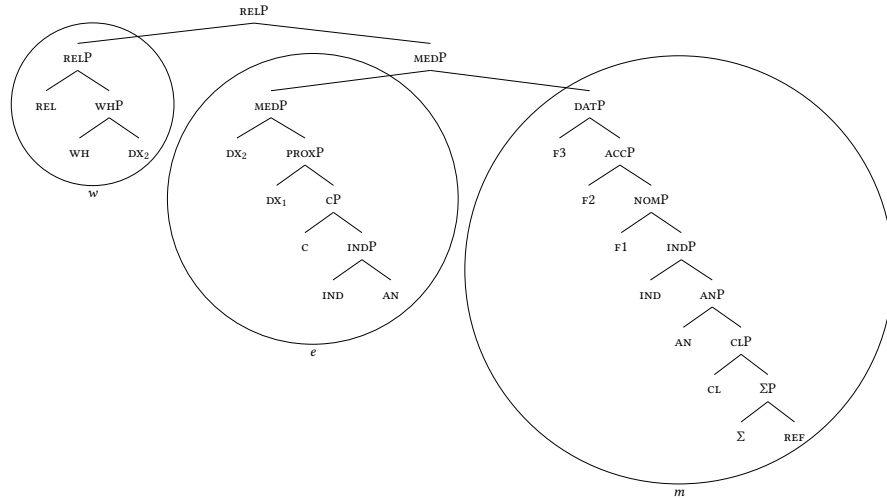
and neither of the spellout driven movements leads to a successful spellout.

Further Backtracking leads to splitting up the MEDP from the ACCP. The feature F3 is merged in both workspaces, so with the MEDP and and with the ACCP. The spellout of F3 is successful when it is combined with the ACCP. It namely forms a constituent in the lexical tree in (44), repeated from (11b), which corresponds to the *m*.



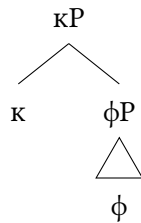
The ACCP is spelled out as *m*, and all constituents are merged back into the existing syntactic structure, as shown in (45).

(45)



To summarize, I decomposed the relative pronoun into the three morphemes *w*, *e* and the final consonant (*n* and *m*). 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.

7.3 The (extra) light head



In Chapter 6, 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 deletion of the light head is optional, and the light-headed relative is derived from an existing light-headed relative. Second, the deletion of the light head is obligatory, and the light-headed relative is derived from a light-headed relative that does not surface in Modern German. I consider the first option first, and I give two reasons against it. However, to identify the exact input structure, I take the light head from the existing light-headed relative as a point of departure, and I modify it in such a way that it is appropriate as a light head for a headless relative.

I give an example of a Modern German light-headed relative in (46).¹¹

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

In (46), the relative pronoun is the WH-pronoun *wen* ‘RP.AN.ACC’, and the light head is the D-pronoun *den* ‘DEM.M.SG.ACC’. For easy reference, I call this light-headed relative the *den-wen* relative.

One hypothesis is that the demonstrative *den* ‘DEM.M.SG.ACC’ is deleted from the

¹¹Modern German also has another light-headed relative, in which the relative pronoun is the D-pronoun. I give an example in (i).

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

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

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

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

light-headed relative in (46) and that the headless relative in (47) remains.¹² For easy reference, I call this headless relative the *wen* relative.

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

I give two arguments against this hypothesis. First, in headless relatives the morpheme *auch immer* ‘ever’ can appear, as shown in (48).

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

Light-headed relatives do not allow this morpheme to be inserted, illustrated in (49).

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

I assume that the headless relative is not derived from an ungrammatical structure.¹³

The second argument against the *den-wen* relative being the source of the *wen* relative comes from the interpretation differences between the two. Broadly speaking, the *wen* relative has two interpretations (see Šimík 2020 for a recent elaborate overview on the semantics of free relatives). The *den-wen* has only one of them. I show this schematically in Table 7.5.

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 second interpretation of the *wen* relative is a universal-like one. This interpreta-

¹²This 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.

¹³I am aware that such an analysis is common for sluicing.

Table 7.5: Interpretations of *wen* and *den-wen* relatives

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

tion 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 (50a).

- (50) a. Context: Yesterday Jan met with two friends. He likes one of them.
The other one he does not like so much.
- b. Jan umarmt den **wen** **er mag**.
Jan hugs DEM.M.SG.ACC RP.AN.ACC he likes
'Jan hugs 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 (51a).

- (51) a. Jan has a general habit of hugging everybody that he likes.
 b. #Jan umarmt den **wen** **er** mag.
 Jan hugs DEM.M.SG.ACC RP.AN.ACC he likes
 ‘Jan hugs 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 absent. This is the morpheme that is the final consonant of the relative pronoun. I give the light-headed relative from which the *wen*-relative is derived in (52). The brackets around the light head indicate that it is obligatorily deleted.¹⁴

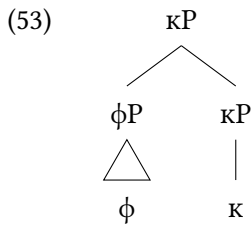
¹⁴The two light heads I discuss resemble the strong and weak definite in Schwarz (2009), at least morphologically (although my light head is always obligatorily deleted). Schwarz’s (2009) strong definite is anaphoric in nature, and the weak definite encodes uniqueness. I give an example of a strong definite 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

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

In Section 6, I gave the simplified structure of the light head, repeated here in (53).



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 accusative and the animate dative. These are the two forms that I compare the constituents of in Section 7.4. I show them in (54).

- (54) a. r
 ‘LH.AN.NOM’

situation of the break-in. In (iib), the moon is unique for us people on the planet.

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

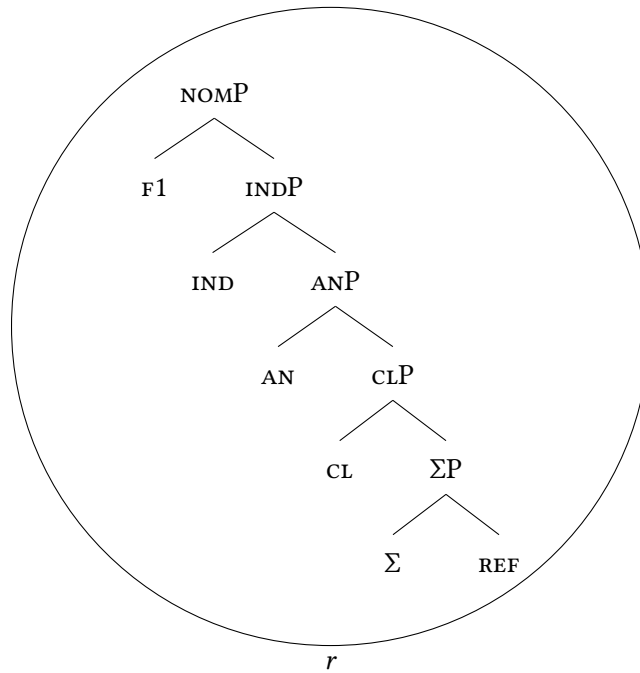
The meaning of Schwarz’s (2009) strong definite seems similar to the meaning of the light head in the *den-wen* relative. I do not see right away how the light head in headless relatives could encode uniqueness. One possibility is that the feature content of his and my form differs slightly after all.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

- b. n
'LH.AN.ACC'

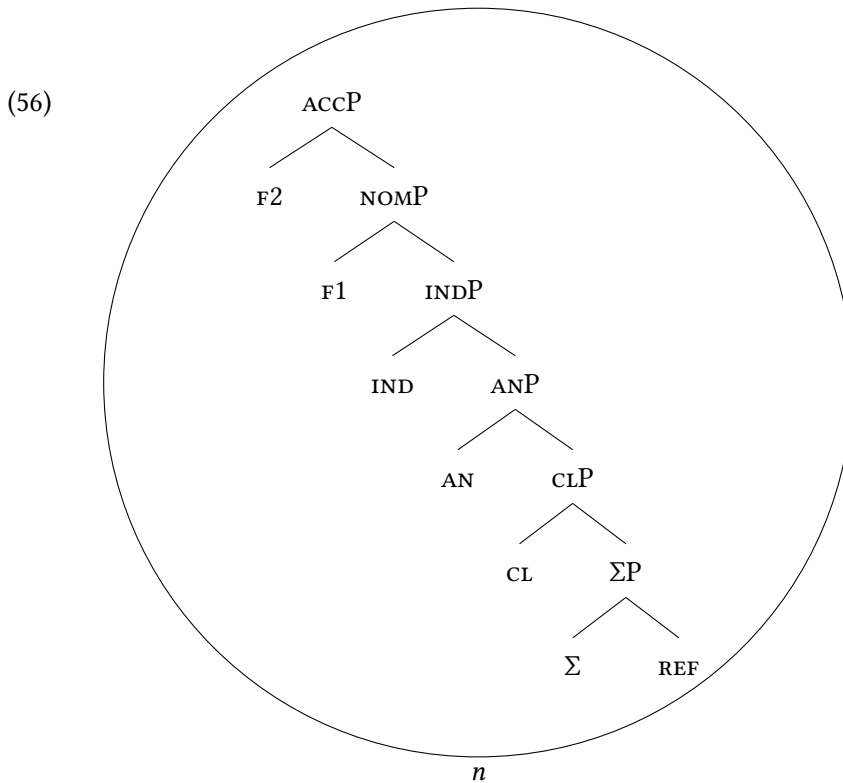
The derivations of the light heads are simple ones. The features are merged one by one, and after each new phrase is created, it is spelled out as a whole.

I give the structures of the animate accusative light head in (55).

(55)



I give the structures of the animate dative light head in (56).



7.4 Comparing constituents

In this section, I compare the constituents of extra light heads to those of relative pronouns in Modern German. 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 Modern German, a internal-only language, the first two example is grammatical. I derive this by showing that the relative pronoun can delete the light head as long as its case is not less complex. In these situations, the light head forms namely a constituent within the relative pronoun.

I start with the matching cases. Consider the example in (57), in which the

internal accusative case competes against the external accusative case. The relative clause is marked in bold. The internal case is accusative, as the predicate *mögen* ‘to like’ takes accusative objects. The relative pronoun *wen* ‘REL.AN.ACC’ appears in the accusative case. This is the element that surfaces. The external case is accusative as well, as the predicate *einladen* ‘to invite’ also takes accusative objects. The extra light head *n* ‘ELH.AN.ACC’ appears in the accusative case. It is placed between square brackets because it does not surface.

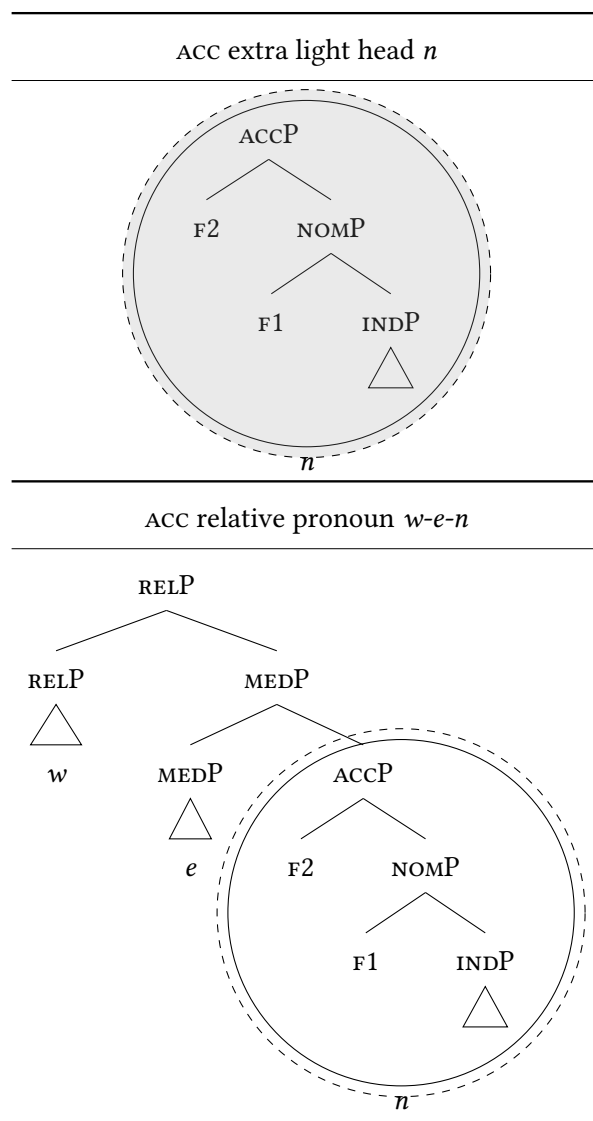
- (57) Ich lade ein [n], **wen auch**
 1SG.NOM invite.PRES.1SG_[ACC] ELH.AN.ACC RP.AN.ACC Maria.NOM
Maria mag.
 like.PRES.3SG_[ACC]
 ‘I invite who Maria also likes.’
 (Modern German, adapted from Vogel 2001: 344)

In Figure 7.3, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *w*, *e* and *n*. The extra light head consists of a single morpheme: *n*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, 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 a single constituent: the 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.

Consider the example in (58), in which the internal dative case competes against the external accusative case. The relative clause is marked in bold. The internal case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The relative pronoun *wem* ‘REL.AN.DAT’ appears in the dative case. This is the element that surfaces. The external case is accusative, as the predicate *einladen* ‘to invite’ takes accusative objects. The extra light head *n* ‘ELH.AN.ACC’ appears in the accusative case. It is placed between square brackets because it does not surface.

Figure 7.3: Modern German EXT_{ACC} vs. INT_{ACC} → *wen*

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

In Figure 7.4, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

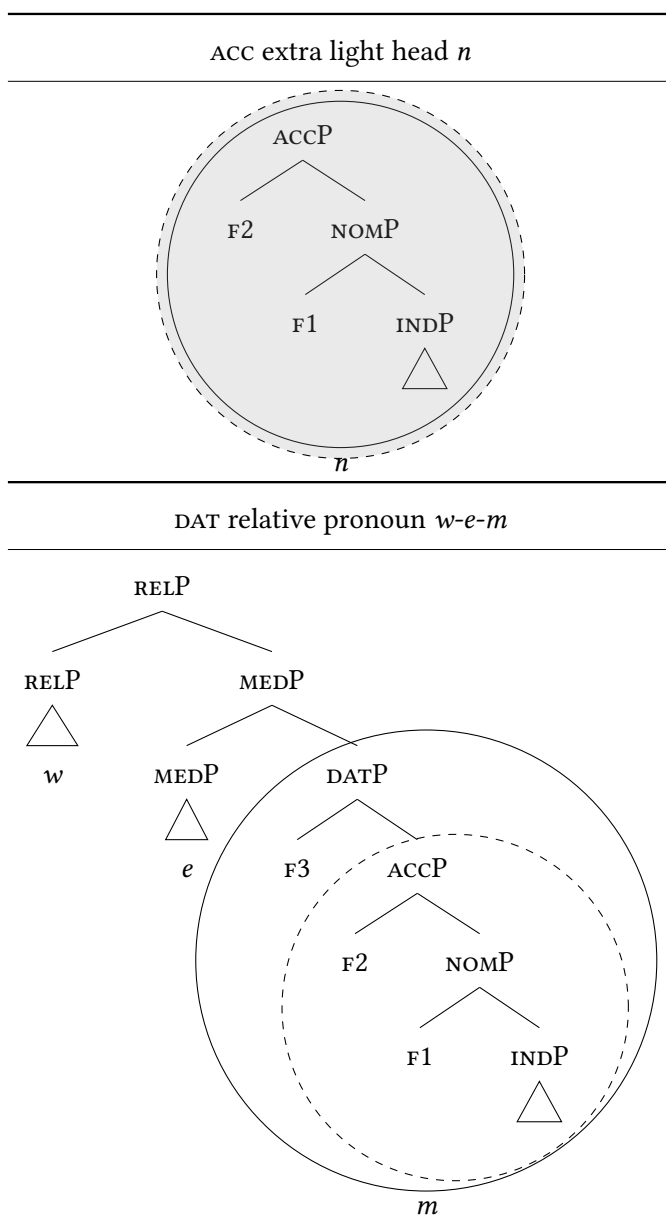
The relative pronoun consists of three morphemes: *w*, *e* and *m*. The extra light head consists of a single morpheme: *n*. As usual, I circle the part of the structure that corresponds to a particular lexical entry, and I place the corresponding phonology under it. I draw a dashed circle around each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

The extra light head consists of a single constituent: the 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.

Consider the examples in (59), in which the internal accusative case competes against the external dative case. The relative clauses are marked in bold. It is not possible to make a grammatical headless relative in this situation.

The internal case is accusative, as the predicate *mögen* ‘to like’ takes accusative objects. The relative pronoun *wen* ‘REL.AN.ACC’ appears in the accusative case. The external case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The extra light head *m* ‘ELH.AN.DAT’ appears in the dative case. (59a) 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. (59b) 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.

- (59) a. *Ich vertraue [m], **wen** **auch** Maria
 1SG.NOM trust.PRES.1SG_[DAT] ELH.AN.DAT RP.AN.ACC also Maria.NOM

Figure 7.4: Modern German EXT_{ACC} vs. $\text{INT}_{\text{DAT}} \rightarrow wem$

mag.

like.PRES.3SG_[ACC]

‘I trust whoever Maria also likes.’

(Modern German, adapted from Vogel 2001: 345)

- b. *Ich vertraue m, [wen] auch Maria
 1SG.NOM trust.PRES.1SG_[DAT] ELH.AN.DAT RP.AN.ACC also Maria.NOM

mag.

like.PRES.3SG_[ACC]

‘I trust whoever Maria also likes.’

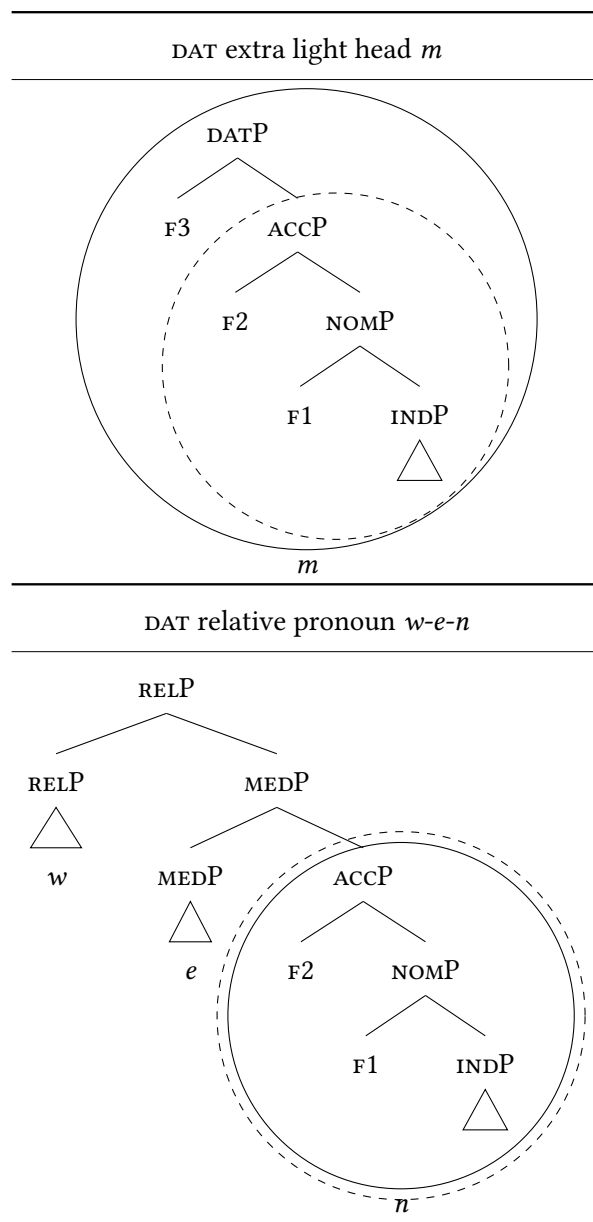
(Modern German, adapted from Vogel 2001: 345)

In Figure 7.5, I give the syntactic structure of the extra light head at the top and the syntactic structure of the relative pronoun at the bottom.

The relative pronoun consists of three morphemes: *w*, *e* and *n*. The extra light head consists of a single morpheme: *m*. 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 a single constituent: the DATP. In this case, the relative pronoun does not contain this constituent. The relative pronoun only contains the ACCP, and it lacks the F3 that makes a DATP. Since the weaker feature containment requirement is not met, the stronger constituent requirement cannot be met either. The extra light head also does not contain all constituents or features that the relative pronoun contains, because it lacks the complete constituents MEDP and RELP. Therefore, the relative pronoun cannot delete the extra light head, and the extra light head can also not delete the relative pronoun.

7.5 Summary

Figure 7.5: Modern German EXT_{DAT} VS. $\text{INT}_{\text{ACC}} \rightarrow m/wen$

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