

Case competition in headless relatives

Fenna Bergsma

October 30, 2020

Contents

Contents	i
List of tables	v
List of figures	vii
List of abbreviations	x
1 Introduction	1
1.1 Decomposing the title	1
1.2 The content of this dissertation	6
1.3 The scope of this dissertation	7
1.3.1 Case attraction	7
1.3.2 Syncretism	7
1.3.3 The genitive	8
I The case facts	11
2 A recurring pattern	13
2.1 In headless relatives	13
2.2 In syntax	22
2.2.1 Agreement	22
2.2.2 Relativization	30
2.3 In morphology	39
2.3.1 Syncretism	40

2.3.2	Morphological case containment	41
2.4	Summary	42
3	Case decomposition	45
3.1	The basic idea	46
3.2	Deriving syncretism	47
3.3	Deriving morphological case containment	68
3.4	The intuition for headless relatives	73
3.5	Summary	76
II	The variation	77
4	A case competition typology	79
4.1	Four possible patterns	80
4.2	Internal and external case allowed	84
4.3	Only internal case allowed	92
4.4	Only external case allowed	99
4.5	Internal and external case not allowed	103
4.6	Summary	106
4.7	Aside: languages without case competition	107
4.7.1	Always external case	109
4.7.2	A typology of headless relatives	117
5	The derivations of the patterns	121
5.1	Internal case wins	123
5.1.1	Relative pronouns in the relative clause	124
5.1.2	Two open issues	126
5.1.2.1	How to get access to external case	127
5.1.2.2	How to disallow the pattern	128
5.1.3	Solution: an external head	130
5.1.3.1	Languages with two heads	130
5.1.3.2	Getting access to external case	131
5.1.3.3	Disallowing the pattern	131

5.1.4	Featural content of the head	132
5.1.5	Syntactic position of external head	132
5.2	The proposal	133
5.3	External case wins	134
5.3.1	German	134
5.3.2	Old High German	134
5.3.3	Gothic	134
5.4	Excluding the third pattern	134
5.5	Alternative analyses	134
5.5.1	Himmelreich	134
5.5.2	Grafting story	134
5.6	Summary	136
III	Going into detail	137
6	Decomposing relative pronouns	139
6.1	The lexical entries	139
6.1.1	The paradigms	139
6.1.2	Morphemes	141
6.1.3	The light head	142
6.1.4	Features	142
6.2	The spellout procedure	142
7	The deletion operation	145
7.1	Only the two heads	145
7.1.1	German deletion	145
7.1.2	Polish deletion	147
7.2	In a larger syntactic context	149
7.2.1	Internal deletes external	149
7.2.2	External deletes internal	150
8	Discussion	151
8.1	Diachronic part	151

8.2	D also in Modern German	151
8.3	Why FEM does not have WH-pronouns	152
8.4	Relativization in general	152
Primary texts		153
Bibliography		155

List of tables

2.1	Extensive summary of Gothic headless relatives	16
2.2	Extensive summary of Gothic headless relatives	18
2.3	Extensive summary of Gothic headless relatives	21
2.4	Summary of Gothic headless relatives	21
2.5	Typology for agreement hierarchy	26
2.6	Syncrretism patterns	41
2.7	Morphological case containment in Khanty	42
3.1	Case decomposed	46
3.2	Syncrretism patterns (repeated)	47
3.3	Morphological case containment of 3sg in Khanty	68
3.4	Summary of Gothic headless relative (repeated)	74
4.1	Either internal or external case allowed	81
4.2	Only internal case allowed	82
4.3	Only external case allowed	83
4.4	Neither internal nor external allowed	84
4.5	Internal and external case allowed (repeated)	84
4.6	Internal and external case allowed (repeated)	85
4.7	Summary of Old High German headless relatives (NOM — ACC)	87
4.8	Summary of Old High German headless relatives (NOM — DAT)	89
4.9	Summary of Old High German headless relatives (ACC — DAT)	90
4.10	Only internal case allowed (repeated)	92
4.11	Summary of Modern German headless relatives (NOM — ACC)	94
4.12	Summary of Modern German headless relatives (NOM — DAT)	96

4.13	Summary of Modern German headless relatives (ACC — DAT)	99
4.14	Only external case allowed (repeated)	99
4.15	Classical Greek possibility 1	101
4.16	Classical Greek possibility 2	101
4.17	Summary of Classical Greek headless relatives	102
4.18	Neither internal nor external allowed (repeated)	103
4.19	Summary of Polish headless relatives	105
4.20	Possible patterns in headless relatives with case competition	106
4.21	Always internal case	108
4.22	Always external case	109
4.23	Old English possibility 1	110
4.24	Old English possibility 2	110
4.25	Old English possibility 3	110
4.26	Summary of Old English headless relatives	112
4.27	Modern Greek possibility 1	113
4.28	Modern Greek possibility 2	113
4.29	Modern Greek possibility 3	114
4.30	Summary of Modern Greek headless relatives	115
4.31	Always internal case	117
4.32	Always external case	117
4.33	Either internal or external case allowed	117
4.34	Only internal case allowed	118
4.35	Only external case allowed	118
4.36	Neither internal nor external allowed	118
4.37	Possible patterns in headless relatives	119
6.1	Relative pronouns in headless relatives in Modern German	140
6.2	Relative pronouns in headless relatives in Old High German	140
6.3	Gothic demonstratives	141
6.4	Gothic 3sg pronouns	141

List of figures

2.1	Agreement hierarchy	23
2.2	Agreement hierarchy with languages	25
2.3	Nominative-accusative alignment	28
2.4	Ergative-absolutive alignment	28
2.5	Agreement hierarchy (case)	29
2.6	Agreement hierarchy (NOM/ACC/DAT)	30
2.7	Relativization hierarchy	31
2.8	Relativization hierarchy with languages	36
2.9	Relativization hierarchy (case)	38
2.10	Relativization hierarchy (NOM/ACC/DAT)	39
4.1	Overview attested headless relatives with case competition	107
4.2	Overview attested headless relatives	120

List of abbreviations

ABS	absolutive
ACC	accusative
AN	animate
AOR	aorist
AUX	auxiliary
CL	clitic
CMPR	comparative
COMP	complementizer
DAT	dative
DEF	definite
DEM	demonstrative
DET	determiner
ERG	ergative
EXT	external case
F	feminine
GEN	genitive
INF	infinitive
INT	internal case
MOD	modal marker
M	masculine

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

Chapter 1

Introduction

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

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

1.1 Decomposing the title

Languages can use case to mark the grammatical role of a noun phrase in a clause (cf. Moravcsik, 2009). Consider the two Modern German sentences in (1). What can descriptively be called the subject of the predicate *mögen* ‘to like’ is marked as nominative. What can be described as the object of *mögen* ‘to like’ is marked as accusative. The case marking of the noun phrases is reflected on the determiner in the noun phrase. In (1a), *der* in *der Lehrer* ‘the teacher’ appears in nominative case, because it is the descriptive subject in the clause. *Den* in *den Schüler* ‘the pupil’ appears in accusative case, because it is a descriptive object of *mögen* ‘to like’. In (1b), the grammatical roles are reversed: *der* in *der Schüler* ‘the pupil’ appears in nominative case, because it is the descriptive subject in the clause. *Den* in *den Lehrer* ‘the teacher’ appears in accusative case, because it is the descriptive object of *mögen* ‘to like’.

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

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

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

- (2) a. Der Lehrer mag den Schüler, der nach draußen
 the.NOM teacher likes the.ACC student REL.SG.M.NOM to outside
 guckt.
 looks
 ‘The teacher likes the pupil that is looking outside.’
 b. Der Lehrer mag den Schüler, den er beim
 the.NOM teacher likes the.ACC student REL.SG.M.ACC he at the

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

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

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

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

- (3) gaarma þan -ei arma
 pity.PRES.1SG_[ACC] REL.SG.M.ACC -COMP pity.PRES.1SG_[ACC]
 ‘I pity him whom I pity’

¹This ‘missing noun’ has been interpreted in two different ways. Some researchers argue that the noun is truly missing, it is absent, cf. Citko 2005; Van Riemsdijk 2006. Others claim that there is actually a head, but it is phonologically zero, Bresnan and Grimshaw 1978; Groos and van Riemsdijk 1981; Grosu 2003. At this point in the discussion this distinction is not relevant. I return to the issue in Chapter 5.

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

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

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

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

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

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

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

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

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

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

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

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

1.2 The content of this dissertation

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

both I will show that morphology is leading. What we observe in syntax is a reflex of the morphology.

1.3 The scope of this dissertation

1.3.1 Case attraction

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

- (6) unde ne wolden níet besên den mort den dô was geschên
and not wanted not see the murder.ACC that.ACC there had happened
'and they didn't want to see the murder that had happened.'
(MHG, Nib. 1391,14, Behaghel 1923-1932: 756, after Pittner 1995: 198)

- (7) Den schilt den er vür bôt der wart schiere
the.ACC shield.ACC which.ACC he held_{ACC}, that.NOM was quickly
zeslagen
shattered_{NOM}
'The shield he held was quickly shattered' Iwein 6722f., Lernerz 1984: 116)

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

1.3.2 Syncretism

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

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

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

1.3.3 The genitive

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

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

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

then the predictions would be..

The genitive differs from the other cases in a particular way. That is, nominative, accusative and dative are dependents of the verb (or prepositions). Genitives can be dependents of verbs, or they can be dependents of nouns, as possessors or partitives. Consider the example in (9). The genitive relative pronoun *þiz(e)* ‘what.GEN’ is a dependent of the noun *waiht* ‘thing’. Most of the examples in headless relatives contain genitives that depend on nouns and not those that depend on verbs. The (genitive) possessor is also placed far away from the other three cases in Keenan and Comrie’s (1977) relativization hierarchy.

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

I leave it for future research..

Part I

The case facts

Chapter 2

A recurring pattern

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

- (1) $\text{NOM} < \text{ACC} < \text{DAT}$

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

2.1 In headless relatives

As the name suggests, headless relatives are relative clauses that lack an (overt) head. The internal case, the case from the relative clause, and the external case, the case from the main clause, compete to surface on the relative pronoun. It has been argued in the literature that the two competing cases always adhere to a particular case scale (cf. Harbert, 1978; Pittner, 1995; Vogel, 2001; Grosu, 2003; Bergsma, 2019; Caha, 2019). This is the scale I gave in the introduction, repeated here in (2).

Elements more to the right on this scale win over elements more to the left on this scale.¹

(2) NOM < ACC < DAT

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

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

I start with the competition between accusative and nominative. Following the case scale in (2), the relative pronoun appears in accusative case and never in nominative.

Consider the example in (3), repeated from the introduction. In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *frijon* ‘to love’ takes accusative objects. The external case is nominative, as the predicate *wisan* ‘to be’ takes nominative subjects. The relative pronoun *þan(a)* ‘REL.SG.M.ACC’ appears in the internal case: the accusative. The relative pronoun is marked in bold, just like as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is accusative, the external case is nominative and the relative pronoun appears in nominative case are unattested.

¹In the literature about headless relatives, the genitive is often discussed together with the nominative, accusative and dative (cf. Harbert, 1978; Pittner, 1995). In this dissertation I do not discuss the genitive. The reason is that I restrict myself to cases that appear in all possible case competition combinations. As the genitive does not fulfill that requirement, it is therefore excluded. In Chapter 8 I briefly return to the issue.

²<http://www.wulfila.be>

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

Consider the example in (4), repeated from the introduction. In this example, the internal nominative case competes against the external accusative case. The internal case is nominative, as the predicate *wisan* ‘to be’ takes nominative subjects. The external case is accusative, as the predicate *ussiggwan* ‘to read’ takes accusative objects. The relative pronoun *þo* ‘REL.SG.N.ACC’ appears in the external case: the accusative. The relative pronoun is not marked in bold, just like as the main clause, showing that the relative pronoun patterns with the main clause. Examples in which the internal case is nominative, the external case is accusative and the relative pronoun appears in nominative case are unattested.

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

The two examples in which nominative and accusative compete are showed in Table 2.1. The left column shows the internal case (INT) between square brackets. The upper row shows the external case (EXT) between square brackets. The other cells indicate the case of the relative pronoun. The diagonal is crossed out, because these are instances in which the internal and external case match, and there is no case competition taking place. The remaining six cells show instances where the internal and external case differ. Within the cells, two cases are given. The case in the lower left corner stands for the relative pronoun in the internal case. The case in the upper right corner stands for the relative pronoun in the external case. The grammatical examples are marked in (light or dark) gray. The unattested examples are marked

with an asterix and are unmarked.³

The light gray marking corresponds to (3), in which the external accusative wins the case competition over the internal nominative, and the relative pronoun surfaces in the accusative case. The dark gray marking corresponds to (4), in which the internal accusative wins the case competition over the external nominative, and the relative pronoun surfaces in the accusative case. The instances of *NOM that appear in the same cells indicate that there are no examples, in which the nominative and the accusative compete and the relative pronoun appears in nominative case.

Table 2.1: Extensive summary of Gothic headless relatives

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

I continue with the competition between dative and nominative. Following the case scale in (2), the relative pronoun appears in dative case and never in nominative.

Consider the example in (5), in which the internal dative case competes against the external nominative case. The internal case is dative, as the predicate *fraletan* ‘to forgive’ takes dative objects. The external case is nominative, as the predicate *frijon* ‘to love’ takes nominative subjects. The relative pronoun *þamm(a)* ‘REL.SG.M.DAT’ appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative

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

- The two examples in which nominative and dative compete are shown in Table 2.2. The light gray marking corresponds to (5), in which the external dative wins the case competition over the internal nominative, and the relative pronoun surfaces in the dative case. The dark gray marking corresponds to (6), in which the internal dative wins the case competition over the external nominative, and the relative pronoun surfaces in the dative case. The instances of *NOM that appear in the same cells indicate that there are no examples, in which the nominative and the dative compete and the relative pronoun appears in nominative case.

Table 2.2: Extensive summary of Gothic headless relatives

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

I end with the competition between dative and accusative. Following the case scale in (2), the relative pronoun appears in dative case and never in accusative.

Consider the example in (7), in which the internal dative case competes against the external accusative case. The internal case is dative, as the preposition *ana*

⁵*Ana* 'on' takes dative complements when the PP is interpreted as locational. *Ana* 'on' takes accusative complements when the PP is interpreted as directional. *Ana pammei* 'on that' in (7) refers to a location.

Table 2.3: Extensive summary of Gothic headless relatives

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

Table 2.3 can be simplified as Figure 2.4. The data can be divided into two set: a set of three instances in the lower left corner and a set of three instances in the upper right corner. In the three instances in the lower left corner, the relative pronoun appears in the internal case. They correspond to the examples (3), (5) and (8). In the three instances in the upper right corner, the relative pronoun appears in the external case. They correspond to the examples in (4), (6) and (7).

Table 2.4: Summary of Gothic headless relatives

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

To sum up, case competition in headless relative is subject to the case scale, repeated in (9).

- (9) NOM < ACC < DAT

If two cases compete, dative wins over accusative and nominative, and accusative wins over nominative. In this section I gave examples from Gothic that illustrate this. As I mentioned in the introduction of this section, this case scale is not specific for Gothic, but it holds across languages (cf. see Pittner 1995 for Modern, Middle High and Old High German and Grosu 2003; Kakarikos 2014 for Ancient Greek).⁶

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

2.2 In syntax

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

2.2.1 Agreement

Agreement can be seen as “a systematic covariance between a semantic or formal property of one element and a formal property of another” (Steel, 1978). Put differently, the shape of one element changes according to some properties of an element it relates to. In this section I discuss the agreement between a predicate and its arguments.

It differs per language with how many of its arguments a predicate agrees. However, it is not random with which agreement takes place. Instead, there is an implicational hierarchy that is identical to the one observed for headless relatives: NOM < ACC < DAT. First I formulate the implicational hierarchy in terms of grammatical function (following Moravcsik 1978). Later I show that a reformulation in terms of case is actually more accurate (following Bobaljik 2006).

⁶Some of these languages differ from Gothic in that they are subject to an additional constraint. That is, they not allow both the internal or the external case to win case competitions. If the other case is more to the right on the case scale (9), the result is ungrammatical. Modern German is an example of a language that only allows the internal case to win the case competition. If the external case is more to the right on the case scale, the headless relative is ungrammatical. This topic is the main focus of Part II of this dissertation.

Moravcsik (1978) formulated the implicational hierarchy in terms of grammatical functions subject, direct object and indirect object.⁷ The hierarchy is schematically represented in Figure 2.1. It should be read as follows: if a language allows the predicate to agree with the argument in a particular circle, it also allows the predicate to agree with the argument in the circle around it.

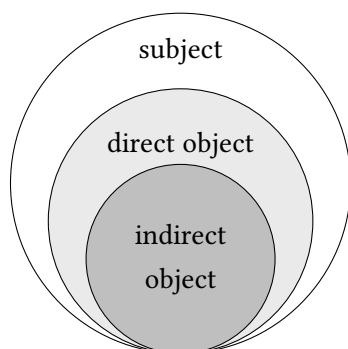


Figure 2.1: Agreement hierarchy

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

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

Japanese is an example of a language that does not show any agreement on the predicate. An example is given in (10). The predicate *okutta* ‘sent’ does not agree

⁷Moravcsik (1978) also included adverbs on the lowest end of the hierarchy. I leave them out here, because they are not relevant for the discussion.

with the subject *Tarooga* ‘Taro’, with the direct object *nimotuo* ‘package’ or with the indirect object *Hanakoni* ‘Hanako’.

- (10) Taroo-ga Hanako-ni nimotu-o okutta.
 Taro-NOM Hanako-DAT package-ACC sent
 ‘Taro sent Hanako a package.’ (Japanese, Miyagawa and Tsujioka 2004: 5)

German is an example of a language that shows agreement with the subject of the clause. An example is given in (11). The predicate *gibst* ‘give’ contains the morpheme *-st*, marked in bold. This morpheme is the agreement morpheme for second person singular subjects (in the present tense). The predicate *gibst* ‘give’ agrees in person and number with the subject *du* ‘you’. There is no agreement with the direct object *das Buch* ‘the book’ or the indirect object *mir* ‘me’.

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

Hungarian is an example of a language that shows agreement with the subject and the direct object of a clause. An example is given in (12). The predicate *adom* ‘give’ contains the morpheme *-om*, marked in bold. This is a portmanteau morpheme for a first person singular subject and a third person object agreement. The predicate *adom* ‘give’ agrees with the subject *én* ‘I’ and the direct object *a könyvet* ‘the book’. There is no agreement with the indirect object *neked* ‘you’. Agreement with the first person singular subject *én* ‘I’ and second person singular indirect object *neked* ‘you.DAT.SG’ is ungrammatical, as indicated by the ungrammaticality of *-lak*.

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

Basque is an example of a language that shows agreement with the subject, the direct object and the indirect object. Basque is an ergative-absolutive language, so in transitive clauses subjects are marked as ergative and objects are marked as absolutive. An example from the Bizkaian dialect is given in (13). The stem of the

auxiliary *aus* combines with the morphemes *d-*, *-ta* and *-zu*, marked in bold. The morpheme *d-* is the agreement morpheme for third person singular as direct objects, which is here *liburua* ‘the book’. The morpheme *-ta* is the agreement morpheme for first person singular indirect objects, which is here *niri* ‘me’. The morpheme *-zu* is the agreement morpheme for second person singular ergative subjects, which is here *zuk* ‘you’.

- (13) Zu-k ni-ri liburu-a emon **d** -aus **-ta** **-zu**.
 you-ERG I-DAT book-DEF.ABS given ABS.3SG -AUX -DAT.1SG -ERG.2SG
 ‘You gave me the book.’

(Bizkaian Basque, adapted from Arregi and Molina-Azaola 2004: 45)

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

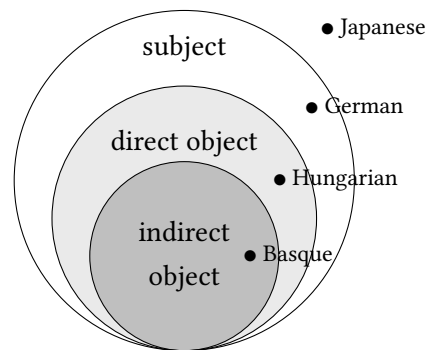


Figure 2.2: Agreement hierarchy with languages

Gilligan (1987) performed a typological study among 100 genetically and areally diverse languages, which confirms the picture. The results are shown in Table 2.5. There are 23 languages that do not show any agreement, like Japanese. There are 31 languages that show agreement only with the subject and not with the direct and indirect object, like German. There are 25 languages that show agreement with the subject and direct object but not with the indirect object, like Hungarian. There are 23 languages that show agreement with the subject, the direct object and the indirect object, like Basque.

Table 2.5: Typology for agreement hierarchy

agreement with				
	direct		indirect	number
subject	object	object	object	of languages
*	*	*	*	23
✓	*	*	*	31
✓	✓	*	*	25
✓	✓	✓	✓	23
✓	*	✓	✓	(1)
*	✓	✓	✓	0
*	x	*	*	0
*	*	✓	✓	0

So far I have discussed the implicational hierarchy in terms of grammatical function. In what follows, I discuss how it actually should be formalized in terms of the case scale that has also been observed for case competition in headless relatives.

Bobaljik (2006) argues that the implicational hierarchy is more accurate if it is stated in terms of case rather than grammatical function. In these situations, case seem to capture the facts for the implicational hierarchy, and grammatical function does not. It is often the case that subjects appear in nominative case, and that direct objects appear in accusative. However, this is not always the case. Subjects can be non-nominative and direct objects can be non-accusative. Bobaljik gives examples of two types of situations in which this is the case: non-nominative subjects in Icelandic and ergative-absolutive languages. In these situations, case seem to capture the facts for the implicational hierarchy, and grammatical function does not. I go through both situations Bobaljik describes.

Icelandic is a language that has dative subjects. It is like German in that it only shows agreement with a single argument. If agreement takes place with the gram-

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

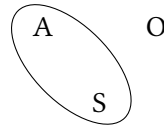


Figure 2.3: Nominative-accusative alignment

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

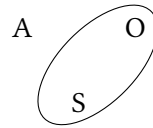


Figure 2.4: Ergative-absolutive alignment

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

Bobaljik (2006) describes how absolutes and ergatives behave with respect to whether they show agreement. There are languages that show agreement with both absolutes and ergatives. There are also languages that show only agreement with absolutes. Crucially, there is no language that shows only agreement with ergatives. Absolutes are a heterogeneous set with respect to grammatical function, i.e. they are subjects of intransitive verbs and objects of transitive verbs. However, with respect to showing agreement absolutes behave the same, and this behavior is different from ergatives. This indicates that it is morphological case and not grammatical function that is the decisive factor.

Bobaljik (following Marantz 2000) combines nominative-accusative and ergative-absolutive languages in the following way: accusative and ergative are dependent cases, and nominative or absolutive are unmarked case. Reformulating

Figure 2.2 in terms of case instead of grammatical function gives the schema in Figure 2.5.

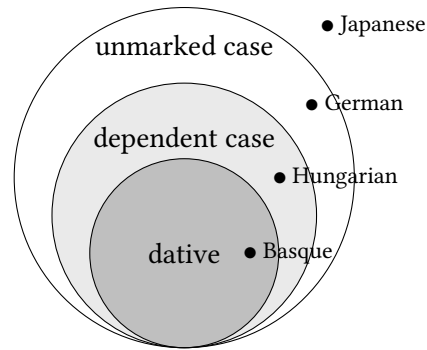


Figure 2.5: Agreement hierarchy (case)

This formulation in terms of case rather than grammatical function works as follows for the examples I gave earlier. First, Japanese is a language that does not show any agreement, as shown in (10). There is no agreement with the unmarked case (here the nominative), not with the dependent case (here the accusative) and not with the dative case. Second, German is a language that shows agreement only with the unmarked case, as shown in (11). The morpheme *-st* on the predicate agrees with the element in unmarked nominative case *du* ‘you’. There is no agreement with the dependent accusative case or with the dative case. Third, Hungarian is a language that shows agreement with the unmarked and the dependent case, as shown in (12). The portmanteau morpheme *-om* on the predicates agrees with the element in unmarked nominative case *én* ‘I’ and the element in dependent accusative case *a könyvet* ‘the book’. Last, Basque is a language that shows agreement with the unmarked, the dependent and the dative case, as shown in (13). The morpheme *-zu* on the auxiliary agrees with the element in dependent ergative case *zuk* ‘you’. The morpheme *d-* on the auxiliary agrees with the element in unmarked absolutive case *liburua* ‘the book’. The morpheme *-ta* on the auxiliary agrees with the element in dative case *niri* ‘me’.

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

fices.

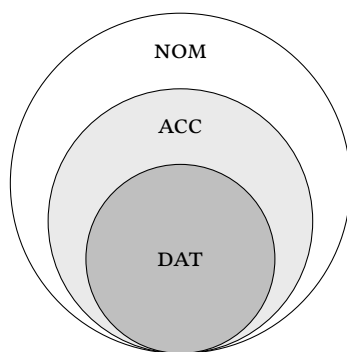


Figure 2.6: Agreement hierarchy (NOM/ACC/DAT)

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

2.2.2 Relativization

Relativization refers to the process in which a relative clause is derived from a non-relative clause. An example of the non-relative clause is given in (16a). The relative clause derived from that is shown in (16b). The head of the relative clause is *woman* and precedes the clause. The relative pronoun follows the head. The head of the head does not appear in the relative clause anymore.

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

In (16b), it is the object of the clause that is relativized. It differs per language which elements can be relativized with a particular strategy. Just like the distribution was not random for agreement, it is not random which elements can be relativized. Instead, there is an implicational hierarchy that is identical to the one observed for the case scale: $\text{NOM} < \text{ACC} < \text{DAT}$.

Keenan and Comrie (1977) formulated the implicational hierarchy in terms of the grammatical functions subject, direct object and indirect object.⁸ The impli-

⁸Keenan and Comrie (1977) also included obliques, possessives and objects of comparison on the

cational hierarchy is schematically represented in Figure 2.7. It should be read as follows: if a language allows a particular relativization strategy of the grammatical function in a particular circle, it also allows this relativization strategy of the grammatical function of the circle around it. The languages in the figure give examples of the circles they are in.

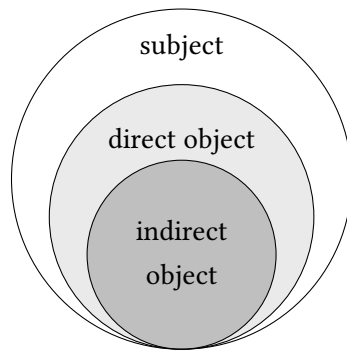


Figure 2.7: Relativization hierarchy

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

Malagasy is an example of a language that allows subjects to be relativized using a particular strategy, but not direct and indirect objects. (17) is an example of a declarative sentence in Malagasy. It is a transitive sentence that contains the subject *ny mpianatra* ‘the student’ and the direct object *ny vehivavy* ‘the woman’.

- (17) Nahita ny vehivavy ny mpianatra.
 saw the woman the student
 ‘The student saw the woman.’ (Malagasy, Keenan and Comrie 1977: 70)

In (18), the subject from the declarative sentence, marked in bold, is relativized. The

lowest end of the hierarchy. I leave them out here, because they are not relevant for the discussion.

subject *ny mpianatra* ‘the student’ appears in the first position of the clause. It is followed by the invariable relativizer *izay* ‘that’. After that, the rest of the relative clause follows, in this case *nahita ny vehivavy* ‘saw the woman’.

- (18) **ny mpianatra** izay nahita ny vehivavy
 the student that saw the woman
 ‘the student that saw the woman’

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

The object of (17) cannot be relativized in the same way, as shown in (19). Here the object *ny vehivavy* ‘the woman’, marked in bold, appears in the first position of the clause. It is again followed by the relativizer *izay* ‘that’ and the rest of the relative clause, which is here *nahita ny mpianatra* ‘saw the student’. This example is ungrammatical.

- (19) ***ny vehivavy** izay nahita ny mpianatra
 the woman that saw the student
 ‘the woman that the student saw’

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

Later in this section I draw the parallel between subject and nominative, direct object and accusative and indirect object and dative (after Caha, 2009). As Malagasy does not have any overt morphological system, it does not hold that the subject corresponds to the nominative in this case. German is another example of a language that allows subjects to be relativized using a particular strategy, but not direct and indirect object. This strategy is the participle construction (Keenan and Comrie, 1977). This strategy is a secondary strategy that exist besides the main strategy that can be used to relativize direct and indirect objects. (20) is an example of a declarative sentence in German. It is a transitive sentence that contains the subject *die Frau* ‘the woman’ and the object *der Mann* ‘the man’.

- (20) Die Frau küsst den Mann.
 the woman kisses the man
 ‘The woman is kissing the man.’

(German)

Indirect objects cannot be relativized using the same strategy. (24) is an example of a ditransitive sentence in Malay. The indirect object *kapada perempuan itu* ‘to the woman’ cannot be relativized using *yang*.

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

This is illustrated by the examples in (25). In (25a), the direct object *perempuan kapada* ‘to the woman’, marked in bold, appears in the first position of the clause. It is followed by the relativizer *yang* ‘that’ and the rest of the relative clause *Ali beri ubi kentang itu kapada* ‘Ali gave the potato to’. This example is ungrammatical. The example in (25b) differs from (25a) in that the preposition *kapada* ‘to’ has been moved such that it precedes the relativizer *yang* ‘that’. This example is ungrammatical as well, indicating this was not the reason for the ungrammaticality.

- (25) a. ***perempuan** yang Ali beri ubi kentang itu kapada
 woman that Ali give potato the to
 b. ***perempuan kapada** yang Ali beri ubi kentang itu
 woman to who Ali give potato that
 (Malay, Keenan and Comrie 1977: 71, my boldfacing)

Later in this section I draw the parallel between subject and nominative, direct object and accusative and indirect object and dative (after Caha, 2009). As Malay does not have any overt morphological system, it does not hold that the subject corresponds to the nominative and the object to the accusative.

Finnish is another example of a language that allows subjects and direct objects to be relativized using a particular strategy, but not indirect objects. This strategy places the relative clause prenominal, does not use a relativization marker, and puts the predicate in the relative clause in the non-finite form (Keenan and Comrie, 1977).

(26) shows how examples of relativized subjects and direct objects. (26a) is an example of a subject relative: *poika* ‘boy’ has been relativized from the clause in which it was the subject of *tanssinut* ‘danced’. The head of the relative clause is *poika*

(26) a. Pöydällä tanssinut **poika** oli sairaas.
on-table having-danced boy was sick
'The boy who had danced on the table was sick.'

b. Näkemäni **poika** tanssi pöydällä.
I-having-seen boy danced on-table
'The boy that I saw danced on the table.'

(Finnish, Keenan and Comrie 1977: 71)

(27) Gizon-a-k emakume-a-ri liburu-a eman dio.
man-DEF-ERG woman-DEF-DAT book-DEF.ABS give has
'The man has given the book to the woman.'
(Basque, Keenan and Comrie 1977: 72)

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

direct object *liburua* ‘the book’ from (27) is relativized. The head *liburua* ‘the book’, marked in bold, follows the relative clause *gizonak emakumeari eman dio-n* ‘that the man has given to the woman’.¹⁰ The suffix *-n* is attached to the relative clause. In (28c), the dative indirect object *emakumeari* ‘the woman’ from (27) is relativized. The head *emakumea* ‘the man’, marked in bold, has lost its dative marker *-ri*, and follows the relative clause *gizonak liburua eman dio-n* ‘that the man has given the book to’. The suffix *-n* is attached to the relative clause.

- (28) a. emakume-a-ri libur-u-a eman dio-n **gizon-a**
 woman-DEF-DAT book-DEF.ABS give has-REL man-DEF
 ‘the man who has given the book to the woman’
 b. gizon-a-k emakume-a-ri eman dio-n **liburu-a**
 man-DEF-ERG woman-DEF-DAT give has-REL book-DEF
 ‘the book that the man has given to the woman’
 c. gizon-a-k libur-u-a eman dio-n **emakume-a**
 man-DEF-ERG book-DEF.ABS give has-REL woman-DEF
 ‘the woman that the man has given the book to’

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

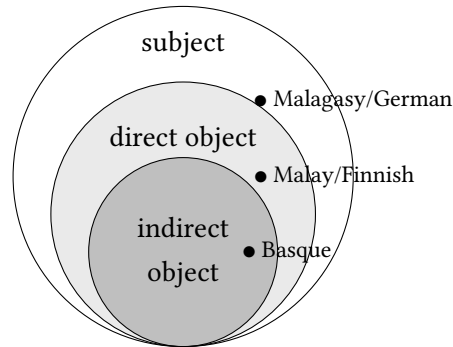


Figure 2.8: Relativization hierarchy with languages

Caha (2009) argues that the implicational hierarchy is more accurate if it is stated

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

in terms of case rather than grammatical function. The main argument comes from ergative-absolutive languages, which was also one of Bobaljik's (2006) argument with the implicational hierarchy for agreement.

According to Keenan and Comrie (1977), ergative-absolutive languages form a counterexample to their hierarchy. It turns out that in some languages ergative subjects cannot be relativized, while absolutive subjects and absolutive objects can. This indicates that absolutive subjects and objects form a natural class to the exclusion of ergative subjects. In other words, it is not the grammatical function that is decisive, but morphological case. Dyirbal is an example of a language in which absolutive subjects and objects can be relativized, but ergative subjects cannot (Dixon 1972: 100).

(29) shows an intransitive and transitive sentence in Dyirbal. In the intransitive sentence in (29a), the subject *balan ɖugumbil* 'the woman' is marked absolutive. In the transitive sentence in (29b), the subject *ɲaɖa* 'I' is marked ergative, and the object *balan ɖugumbil* 'the woman' is marked absolutive.

- (29) a. *balan ɖugumbil ɲina-ɲu*
 DET.ABS woman.ABS sit-PASS
 'The woman is sitting down.'
- b. *ɲaɖa balan ɖugumbil buɾa-n*
 I.ERG DET.ABS woman.ABS see-PRES/PST
 'I am watching the woman.' (Dyirbal, Dixon 1972: 100, my boldfacing)

A relative clause in Dyirbal follows its head, and marks the predicate of the relative clause with the relative suffix *-ɲu*. In (30a), the absolutive subject *ɖugumbil* 'woman' from (29a) is relativized. The head *ɖugumbil* 'woman', marked in bold, precedes the relative clause *ɲina-ɲu* 'who is sitting down'. The predicate in the relative clause *ɲina* 'sit' is followed by the relative suffix *-ɲu*. In (30b), the absolutive object *ɖugumbil* 'woman' from (29b) is relativized. The head *ɖugumbil* 'woman', marked in bold, precedes the relative clause *ɲaɖa buɾa-ɲu* 'whom I am watching'. The predicate in the relative clause *buɾa* 'see' is followed by the relative suffix *-ɲu*.

- (30) a. *ɲaɖa balan ɖugumbil ɲina-ɲu buɾa-n*
 I.ERG DET.ABS woman.ABS sit-REL see-PRESPST
 ‘I am watching the woman who is sitting down.’
 (Dyirbal, Dixon 1972: 100, my boldfacing)
- b. *balan ɖugumbil ɲaɖa buɾa-ɲu ɲina-ɲu*
 DET.ABS woman.ABS I see-REL sit-PASS
 ‘The woman whom I am watching is sitting down.’
 (Dyirbal, Dixon 1972: 100, my boldfacing)

Ergatives (for instance the ergative subject *ɲaɖa* ‘I’ in (29b)) cannot be directly relativized. They have to be promoted to absolutes first, creating a passive-like structure. In other words, only relativization of absolutes is possible, ergatives cannot be relativized.

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

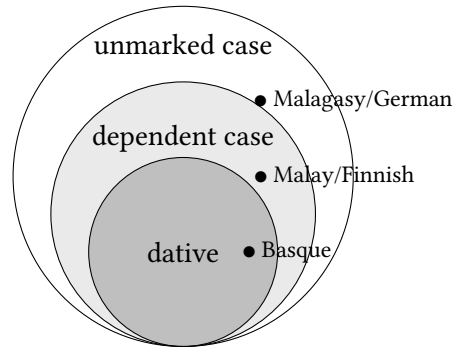


Figure 2.9: Relativization hierarchy (case)

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

First, German is a language that has a particular relativization strategy for the unmarked case, as shown in (21). The unmarked nominative case can be relativized with a reduced relative clause, but the dependent accusative case and the dative case

cannot. Second, Finnish is a language that has a particular relativization strategy for unmarked and dependent case, as shown in (26). The unmarked nominative case and the dependent accusative case can be relativized with a reduced relative clause, but the dative case cannot. Last, Basque is a language that has a particular relativization strategy for unmarked, dependent and dative case, as shown in (28). The unmarked ergative, dependent absolutive and dative case can be relativized by extraposing the head, and marking it with the invariable marker *-n*.

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

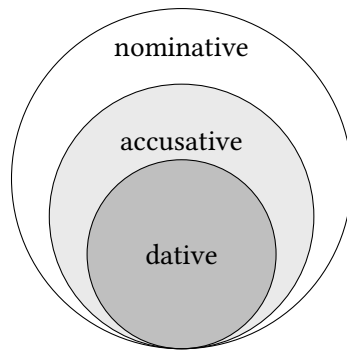


Figure 2.10: Relativization hierarchy (NOM/ACC/DAT)

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

2.3 In morphology

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

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

languages show morphological containment that mirrors the case scale.

2.3.1 Syncretism

Syncretism refers to the phenomenon whereby two or more different functions are fulfilled by a single form (cf. Baerman, Brown, and Corbett, 2002). In this section I discuss literature that shows that syncretism patterns among nominative, accusative and dative are not random. Instead, they pattern along the case scale $\text{NOM} < \text{ACC} < \text{DAT}$.

It has widely been observed that syncretism is restricted by the linear sequence $\text{NOM} - \text{ACC} - \text{DAT}$ (Baerman, Brown, and Corbett, 2005; Caha, 2009; Zompì, 2017) (and see McFadden 2018; Smith et al. 2019 for similar claims concerning root suppletion). That is, if one orders cases in this linear sequence, only contiguous regions in the sequence turn out to be syncretic. Following that, four possible patterns are attested crosslinguistically. First, all three cases are syncretic. Second, nominative and accusative are syncretic and the dative is not. Third, the accusative and the dative are syncretic and the nominative is not. Fourth, all cases are non-syncretic.

There is one pattern that is not attested crosslinguistically. This pattern does not target continuous regions, but non-contiguous ones: nominative and dative are syncretic and accusative is not. In other words, what does not exist is an ABA pattern, in which a form B intervenes between the two identically formed As (Bobaljik, 2012).

Table 2.6 shows examples for each of these possible patterns. I give an example of three distinct forms from Faroese. The second person singular is *tú* ‘you’ for nominative, *teg* ‘you’ for accusative and *tær* ‘you’ for dative (Lockwood 1977: 70). I give an example of a complete syncretism for nominative, accusative and dative from Dutch. The second person plural pronoun is *jullie* ‘you.PL’ is syncretic between all three cases. I give an example of a syncretism between accusative and dative but not nominative from Icelandic. The first person singular plural is *okkur* ‘us’ is syncretic between accusative and dative. The nominative has a separate form: *við* ‘we’ (Einarsson 1949: 68). I give an example of a syncretism between nominative and accusative but not dative from German. The third person singular feminine *sie* ‘she/her’ is syncretic between nominative and accusative. The dative has a separate

form: *ihr* ‘her’. Crucially, to the best of my knowledge, there is no language in which the nominative and the dative are syncretic but the accusative is not.

Table 2.6: Syncretism patterns

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

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

2.3.2 Morphological case containment

This section shows a second way in which NOM < ACC < DAT is reflected in morphology: morphological case containment (cf. Caha, 2010; Zompì, 2017; Smith et al., 2019). In some languages, the form that is used for the accusative literally contains the form that is used for the nominative. In turn, the forms for the dative contains the form for the accusative. I illustrate this phenomenon with examples from Khanty.

Khanty (or Ostyak) shows morphological case containment in some of its pronouns (Nikolaeva 1999: 16 after Smith et al. 2019). Three examples are given in Table 2.7.

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

The third person singular and first person plural show the same pattern. The accusative forms *luwe:l* ‘him/her’ and *muŋe:w* ‘us’ contain the nominative forms

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

Table 2.7: Morphological case containment in Khanty

	first personSG	third personSG	first personPL
NOM	ma	luw	muŋ
ACC	ma:- ne:m	luw- e:l	muŋ- e:w
DAT	ma:- ne:m-na	luw- e:l-na	muŋ- e:w-na

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

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

2.4 Summary

Case competition in headless relatives adheres to the case scale in (31). If the internal and external case differ, cases more on the right of the scale win over cases more to the left on the case.

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

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

ing the same strategy. If an accusative can be relativized with a particular strategy, so can a nominative with this strategy.

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

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

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

Chapter 3

Case decomposition

At the beginning of the previous chapter I showed that the case scale $\text{NOM} < \text{ACC} < \text{DAT}$ appears in headless relatives. In most accounts for headless relatives (cf. Harbert 1978; Pittner 1995; Vogel 2001; Grosu 2003, an exception to this is Himmelreich 2017) the case scale is stipulated. Headless relatives simply obey to that hierarchy. Pittner (1995: 201:fn.4) makes this explicit: “One of the reviewers notes that an explanation in terms of a Case hierarchy is rather stipulative. However, as far as I know, nobody has suggested a nonstipulative explanation for these facts.”

What I showed as well in the previous chapter is that the case scale $\text{NOM} < \text{ACC} < \text{DAT}$ is a wide-spread phenomenon: it recurs in several phenomena across different languages. The scale can be observed in at least two more syntactic phenomena: agreement and relativization.¹ The case scale also appears within morphology in syncretism patterns and morphological case containment. Pittner (1995: 201:fn.4) makes this link to morphology as well: “Furthermore, the Case hierarchies receive some independent support by morphology as shown by the various inflectional paradigms.”

I am not after a theory in which the case hierarchy is something construction specific, and syntax and morphology both have their own case hierarchy. I argue that there is a single trigger that is responsible for the case scales in different subparts of language (cf. Caha, 2019, on numeral constructions). Specifically, I show

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

that the observed case scale naturally follows on the assumption that the case hierarchy is deeply anchored in syntax. The case scales in morphology and syntax are merely reflexes of how case is organized in language.²

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

3.1 The basic idea

Caha (2009, 2013) (followed by cf. Starke 2009; Bobaljik 2012; McFadden 2018; Van Baal and Don 2018; Smith et al. 2019) has extensively argued that case should be decomposed into privative features. Specifically, the decomposition is cumulative: each case has a different number of case features, and the number grows one by one. This is illustrated in Table 3.1. Accusative has all the features that nominative has (here F1) plus one extra (here F2). Dative has all the features accusative has (F1 and F2) plus one extra (F3).

Table 3.1: Case decomposed

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

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

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

F2 and F3). Lastly, accusative corresponds to a set of features (F1 and F2) that is contained in the set of features of dative (F1, F2 and F3).

- (1) NOM < ACC < DAT

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

3.2 Deriving syncretism

Case syncretism follows the ordering of the case scale NOM < ACC < DAT. Along this scale, only contiguous regions in the sequence are syncretic. In this section I show how case syncretism patterns can be derived from the case decomposition in Table 3.1. In Table 3.2 I repeat from Table 2.6 examples that shows the possible and impossible syncretism patterns.

Table 3.2: Syncretism patterns (repeated)

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

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

one that targets non-contiguous regions in the table, the ABA pattern (Baerman, Brown, and Corbett, 2005; Caha, 2009; Zoppi, 2017).

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

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

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

In Nanosyntax, the lexicon contains lexical entries, which are links between lexical trees, phonological representations and conceptual representations (Starke, 2014).⁵ I leave the conceptual representation out of discussion for now, as it is

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

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

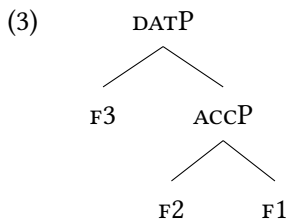
⁵The lexical tree does not have to correspond to both a phonological and a conceptual represen-

not relevant for the discussion here. The fact that only syntax can create complex feature structures also has a consequence for lexical entries in the lexicon. Syntactic structures are constrained by certain principles, such that only well-formed syntactic structures exist. Since lexical entries in the lexicon link lexical trees to phonological and conceptual representation, these lexical trees are constrained by the same principles as syntactic structures are. As a result, the lexicon only contains well-formed lexical trees. The lexicon does not contain unstructured ‘feature bundles’, because they could never be created by syntax.

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

(2) [F1, F2, F3]

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



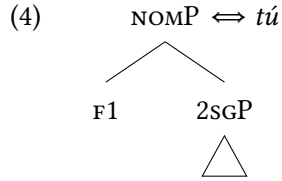
This structure leads to the concept of phrasal spellout: not terminals but multiple syntactic heads (phrases) are realized with a single piece of phonology (i.e. a single morpheme). Applying this to (3), not the terminals F1, F2 and F3 receive a realization, but ACCP and DATP are spelled out. A necessary requirement is that these multiple syntactic heads form a constituent. That means that DATP cannot be spelled out without ACCP.

Let me illustrate all of the above with the Faroese pronouns from Table 3.2. I simplify the situation in two respects. First, I do not show the internal complexity

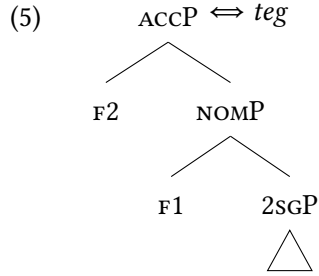
tation. Lexical trees that only correspond to a conceptual representations and not to phonological representations are (phrasal or clausal) idioms. Lexical trees that only correspond to phonological representations but not to conceptual representations are for instance irregular plurals.

of the pronouns, including person and number features. Instead, I give a triangle, indicating that this is a complex syntactic structure. I refer to it as the person-number phrase it refers to, so e.g. 2sgP. Second, in this simplified representation I consider the Faroese pronouns to be monomorphemic. I ignore the fact that all three pronouns have the stem *t* with a suffix following it.

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

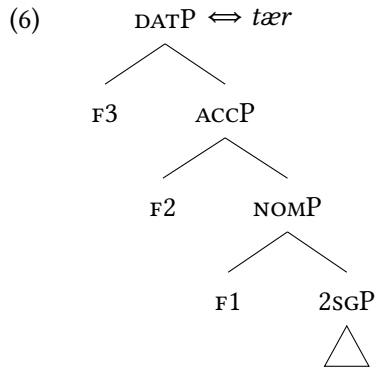


The lexical entry for *teg* is given in (5). The lexical tree consists of all the features of the lexical tree in (4), plus F2, making it an ACCP. The linked phonological representation is *teg*.



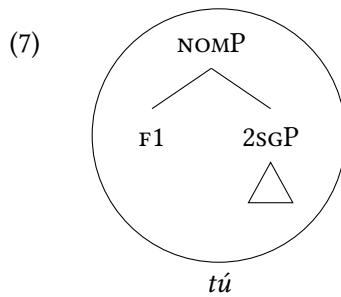
The lexical entry for *tær* is given in (6). The lexical tree consists of all the features of the lexical tree in (5), plus F3, making it a DATP. The linked phonological representation is *tær*.

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



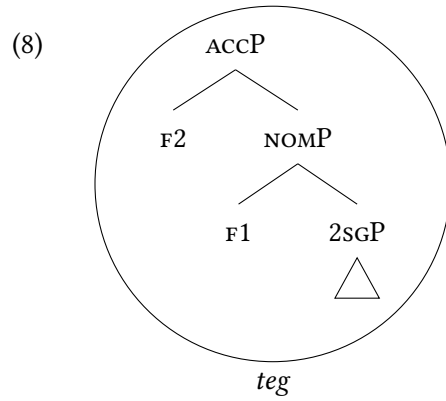
The lexical trees and their phonological counterparts I gave in (4) to (6) are lexical entries. These lexical entries are used to spell out syntactic structures. I give examples of syntactic structures in (7) to (9).

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

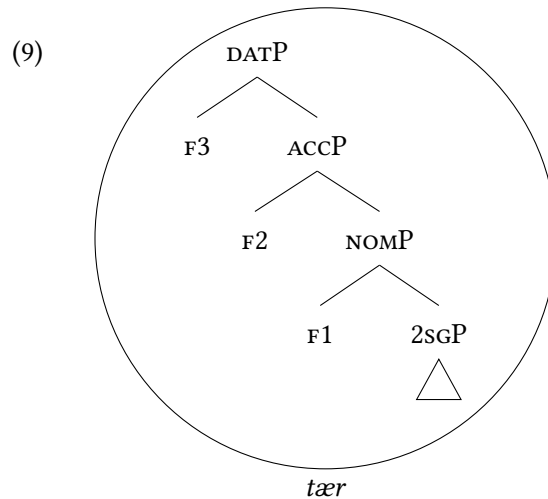


The lexical tree in (5) is identical to the syntactic structure in (8), and it is spelled out as *teg*.

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



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

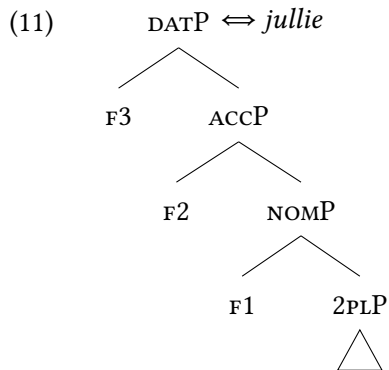


In the Faroese examples above, the syntactic structures are all identical to the lexical trees. However, Nanosyntax assumes that to be a successful match, identity is not a necessary requirement. Instead, matching relies on a containment relation. A lexical entry applies when it contains all features.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

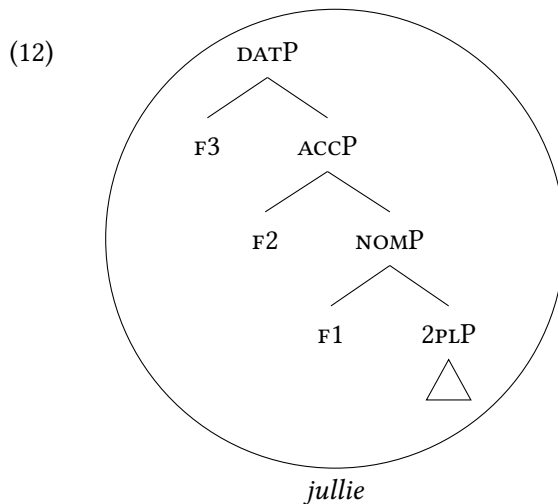
(10) **The Superset Principle** Starke (2009):

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

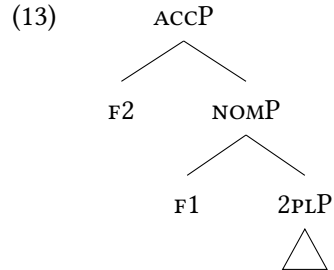
Let me illustrate this with the Dutch second person plural pronoun from Table 3.2. This pronoun is syncretic between the nominative, accusative and dative. The lexicon only contains a single lexical entry, namely (11). The lexical tree consists of the complex lexical tree that corresponds to the second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



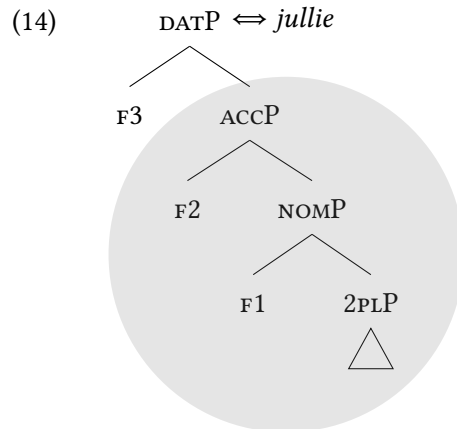
The syntactic structure of the dative, given in (12), is the least exciting of the three. It is identical to the lexical tree (11), and therefore, spelled out as *jullie*.



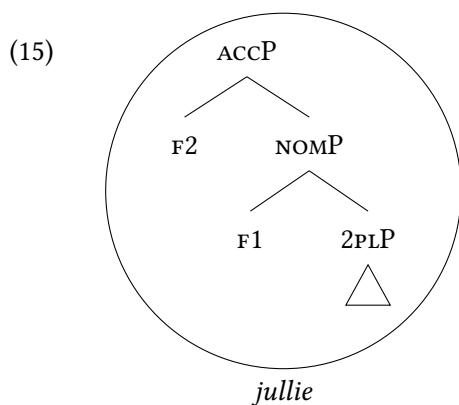
The syntactic structure of the accusative is given in (13).



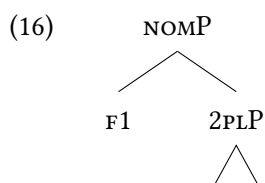
The lexical entry in (11) is not identical to this syntactic structure. However, the lexical tree contains the syntactic structure of the accusative. I repeat the lexical entry for *jullie* in (14), marking the subpart of the tree that matches the syntactic structure in gray.



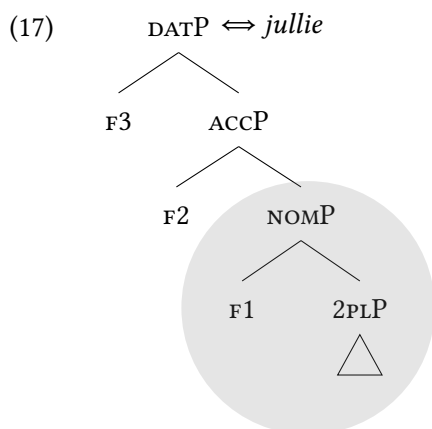
As a result, the accusative is spelled out as *jullie*, shown in (15).



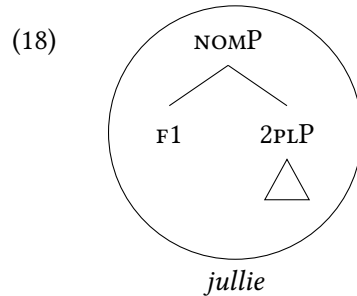
The same holds for the nominative. The syntactic structure is given in (16).



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



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

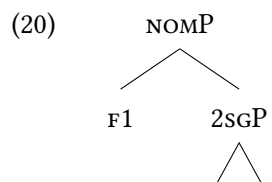


A question arises at this point. Why are the accusative and nominative in Faroese not spelled out by the lexical entry for the dative (and why is the nominative not spelled out by the lexical entry for the accusative)? These syntactic structures are namely contained in the lexical tree for the dative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

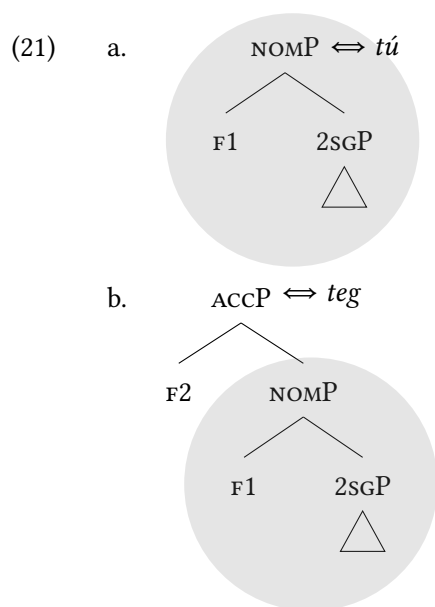
- (19) **The Elsewhere Condition** (Kiparsky 1973, formulated as in Caha 2020):
 When two entries can spell out a given node, the more specific entry wins.
 Under the Superset Principle governed insertion, the more specific entry is the one which has fewer unused features.

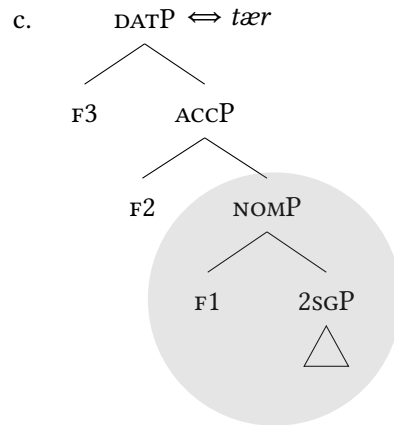
I show how the Superset Principle and the Elsewhere Condition interact in a competition with the Faroese lexical entries. I only discuss the nominative *tú* and the accusative *teg*, because for the dative *tær* there is only a single candidate that contains all features: the lexical entry *tær*.

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

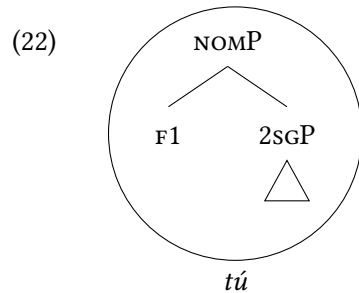


The three lexical entries for *tú* in (4), *teg* in (5) and *tær* in (6) are candidates for this syntactic structure. I repeat the lexical entries for *tú*, *teg* and *tær* in (21), marking the subpart of the tree that matches the syntactic structure in gray.

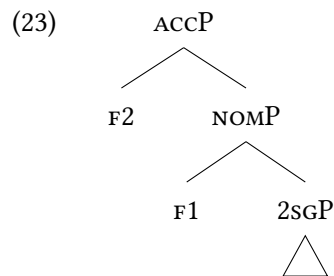




The first, (21a), has no unused features. The second, (21b), has one unused feature: f2 . The third, (21c), has two unused features: f2 and f3 . Because (21a) has the least amount of unused features, it wins the competition, and the syntactic structure is spelled out as *tú*. This is shown in (22).

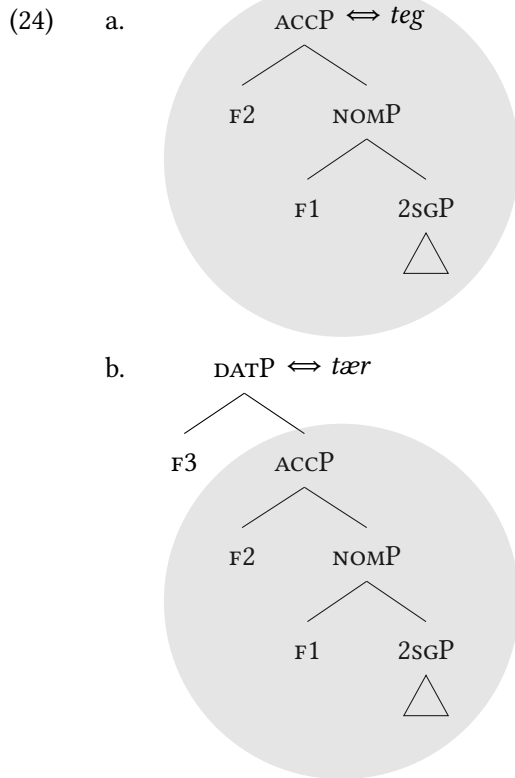


Consider the syntactic structure for the accusative in (23), repeated from (8).



The two lexical entries for *teg* in (5) and *tær* in (6) are candidates for this syntactic

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



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

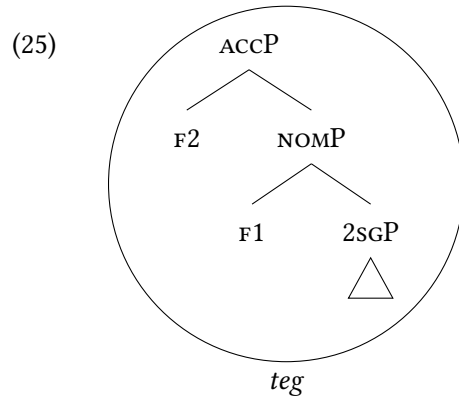
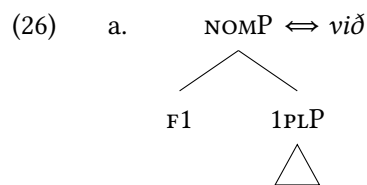
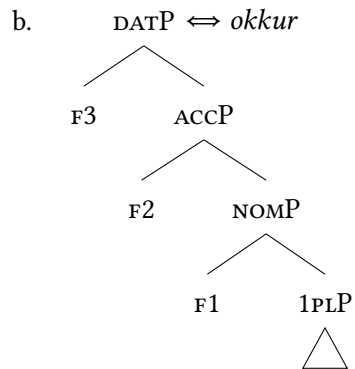


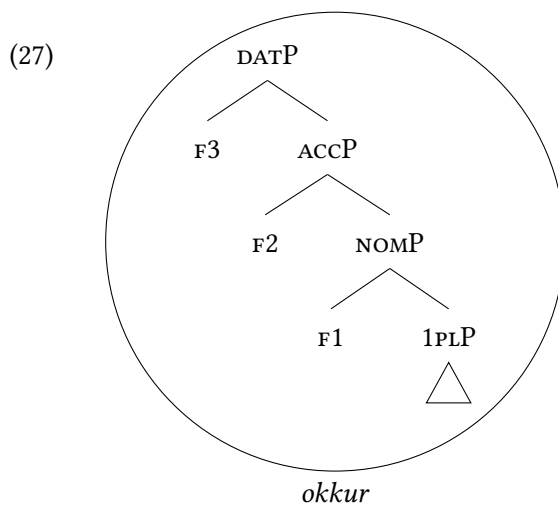
Table 3.2 contains two more attested patterns: the ABB in Icelandic and the AAB in German. In the remainder of this section I show how these two patterns are derived, and that the unattested one cannot be derived. I also show how the system is unable to derive an ABA pattern, which is crosslinguistically unattested (Baerman, Brown, and Corbett, 2005; Caha, 2009; Zompì, 2017).

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

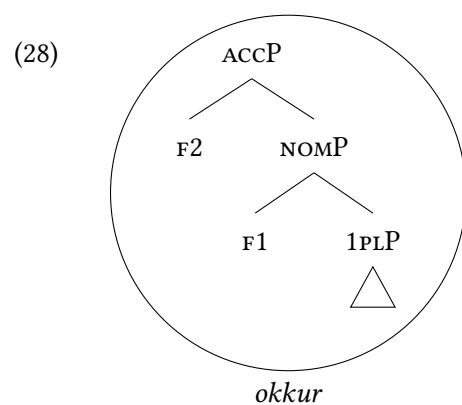




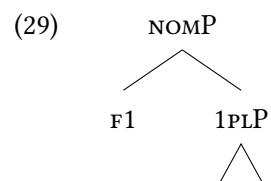
The syntactic structure for the dative is given in (27). It is contained in the lexical tree in (26b), and therefore, spelled out as *okkur*. The lexical entry in (26a) is not considered, because it does not contain *F2* and *F3*.



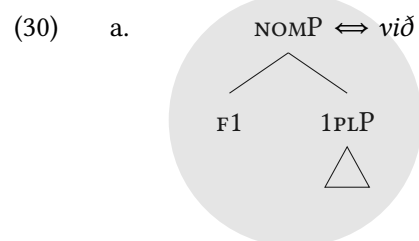
The syntactic structure for the accusative is given in (28). It is contained in the lexical tree in (26b), and therefore, spelled out as *okkur*. The lexical entry in (26a) is not considered, because it does not contain *F2*.

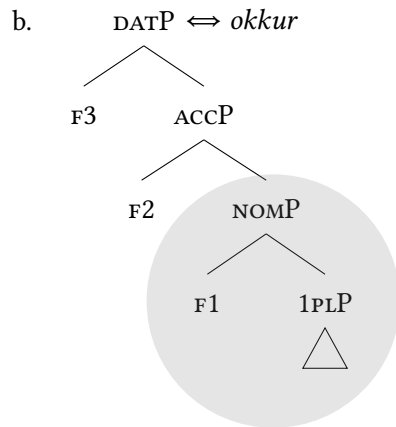


The syntactic structure for the nominative is given in (29).

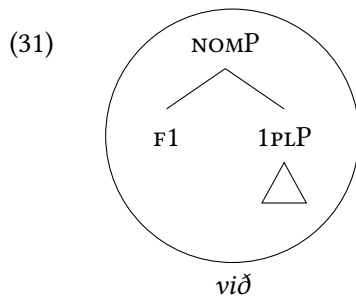


It is contained in the lexical tree for *við* in (26a) and in the one for *okkur* in (26b). I repeat the lexical entries for *við* and *okkur* in (30), marking the subparts of the trees that match the syntactic structure in gray.

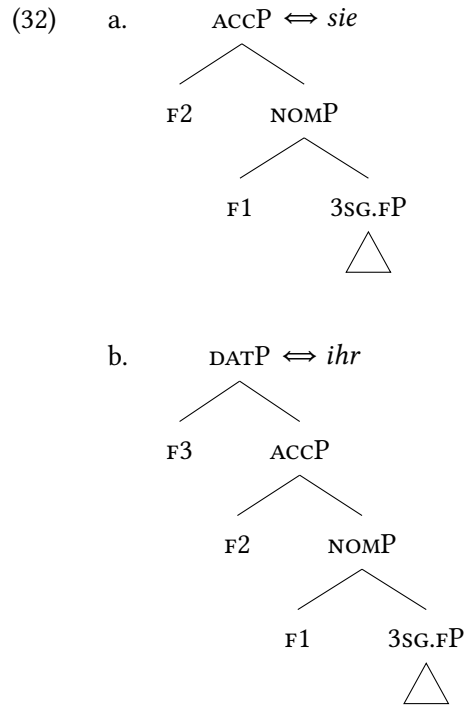




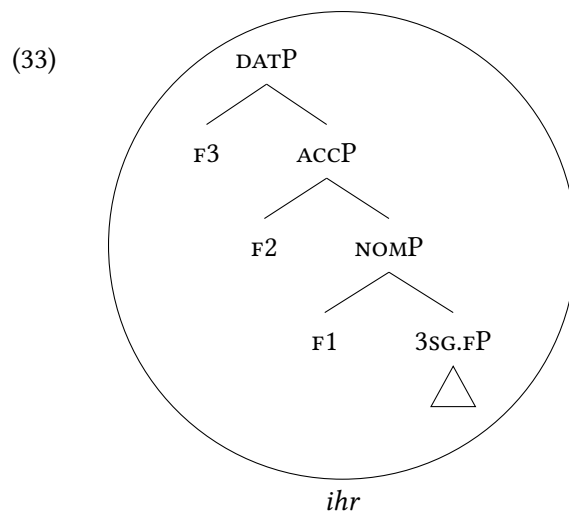
The former, (30a), has no unused features. The latter, (30b), has two unused features: F2 and F3. Because (30a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *við*. This is shown in (31).



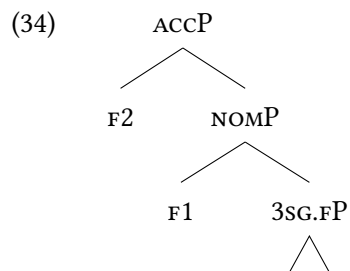
For the third person singular feminine, German uses *sie* as nominative and accusative, and *ihr* as dative. Two lexical entries are needed for that. The first one in (32a) contains pronominal features, F1 and F2. It corresponds to the phonology *sie*. The second one is given in (32b). It contains in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



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

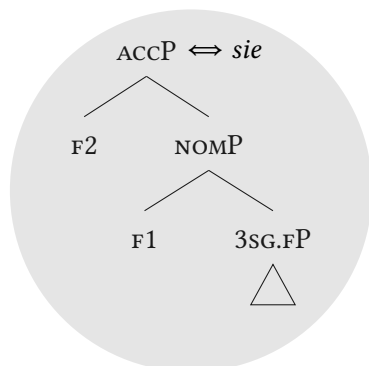


The syntactic structure for the accusative is given in (34).

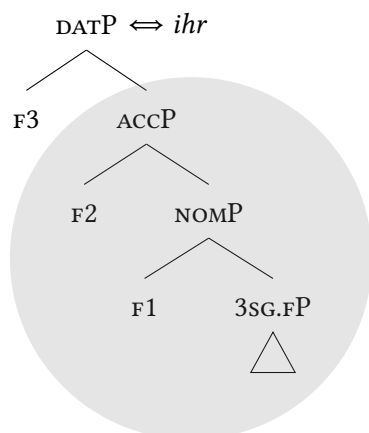


It is contained in the lexical tree for *sie* in (32a) and in the one for *ihr* in (32b). I repeat the lexical entries for *sie* and *ihr* in (35), marking the subparts of the trees that match the syntactic structure in gray.

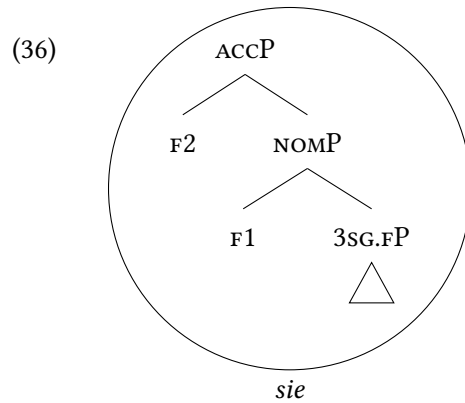
(35) a.



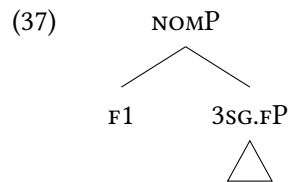
b.



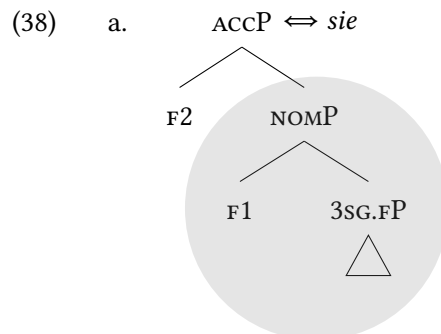
The former, (35a), has one no unused features. The latter, (35b), has one unused feature: f3. Because (35a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *sie*. This is shown in (36)

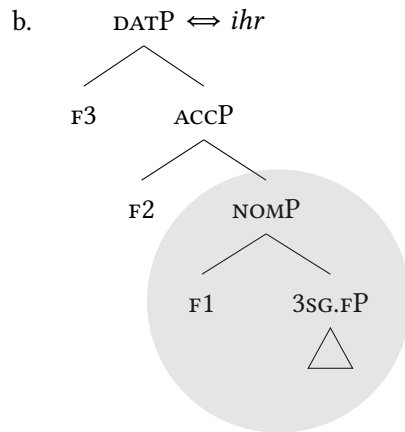


The syntactic structure for the nominative is given in (37).

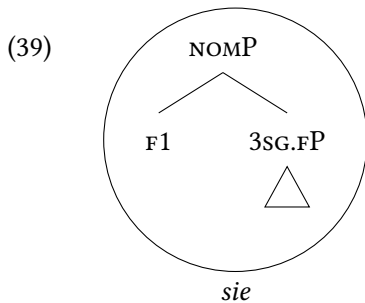


It is contained in the lexical tree for *sie* in (32a) and in the one *ihr* in (32b). I repeat the lexical entries for *sie* and *ihr* in (38), marking the subparts of the trees that match the syntactic structure in gray.





The former, (38a), has one unused feature: *f2*. The latter, (38b), has two unused features: *f2* and *f3*. Because (38a) has fewer unused features, it wins the competition, and the syntactic structure is spelled out as *sie*. This is shown in (39).



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

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

because the lexical entry for *sie* is and will remain to be more specific.

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

3.3 Deriving morphological case containment

Some languages morphologically reflect the case scale $\text{NOM} < \text{ACC} < \text{DAT}$. Khanty is an example of such a language. The phonological form of the accusative literally contains the phonological form of the nominative, and the form of the dative contains the form of the accusative. In this section I show how morphological case containment can be derived from the case decomposition in Table 3.1. I repeat an example from Khanty that shows morphological case containment in Table 3.3 (Nikolaeva 1999: 16).

Table 3.3: Morphological case containment of 3SG in Khanty

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

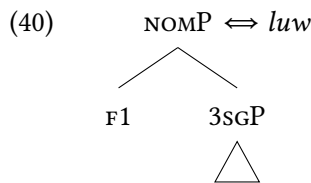
The intuition is the following. The morphological form of the pronouns mirrors the cumulative feature decomposition given in Table 3.1. That is, the accusative has the morphology that the nominative has (*luw*) plus something extra (*e:l*). Similarly, the accusative also has the features that the nominative has (F1) plus something extra (F2). The dative has the morphology that the accusative has (*luw-e:l*) plus something extra (*na*). Again, similarly, the dative has the features that the accusative has (F1, F2) plus something extra (F3).

Before I show how languages with morphological case containment can be derived, I need to discuss how variation between languages is modeled in Nanosyntax. Crosslinguistic variation is namely explained in terms of differences in the lexicon.

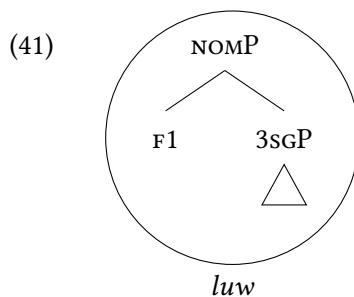
In other words, the syntactic structure is identical across languages, but the lexical entries package features together differently.

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

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



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



As shown in Table 3.3, the morphological form of the accusative contains the mor-

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

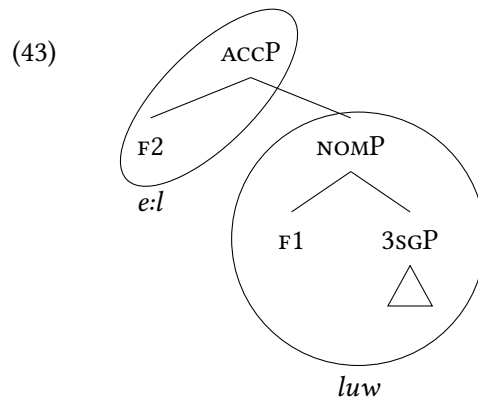
$$(42) \quad \text{ACCP} \Leftrightarrow e:l$$

$$\quad \quad \quad |$$

$$\quad \quad \quad \text{F2}$$

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

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



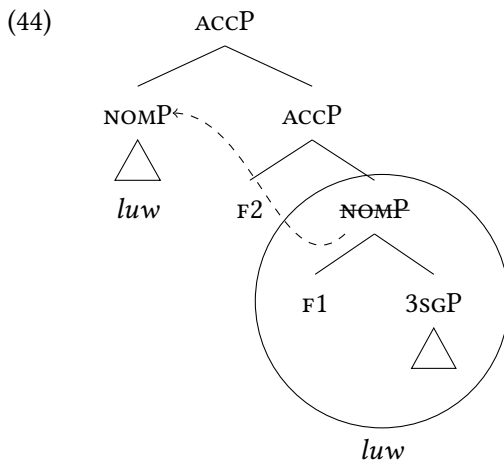
The lexical entry in (42) can only match the syntactic structure if NOMP moves away, leaving the ACCP containing F2 behind. In other words, the syntactic structure needs to be modified in such a way that the complement of F2 is not in the way anymore.

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

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

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

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



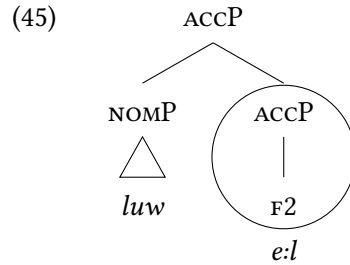
¹⁰In Chapter 7 I introduce the spellout procedure in more detail.

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

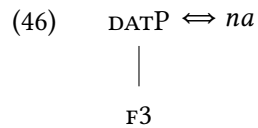
¹²This type of movement is different from syntactic movement. It is driven by spellout, it does not have any interpretational effects, and it does not leave any traces (Starke, 2018). In Chapter 5 I return to ‘regular’ syntactic movement in Nanosyntax.

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

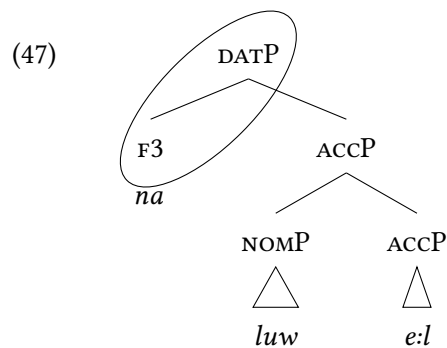
The result of the movement is given in (45). The lexical tree in (42) matches the syntactic structure, and ACCP is spelled out as *e:l*.



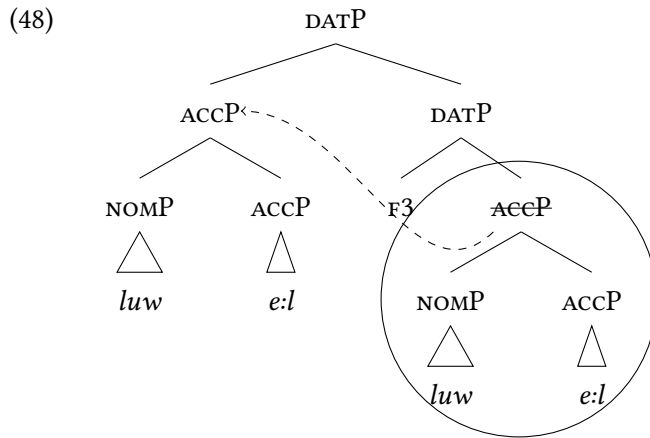
Just as Khanty has an additional morpheme that shows up in the accusative, it also has a morpheme that shows up in the dative. Similarly, just as the accusative has one more feature than the nominative (F1, F2 vs. F1), the dative has one more feature than the accusative (F1, F2, F3 vs. F1, F2). This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



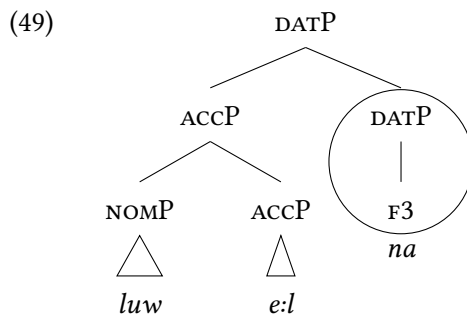
Again, because spellout only targets constituents, F3 cannot be spelled out right after it has been merged, as shown in (47).



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



The result of the movement is given in (49). The lexical tree in (46) matches the syntactic structure, and DATP is spelled out as *na*.



In sum, the cumulative case decomposition from Table 3.1 can derive the morphological case containment facts.

3.4 The intuition for headless relatives

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

I repeat the summary of the data pattern for Gothic in Table 3.4. I gave the cells

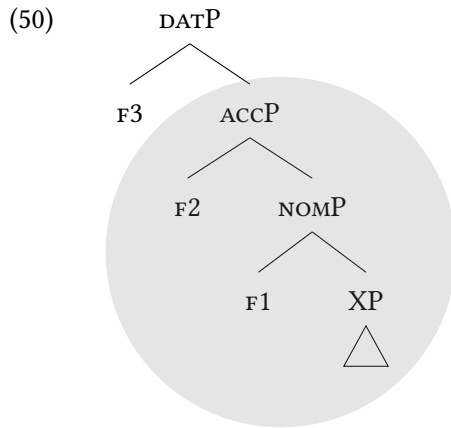
different shadings depending on which cases compete. The dark gray cells are the ones in which dative and the accusative compete, and the dative wins. The light gray cells are the ones in which the dative and the nominative compete, and the dative again wins. The uncolored cells are the ones in which the accusative and the nominative compete, and the accusative wins.

Table 3.4: Summary of Gothic headless relative (repeated)

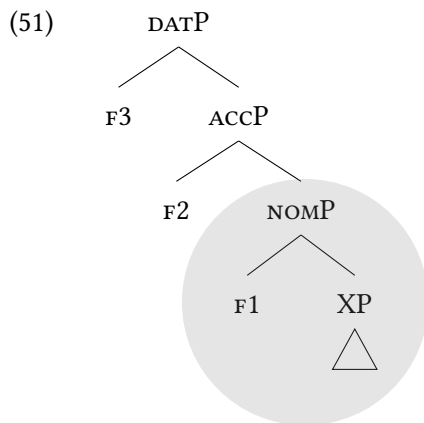
INT^{EXT}	[NOM]	[ACC]	[DAT]
[NOM]		ACC	DAT
[ACC]	ACC		DAT
[DAT]	DAT	DAT	

The intuition is the following. The headless relatives reflect the cumulative feature decomposition given in Table 3.1. A case wins the competition if it contains all features the other case has. The dative contains all features that the accusative has, so the dative surfaces. Similarly, the dative contains all features the nominative has, and again the dative surfaces. The same holds for the last pair: the accusative contains all features the nominative has, so the accusative surfaces. I illustrate this per case pair.

I start with the competition between dative and accusative, in which dative wins. The corresponding cells are marked dark gray in Table 3.4. In (50) I show the syntactic structure of a dative relative pronoun. For now I let syntactic structure that has to do with being a relative pronoun correspond to a complex XP. I elaborate on the exact content of XP in Chapter 5. Following that, a dative relative pronoun contains the XP, F1, F2 and F3. Contained in this structure is an accusative relative pronoun, marked in gray. This consists of the XP, F1 and F2. The bigger structure wins against the smaller structure it contains: the dative wins over the accusative.

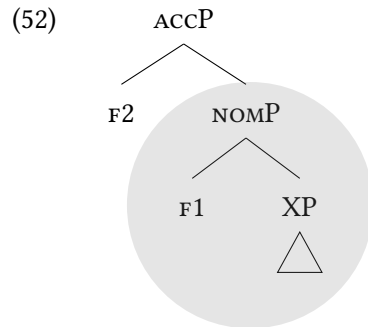


Next is the competition between dative and nominative, in which dative wins. The corresponding cells are marked light gray in Table 3.4. In (51) I show the syntactic structure of a dative relative pronoun. It contains the XP, F1, F2 and F3. Contained in this structure is a nominative relative pronoun,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



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

contains: the accusative wins over the nominative.



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

3.5 Summary

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

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

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

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

Part II

The variation

Chapter 4

A case competition typology

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

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

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

This part of the dissertation, Part II, focuses on a second aspect to headless relatives. This part is not stable crosslinguistically, but it differs across languages. Languages differ in whether they allow the internal case (the case from the relative clause) or the external case (the case from the main clause) to surface when they win the case competition. Metaphorically speaking, even though a case wins the case competition, it is a second matter whether it is allowed to come forward as

a winner. Four patterns are logically possible for languages: (1) either the internal case or the external case is allowed to surface, (2) only the internal case is allowed to surface, and the external case is not, (3) only the external case is allowed to surface, and the internal case is not, (4) neither the internal nor the external case is allowed to surface.¹ I show in this chapter that one of these logically possible patterns is not attested in any natural language.

The next section introduces the patterns that are logically possible in languages with case competition. Section 4.2 to Section 4.5 discuss the patterns one by one, and I give examples when the pattern is attested. In Section ?? I make a sidestep to potential counterexamples to my generalization. I argue that these cases are actually languages that lack case competition to begin with.

4.1 Four possible patterns

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

Metaphorically, the second aspect can be described as a language-specific approval committee. The committee learns (from the first aspect) which case wins the case competition. Then it can either approve this case or not approve it. This approval happens based on where the winning case comes from: (1) from inside to the relative clause (internal) or (2) from outside to the relative clause (external). It is determined per language whether it approves the internal case, the external case or both of them. The approval committee can only approve the winner of the competition or deny it, it cannot propose an alternative winner. In this metaphor, the approval of the committee means that a particular case is allowed to surface. When the case is not allowed to surface, the headless relative as a whole is ungrammatical.

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

Taking this all together, there are four patterns possible in languages. First, either the internal case or the external case is allowed to surface. Second, only the internal case is allowed to surface, and the external case is not. Third, only the external case is allowed to surface, and the internal case is not. Fourth, neither the internal nor the external case is allowed to surface. In what follows, I introduce these possible patterns.

The first possible pattern is that of a language that allows the internal case and the external case to surface when either of them wins the case competition. This might look familiar, because it is the pattern that Gothic shows, which I discussed in Chapter 2. Table 4.2 (repeated from Table 2.4) illustrates what the pattern for such a language looks like.

The left column shows the internal case between square brackets. The upper row shows the external case between square brackets. The other cells indicate the case of the relative pronoun. The diagonal is crossed out, because these are instances in which the internal and external case match, and there is no case competition taking place. The three cells in the lower left corner are the situations in which the internal case surfaces when it wins the competition. The three cells in the upper right corner are the situations in which the external case surfaces when it wins the competition. All these instances are grammatical.

Table 4.1: Either internal or external case allowed

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

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

Table 4.2 illustrates what the pattern for such a language looks like. Only half of the situations from the first pattern remains. The other half is ungrammatical. The three cells in the lower left corner are the situations in which the internal case surfaces when it wins the competition. Just as in the first pattern, these instances are grammatical. The three cells in the upper right corner are the situations in which the external case surfaces when it wins the competition. These instances are not grammatical for this type of language. The reasoning behind that is that the language does not allow the external case to surface when it wins the case competition.

Table 4.2: Only internal case allowed

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

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

Table 4.3 illustrates what the pattern for such a language looks like. It is the mirror image of the second type of language. The three cells in the lower left corner are the situations in which the internal case surfaces when it wins the competition. Unlike in the first and the second pattern, these instances are not grammatical for this type of language. The reasoning behind that is that the language does not allow the internal case to surface when it wins the case competition. The three cells in the upper right corner are the situations in which the external case surfaces when it wins the competition. Just as the first pattern, these instances are grammatical.

Table 4.3: Only external case allowed

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

The fourth possible pattern is that of a language that allows neither the internal nor the external case to surface when it wins the case competition. When the internal case or the external is more complex, it is not allowed to surface, and the headless relative construction is ungrammatical. In other words, when the internal and the external case differ, there is no grammatical headless relative construction possible.²

Table 4.4 illustrates what the pattern for such a language looks like. The three cells in the lower left corner are the situations in which the internal case surfaces when it wins the competition. Just as the third pattern, but unlike the first and the second pattern, these instances are not grammatical for this type of language. The reasoning behind that is that the language does not allow the internal case to surface when it wins the case competition. The three cells in the upper right corner are the situations in which the external case surfaces when it wins the competition. Just as the second pattern, but unlike the first and the third pattern, these instances are not grammatical for this type of language. The reasoning behind that is that the language does not allow the external case to surface when it wins the case competition.

²On the surface, this pattern cannot be distinguished from a pattern that does not have case competition and does not allow for any case mismatches. I understand ‘a language with case competition’ as a language that compares the internal and external case in its headless relatives. The source of ungrammaticality for the cells in Table 4.4 can only come from the comparing the internal and external case. For this to go through, the language is required to have headless relatives in some configurations, for instance when the cases match. In Section 4.7 I discuss languages in which the internal and external case are not compared to each other.

Table 4.4: Neither internal nor external allowed

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

In this chapter I show that three of these four patterns are attested crosslinguistically. Section 4.2 shows that the first pattern, in which either the internal case or the external case can surface, is exemplified by Gothic (repeated from Chapter 2) and by Old High German. The second pattern, in which only the internal case can surface, is illustrated by Modern German in Section 4.3. To my knowledge, there is no language in which only the external case can surface when it wins the case competition. This is discussed in 4.4. Section 4.5 shows a language that allows neither the internal nor the external case to surface when it wins the competition: Polish.

4.2 Internal and external case allowed

This section discusses the situation in which the internal case or the external case is allowed to surface when either of them wins the case competition. Schematically, this looks as in Table 4.5 (repeated from Table 4.1).

Table 4.5: Internal and external case allowed (repeated)

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

Two examples of languages that show this pattern are Gothic and Old High

German. I repeat the findings from Gothic (from 2), and I present the data for Old High German, which is the result of my own research

In 2, I discussed case competition between nominative, accusative and dative case in Gothic headless relatives, based on the work of Harbert (1978). I repeat the results in Table 4.6 from Table 2.4.

In Gothic, the relative pronoun is allowed to surface in either the internal case or the external case. The three cells in the lower left corner are the situations in which the internal case surfaces when it wins the competition. The three cells in the upper right corner are the situations in which the external case surfaces when it wins the competition. All these instances are grammatical. The examples corresponding to the cells in Table 4.6 can be found in Section 2.1.

Table 4.6: Internal and external case allowed (repeated)

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

Old High German is another instance of a language in which the relative pronoun is allowed to surface in either the internal case or the external case. This conclusion follows from my own research of the texts ‘Der althochdeutsche Isidor’, ‘The Monsee fragments’, ‘Otfrid’s Evangelienbuch’ and ‘Tatian’ in ANNIS (Krause and Zeldes, 2016).³ The examples follow the spelling and the detailed glosses in ANNIS. The translations are my own.

³Old High German is widely discussed in the literature because of its case attraction in headed relatives (cf. Pittner, 1995), a phenomenon that seems related to case competition in headless relatives (see Section 1.3.1 for why attraction is not further discussed in this dissertation). A common observation is that case attraction in headed relatives in Old High German adheres to the case scale. The same is claimed for headless relatives. What, to my knowledge, has not been studied systematically is whether Old High German headless relatives allow the internal case and the external case to surface when either of them wins the case competition. This is what I investigated in my work.

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

Consider the example in (2). In this example, the internal nominative case competes against the external accusative case. The internal case is nominative, as the predicate *gisizzen* ‘to possess’ takes nominative subjects. The external case is accusative, as the predicate *bibringan* ‘to create’ takes accusative objects. The relative pronoun *dhen* ‘REL.SG.M.ACC’ appears in the external case: the accusative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause.⁴

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

(Old High German, Isid. 34:3)

Consider the example in (3). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *zellen* ‘to tell’ takes accusative objects. The external case is nominative, as the predicate *sin* ‘to be’ takes nominative objects. The relative pronoun *then* ‘REL.SG.M.ACC’ appears in the internal case: the accusative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is accusative, the external case is nominative and the relative pronoun appears in nominative case are

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

unattested.

- (3) thíz ist **then** sie **zélleht**
 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’ (Old High German, Otfrid III 16:50)

The two examples in which nominative and accusative compete are highlighted in Table 4.7. The light gray marking corresponds to (2), in which the external accusative wins over the internal nominative, and the relative pronoun is allowed to surface in the accusative case. The dark gray marking corresponds to (3), in which the internal accusative wins over the external nominative, and the relative pronoun is allowed to surface in the accusative case.

Table 4.7: Summary of Old High German headless relatives (NOM — ACC)

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

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

Consider the example in (4). In this example, the internal nominative case competes against the external dative case. The internal case is nominative, as the predicate *sprehhan* ‘to speak’ takes nominative subjects. The external case is dative, as the predicate *antworten* ‘to reply’ takes dative objects. The relative pronoun *demo* ‘REL.SG.M.DAT’ appears in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. Examples in which the internal case is nominative, the external case is dative and the relative pronoun appears in nominative case are unattested.

- (4) 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’
 (Old High German, Mons. 7:24, adapted from Pittner 1995: 199)

Consider the example in (5). In this example, the internal dative case competes against the external nominative case. The internal case is dative, as the predicate *forlazan* ‘to read’ takes dative indirect objects. The external case is nominative, as the predicate *minnon* ‘to love’ takes nominative subjects. The relative pronoun *themo* ‘REL.SG.M.DAT’ appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. Examples in which the internal case is dative, the external case is nominative and the relative pronoun appears in nominative case are unattested.

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

The two examples in which nominative and dative compete are highlighted in Table 4.8. The light gray marking corresponds to (4), in which the external dative wins over the internal nominative, and the relative pronoun is allowed to surface in the dative case. The dark gray marking corresponds to (5), in which the internal dative wins over the external nominative, and the relative pronoun is allowed to surface in the dative case.

Consider the example in (7). In this example, the internal dative case competes against the external accusative case. The internal case is dative, as the predicate *zawen* ‘to tell’ takes dative subjects. The external case is accusative, as the predicate *weizan* ‘to know’ takes accusative objects. The relative pronoun *thémo*

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

Table 4.9: Summary of Old High German headless relatives (ACC – DAT)

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

In my research I encountered a single counterexample to the pattern I just described. Consider the example in (8). In this example, the internal nominative case competes against the external accusative case. The internal case is nominative, as the predicate *giheilen* ‘to save’ takes nominative subjects. The external case is accusative, as the predicate *beran* ‘to bear’ takes accusative objects. Surprisingly, the relative pronoun *thér* ‘REL.SG.M.NOM’ appears in the internal case: the nominative, which is the less complex of the two cases. The relative pronoun is marked in bold,

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

4.3 Only internal case allowed

This section discusses the situation in which only the internal case is allowed to surface when it wins the case competition. When the external case wins the case competition, the result is ungrammatical. Schematically, this looks as in Table 4.10 (repeated from Table 4.2).

Table 4.10: Only internal case allowed (repeated)

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

An example of a language that shows this pattern is Modern German. In this section I discuss the Modern German data, based on the research of Vogel (2001).

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

I start with the situation in which the external case wins the competition, and there is no grammatical outcome possible. Consider the example in (9). In this example, the internal nominative case competes against the external accusative case. The internal case is nominative, as the predicate *sein* ‘to be’ takes nominative subjects. The external case is accusative, as the predicate *einladen* ‘to invite’ takes accusative objects. The relative pronoun *wen* ‘REL.AN.ACC’ appears in the external case: the accusative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. The example adheres to the case scale, but the more complex case (here the accusative) is not the internal case. As only the internal can win the case competition in Modern German, the example is ungrammatical.

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

The example in (10) is identical to (9), except for that the relative pronoun appears in the external less complex nominative case. This example is also ungrammatical: in addition to the more complex case not being the internal case, the relative pronoun also does not appear in the more complex case (the accusative) but in the less complex case (the nominative).

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

Now I turn to the situation in which the internal case wins the competition, and there is a grammatical outcome possible. Consider the example in (11). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *mögen* ‘to like’ takes accusative objects. The external case is nominative, as the predicate *besuchen* ‘to visit’ takes nominative subjects. The relative pronoun *wen* ‘REL.AN.ACC’ appears in the internal case: the accusative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. The example adheres to the case scale, and the more complex case (here the accusative) is the internal case, so the example is grammatical.

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

The example in (12) is identical to (11), except for that the relative pronoun appears in the external less complex nominative case. This example is ungrammatical: although the internal case is more complex, the relative pronoun appears in the less complex case (the nominative) and not in the more complex case (the accusative).

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

The two examples in which nominative and accusative compete are highlighted in Table 4.11. The light gray marking corresponds to (9), in which the external accusative wins over the internal nominative, but the relative pronoun is not allowed to surface in the accusative case (or in the losing nominative case). The dark gray marking corresponds to (11), in which the internal accusative wins over the external nominative, and the relative pronoun is allowed to surface in the accusative case (and in the losing nominative case).

Table 4.11: Summary of Modern German headless relatives (NOM – ACC)

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

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

I start again with the situation in which the external case wins the competition, and there is no grammatical outcome possible. Consider the example in (13). In this example, the internal nominative case competes against the external dative case.

The internal case is nominative, as the predicate *mögen* ‘to like’ takes nominative subjects. The external case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The relative pronoun *wem* ‘REL.AN.DAT’ appears in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. The example adheres to the case scale, but the more complex case (here the dative) is not the internal case. As only the internal can win the case competition in Modern German, the example is ungrammatical.

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

The example in (14) is identical to (13), except for that the relative pronoun appears in the external less complex nominative case. This example is also ungrammatical: in addition to the more complex case not being the internal case, the relative pronoun also does not appear in the more complex case (the dative) but in the less complex case (the nominative).

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

Now I turn again to the situation in which the internal case wins the competition, and there is a grammatical outcome possible. Consider the example in (15). In this example, the internal dative case competes against the external nominative case. The internal case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The external case is nominative, as the predicate *besuchen* ‘to visit’ takes nominative subjects. The relative pronoun *wem* ‘REL.AN.DAT’ appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. The example adheres to the case scale, and the more complex case (here the dative) is the internal case, so

the example is grammatical.

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

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

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

The two examples in which nominative and dative compete are highlighted in Table 4.12. The light gray marking corresponds to (13), in which the external dative wins over the internal nominative, but the relative pronoun is not allowed to surface in the dative case (or in the losing nominative case). The dark gray marking corresponds to (15), in which the internal dative wins over the external nominative, and the relative pronoun is allowed to surface in the dative case (and in the losing nominative case).

Table 4.12: Summary of Modern German headless relatives (NOM – DAT)

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

I end with the competition between dative and accusative. Following the case

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

I start again with the situation in which the external case wins the competition, and there is no grammatical outcome possible. Consider the example in (17). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *mögen* ‘to like’ takes accusative objects. The external case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The relative pronoun *wem* ‘REL.AN.DAT’ appears in the external case: the dative. The relative pronoun is not marked in bold, just as the main clause, showing that the relative pronoun patterns with the main clause. The example adheres to the case scale, but the more complex case (here the dative) is not the internal case. As only the internal can win the case competition in Modern German, the example is ungrammatical.

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

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

- (18) *Ich vertraue wen **auch Maria**
 1SG.NOM trust.PRES.1SG_[DAT] REL.AN.ACC also Maria.NOM
mag.
 like.PRES.3SG_[ACC].
 ‘I trust whoever Maria also likes.’

(Modern German, adapted from Vogel 2001: 345)

Now I turn again to the situation in which the internal case wins the competition, and there is a grammatical outcome possible. Consider the example in (19). In this example, the internal dative case competes against the external accusative case. The internal case is dative, as the predicate *vertrauen* ‘to trust’ takes dative objects. The external case is accusative, as the predicate *einladen* ‘to invite’ takes accusative objects. The relative pronoun *wem* ‘REL.AN.DAT’ appears in the internal case: the dative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause. The example adheres to the case scale, and the more complex case (here the dative) is the internal case, so the example is grammatical.

- (19) Ich lade ein **wem** auch Maria
 1SG.NOM invite.PRES.1SG_[ACC] REL.AN.DAT also Maria.NOM
vertraut.
 trust.PRES.3SG_[DAT].
 ‘I invite whoever Maria also trusts.’

(Modern German, adapted from Vogel 2001: 344)

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

- (20) *Ich lade ein **wen** auch Maria
 1SG.NOM invite.PRES.1SG_[ACC] REL.AN.ACC also Maria.NOM
vertraut.
 trust.PRES.3SG_[DAT].
 ‘I invite whoever Maria also trusts.’

(Modern German, adapted from Vogel 2001: 344)

The two examples in which nominative and dative compete are highlighted in Table 4.13. The light gray marking corresponds to (13), in which the external dative

wins over the internal nominative, but the relative pronoun is not allowed to surface in the dative case (or in the losing accusative case). The dark gray marking corresponds to (19), in which the internal dative wins over the external accusative, and the relative pronoun is allowed to surface in the dative case (and in the losing accusative case).

Table 4.13: Summary of Modern German headless relatives (ACC – DAT)

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

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

4.4 Only external case allowed

This section discusses the situation in which only the external case is allowed to surface when it wins the case competition. When the internal case wins the case competition, the result is ungrammatical. Schematically, this looks as in Table 4.14 (repeated from Table 4.3).

Table 4.14: Only external case allowed (repeated)

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

To my knowledge, this pattern is not attested in any natural language, whether extinct or alive. For Classical Greek it has been claimed in the literature that it follows this pattern. I show that Classical Greek actually patterns with Gothic and Old High German.

It has been claimed that Classical Greek only allows the external case to surface when it wins the case competition (cf. Cinque, 2020). It does indeed seem to be the case that examples in which the external case wins over the internal case are more frequent than examples in which the internal case wins over the external case (see Kakarikos 2014 for numerous examples of these cases).⁵ I start with an example of such a situation, in which a more complex external case wins over a less complex internal case.

Consider the example in (21). In this example, the internal accusative case competes against the external dative case. The internal case is accusative, as the predicate *tíktō* ‘to give birth to’ takes accusative objects. The external case is dative, as the predicate *ékho* ‘to provide’ takes dative indirect objects. The relative pronoun *hō* ‘REL.SG.M.ACC’ appears in the internal case: the accusative. The relative pronoun is not marked in bold, unlike as the relative clause, showing that the relative pronoun patterns with the main clause.

- (21) *pān tò tekòn trophèn ékhei hō án*
 any parent.SG.NOM food.SG.ACC provide.PRES.3SG REL.SG.M.DAT MOD
 tékē
 gives birth.AOR.3SG
 ‘any parent provides food to what he would have given birth to’
 (Classical Greek, Pl. Men. 237e, adapted from Kakarikos 2014: 292)

This example is compatible with the picture of Classical Greek only allowing the external case to surface when it wins the competition. In Table 4.15, I mark the example (21) in gray in the external-only pattern taken from the beginning of this section.

⁵In this dissertation I do not address the question of why certain constructions and configurations are more frequent than others. My goal is to set up a system that generates the grammatical patterns and excludes the ungrammatical or unattested patterns.

Table 4.15: Classical Greek possibility 1

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

However, the example is also compatible with the picture of Classical Greek allowing the internal or the external case to surface when either of them wins the case competition. In Table 4.16, I mark the example (21) in gray in the internal-and-external pattern taken from Section 4.2

Table 4.16: Classical Greek possibility 2

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

What sets Table 4.15 and Table 4.16 apart is the lower left corner of the table. These are cases in which the internal case wins the case competition. In Table 4.15 these examples are not allowed to surface, and in Table 4.16 they are. In what follows, I give an example in which a more complex internal case wins over a less complex external case. This indicates that Classical Greek cannot be of the type shown in Table 4.15, but it has to be of the type shown in Table 4.16. In other words, it is not of the type that only allows the external case to surface when it wins the case competition.

Consider the example in (22). In this example, the internal accusative case competes against the external nominative case. The internal case is accusative, as the predicate *philéo* ‘to love’ takes accusative objects. The external case is nominative,

as the predicate *apothnēiskō* ‘to die’ takes nominative subjects. The relative pronoun *hòn* ‘REL.SG.M.ACC’ appears in the internal case: the accusative. The relative pronoun is marked in bold, just as the relative clause, showing that the relative pronoun patterns with the relative clause.⁶

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

This example shows that Classical Greek is not an instance of the third possible pattern, in which only the external case is allowed to surface. Instead, as illustrated by Table 4.17, the language allows the external case (marked light gray) and the internal case (marked dark gray) to surface when either of them wins the case competition.

Table 4.17: Summary of Classical Greek headless relatives

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

I do not give examples that correspond to the cells not highlighted in Table 4.17. The only kind of system that is compatible with the examples given is the one in which the internal or external case is allowed to surface when either of them wins the case competition. For more examples in which the external case wins, I refer the reader to Kakarikos (2014: 292-294). An example in which the external dative wins over the internal nominative can be found in Noussia-Fantuzzi (2015). I am not aware of an example in which the internal dative wins over the external accusative.

To sum up, to my knowledge, there is no language in which only the external case is allowed to surface when it wins the case competition, and the internal case

⁶The sentence in (22) can also be analyzed as a headed relative, in which the relative clause modifies the phonologically empty subject of *apothnēiskō* ‘to die’. Then, however, more needs to be said about how it is possible for a relative clause to modify a phonologically empty element.

is not. Classical Greek, which has been mentioned in the literature as an instance of this pattern, actually patterns with Gothic and Old High German in that it allows the internal and the external case to surface.

4.5 Internal and external case not allowed

This section discusses the situation in which neither the internal nor the external case is allowed to surface when it wins the case competition. When the internal case or the external is more complex, it is not allowed to surface, and the headless relative construction is ungrammatical. In other words, when the internal and the external case differ, there is no grammatical headless relative construction possible. Schematically, this looks as in Table 4.18 (repeated from Table 4.4).

Table 4.18: Neither internal nor external allowed (repeated)

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

An example of a language that shows this pattern is Polish. In this section I discuss the Polish data, based on the research of Citko (2013) after Himmelreich (2017). I only discuss the case competition between accusative and dative, as only this data is discussed. This does not change anything about the point I am making here: the only kind of system that is compatible with the examples given is the one in which neither the internal nor the external case is allowed to surface.

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

I start with the situation in which the external case wins the competition, and there is no grammatical outcome possible. Consider the example in (23). In this ex-

- (25) *Jan lubi **komu** **-kolkwiek dokucza.**

Jan like.3SG_{ACC} REL.DAT.M.SG ever tease.3SG_{DAT}

‘Jan likes whoever he teases.’

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

The example in (26) is identical to (25), except for that the relative pronoun appears in the external less complex accusative case. This example is also ungrammatical: the external case is less complex, and the external case is not allowed to surface when it wins the case competition.

- (26) *Jan lubi kogo **-kolkwiek dokucza.**

Jan like.3SG_{ACC} REL.ACC.M.SG ever tease.3SG_{DAT}

‘Jan likes whoever he teases.’

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

The two examples in which nominative and dative compete are highlighted in Table 4.19. The light gray marking corresponds to (17), in which the external dative wins over the internal accusative, but the relative pronoun is not allowed to surface in the dative case (or in the losing accusative case). The dark gray marking corresponds to (25), in which the internal dative wins over the external accusative, but the relative pronoun is not allowed to surface in the dative case (or in the losing accusative case).

Table 4.19: Summary of Polish headless relatives

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

In sum, Polish is an instance of a language that allows neither the internal case nor the external case to surface. When the internal and the external case differ in Polish, there is no way to form a grammatical headless relative construction.

4.6 Summary

In case competition in headless relatives two aspects play a role. The first one is which case wins the case competition. It is a crosslinguistically stable fact that this is determined by the case scale in (27), repeated from Chapter 2. A case more to the right on the scale wins over a case more to the left on the scale.

$$(27) \quad \text{NOM} < \text{ACC} < \text{DAT}$$

The second aspect is whether the internal and the external case are allowed to surface when they win the case competition. This differs across languages. There are four possible patterns: (1) a pattern in which the external or the internal case are allowed to surface when either of them wins, (2) a pattern in which only the internal case is allowed to surface when it wins, (3) a pattern in which only the external case is allowed to surface when it wins, and (4) a pattern in which neither the internal nor the external case is allowed to surface.

Gothic, Old High German and Classical Greek are examples of languages of the first type. Modern German is an example of a language of the second type. Polish is an example of a language of the fourth type. To my knowledge, the third pattern is not attested. A summary of the patterns and languages is given in Table 4.20.

EXT, INT

Table 4.20: Possible patterns in headless relatives with case competition

INT>EXT		EXT>INT		language
INT	EXT	INT	EXT	
✓	*	*	✓	Old High German
✓	*	*	*	Modern German
*	*	*	✓	n.a.
*	*	*	*	Polish

It is impossible to prove that this pattern does not exist (or has not existed) in any natural language, and it could be an accidental gap. However, in line with the

available data so far, I set up a system in the next section that derives the three attested patterns, and excludes the fourth one.

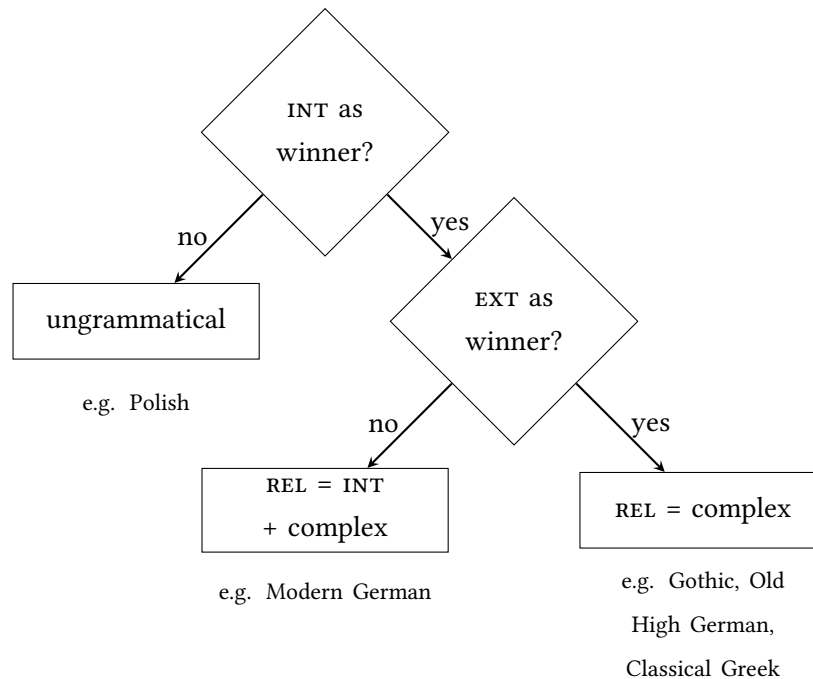


Figure 4.1: Overview attested headless relatives with case competition

4.7 **Aside: languages without case competition**

Two languages that come close to being of the third type discussed in Section 4.4 are Old English and Modern Greek. In this section I show that these two languages are actually languages that lack case competition.

In this chapter so far, I discussed languages that show case competition. There are also languages that do not show any case competition. In these languages, the internal case and the external case do not compete to show their case on the relative pronoun. It is irrelevant how the two cases relate to each other on the case scale. Instead, it is fixed per language whether the relative pronoun appears in the external or the internal case. Logically, there are two possible languages: one that lets the

relative pronoun appear in the internal case, and one that lets the relative pronoun appear in the external case.

Table 4.31 shows the pattern of a language in which the relative pronoun always appears in the internal case. In the second row, the internal case is nominative and the external case is either accusative or dative. The relative pronoun appears in the nominative. It is irrelevant here that the nominative is less complex than the accusative and the dative, because there is no case competition taking place. The third row shows that the relative pronoun always appears in the accusative when the internal case is the accusative, and the fourth row shows the same for the dative. To my knowledge, this type is not attested in any natural language.

Table 4.21: Always internal case

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

Table 4.32 shows the pattern of a language in which the relative pronoun always appears in the external case. In the second column, the external case is nominative and the internal case is either accusative or dative. The relative pronoun appears in the nominative. It is irrelevant here that the nominative is less complex than the accusative and the dative, because there is no case competition taking place. The third column shows that the relative pronoun always appears in the accusative when the external case is the accusative, and the fourth column shows the same for the dative.

This example is compatible with three patterns. First, Old English could be a case competition language that only allows the external case to surface. In Table 4.23, I

mark the example (28) in gray in the external-only pattern taken from Section 4.4.

Table 4.23: Old English possibility 1

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

Second, Old English could be a case competition language that allows the internal case and external case to surface. In Table 4.24, I mark the example (28) in gray in the internal-and-external pattern repeated from Section 4.2.

Table 4.24: Old English possibility 2

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

Third, Old English could be a language without case competition that lets the relative pronoun appear in the external case. In Table 4.25, I mark the example (28) in gray in the always-external pattern repeated from Table 4.32.

Table 4.25: Old English possibility 3

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

What sets Table 4.23, Table 4.24 and Table 4.25 apart is the lower left corner of the table. These are cases in which the internal case is more complex than the external case.

In Table 4.23 the winning case is not allowed to surface, and there is no grammatical headless relative possible. If this is the pattern that Old English shows, then it would be a language with case competition that only allows the external case to surface, i.e. it would be of the type of Section 4.4 I claimed did not exist.

In Table 4.24 and in Table 4.25 there is a relative pronoun that can surface, but the case of the relative pronouns differs. In Table 4.24, the relative pronoun surfaces in the more complex case that wins the case competition: the internal case. In Table 4.25, there is no case competition taking place, and the relative pronoun surfaces in the external case.

In the example that follows I show that Old English is of the type in Table 4.25. I give an example in which the internal case is more complex than the external one. Nevertheless, the relative pronoun surfaces in the less complex external case. Old English is namely a language without case competition that lets the relative pronoun surface in the external case.

Consider the example in (29). The internal case is dative, as the preposition *onuppan* ‘upon’ takes dative objects. The external case is accusative, as the predicate *tōbrȳsan* ‘to pulverize’ takes accusative objects. The relative pronoun *ðone* ‘REL.SG.ACC’ appears in the external case: the accusative. The relative pronoun appears in the external case, although it is the less complex case of the two. The example is grammatical, because Old English does not show case competition, so the case scale is irrelevant. As long as the relative pronoun appears in the external case, the headless relative is grammatical.

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

(Old English, adapted from Harbert 1983: 550)

This example shows that Old English is not an instance of the pattern in Section 4.4, in which only the external case is allowed to surface. Instead, as illustrated by

Table 4.26, the language does not have any case competition. The relative pronoun appears in the external case: the external case can be the more complex case, illustrated by the example in (28), marked here in light gray, or the external case can be the less complex case, illustrated by the example in (29), marked here in dark gray.

Table 4.26: Summary of Old English headless relatives

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

I do not give examples that correspond to the cells not highlighted in Table 4.26. The only kind of system that is compatible with the examples given is the one in which the relative pronoun always appears in the external case.

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

Consider the example in (30). The internal case is nominative, as the predicate *voíθisó* ‘to help’ takes nominative subjects. The external case is accusative, as the predicate *efχarístisó* ‘to thank’ takes accusative objects. The relative pronoun *ópjus* ‘REL.PL.M.ACC’ appears in the external case: the accusative. The relative pronoun is not marked in bold, unlike the relative clause, showing that the relative pronoun patterns with the main clause.

- (30) Efχarístisa ópjus **me** **voíθisan.**
 thank.PST.3PL_[ACC] REL.PL.M.ACC CL.1SG.ACC help.PST.3PL_[NOM]
 ‘I thanked whoever helped me.’

(Modern Greek, adapted from Daskalaki 2011: 80)

This example is compatible with three patterns. First, Modern Greek could be a case

competition language that only allows the external case to surface. In Table 4.27, I mark the example (30) in gray in the external-only pattern taken from Section 4.4.

Table 4.27: Modern Greek possibility 1

INT^{EXT}	[NOM]	[ACC]	[GEN]
[NOM]	\times	ACC	GEN
[ACC]	*	\times	GEN
[GEN]	*	*	\times

Second, Modern Greek could be a case competition language that allows the internal case and external case to surface. In Table 4.28, I mark the example (30) in gray in the internal-and-external pattern repeated from Section 4.2.

Table 4.28: Modern Greek possibility 2

INT^{EXT}	[NOM]	[ACC]	[GEN]
[NOM]	\times	ACC	GEN
[ACC]	ACC	\times	GEN
[GEN]	GEN	GEN	\times

Third, Modern Greek could be a language without case competition that lets the relative pronoun appear in the external case. In Table 4.29, I mark the example (30) in gray in the always-external pattern repeated from Table 4.32.

Table 4.29: Modern Greek possibility 3

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

What sets Table 4.27, Table 4.28 and Table 4.29 apart is the lower left corner of the table. These are cases in which the internal case is more complex than the external case.

In Table 4.27 the winning case is not allowed to surface, and there is no grammatical headless relative possible. If this is the pattern that Modern Greek shows, then it would be a language with case competition that only allows the external case to surface, i.e. it would be of the type of Section 4.4 I claimed did not exist.

In Table 4.28 and in Table 4.29 there is a relative pronoun that can surface, but the case of the relative pronouns differs. In Table 4.28, the relative pronoun surfaces in the more complex case that wins the case competition: the internal case. In Table 4.29, there is no case competition taking place, and the relative pronoun surfaces in the external case.

In the example that follows I show that Modern Greek is of the type in Table 4.29. I give an example in which the internal case is more complex than the external one. Nevertheless, the relative pronoun surfaces in the less complex external case. Modern Greek is namely a language without case competition that lets the relative pronoun surface in the external case.

Consider the example in (31). The internal case is accusative, as the predicate *irθó* ‘to invite’ takes accusative objects. The external case is accusative, as the predicate *kálesó* ‘to come’ takes nominative subjects. The relative pronoun *ópi* ‘REL.PL.M.NOM’ appears in the external case: the nominative. The relative pronoun appears in the external case, although it is the less complex case of the two. The example is grammatical, because Modern Greek does not show case competition, so the case scale is irrelevant. As long as the relative pronoun appears in the external

case, the headless relative is grammatical.

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

(Modern Greek, adapted from Daskalaki 2011: 80)

The example in (32) is identical to (31), except for that the relative pronoun appears in the internal more complex case. This example is ungrammatical: the relative pronoun does not appear in the external case. The fact that the internal case is more complex is irrelevant.

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

(Modern Greek, adapted from Daskalaki 2011: 79)

This example shows that Modern Greek is not an instance of the pattern in Section 4.4, in which only the external case is allowed to surface. Instead, as illustrated by Table 4.30, the language does not have any case competition. The relative pronoun appears in the external case: the external case can be the more complex case, illustrated by the example in (30), marked here in light gray, or the external case can be the less complex case, illustrated by the example in (31), marked here in dark gray.

Table 4.30: Summary of Modern Greek headless relatives

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

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

make it grammatical (Daskalaki, 2011).

Consider the example in (33). The internal case is genitive, as the predicate *eðósó* ‘to give’ takes genitive objects. The external case is accusative, as the predicate *efxarístisó* ‘to thank’ takes nominative subjects. The relative pronoun *ópjon* ‘REL.PL.M.NOM’ appears in the external case: the nominative. The relative pronoun appears in the external case, although it is the less complex case of the two. The example is grammatical, because Modern Greek does not show case competition, so the case scale is irrelevant. As long as the relative pronoun appears in the external case, the headless relative is grammatical. In addition, the relative clause obligatorily contains the genitive clitic *tus* ‘CL.3PL.GEN’.⁷

- (33) Me efxarístisan ópji **tus** **íxa**
 CL.1SG.ACC thank.PST.3PL_[NOM] REL.PL.M.NOM CL.3PL.GEN have.PST.1SG
ðósi **leftá.**
 give.PTCP_[GEN] money
 ‘Whoever I had given money to, thanked me.’
 (Modern Greek, adapted from Daskalaki 2011: 80)

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

I do not give examples that correspond to the cells not highlighted in Table 4.30. The only kind of system that is compatible with the examples given is the one in which the relative pronoun always appears in the external case. For more examples that illustrate this pattern, I refer the reader to Daskalaki (2011: 79-80).

Taking this all together, I have not encountered a language that only allows the external case to surface when it wins the case competition. Modern Greek and Old English come close, because they always let the relative pronoun surface in the

⁷In Modern German, it is possible to insert a light head to resolve a situation with a more complex external case. However, then the relative pronoun has to change as well (from a WH-pronoun into a D-pronoun). I assume this is a different construction, and the Modern Greek one with the clitic inserted is not.

external case. The crucial difference with the non-attested pattern is that they do not show any case competition.

4.7.2 A typology of headless relatives

I combine

Table 4.31: Always internal case

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

Table 4.32: Always external case

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

Table 4.33: Either internal or external case allowed

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

Table 4.34: Only internal case allowed

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

Table 4.35: Only external case allowed

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

Table 4.36: Neither internal nor external allowed

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

Table 4.37: Possible patterns in headless relatives

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

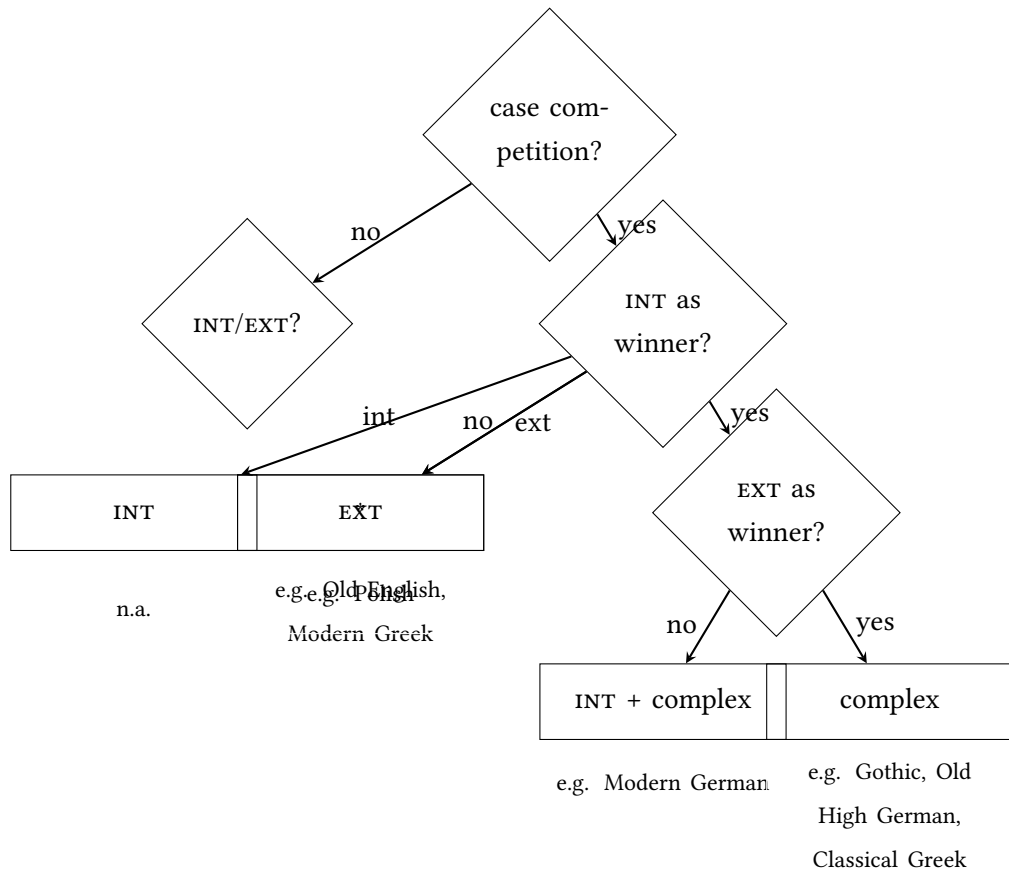


Figure 4.2: Overview attested headless relatives

Chapter 5

The derivations of the patterns

In the previous chapter I showed that languages with case competition come in two variants. First, there are languages that allow the internal and external case to surface when they win the competition, such as Gothic and Old High German. Second, there are languages that only allow the internal case to surface when it wins the competition, such as Modern German. Crucially, there is no language that only allows the external case to surface when it wins the competition.

The aim of this chapter is twofold. Third, I discuss how the difference between internal-and-external languages and internal-only languages can be derived. I introduce both matters a bit more in this introduction. Second, I discuss how the non-existence of the external-only pattern can be explained.

Let me now turn to the matter of crosslinguistic differences. Every speaker of a language needs to learn what the pattern for its language is. Headless relatives are infrequent, is what can be said about at least Modern German. Even though not everybody likes the construction to begin with (they prefer (light-)headed relatives), people seem to have the clear intuition that INT>EXT is much better than the other way around. It seems implausible that learners of German learn this pattern from the few examples they got (there are just too few to make a generalization). Still, the intuition exist. And it is very particular: more complex case wins over less complex case, but only if the internal case is more complex than the external case. This already sounds hard to learn from the input as a generalization. People have also been describing it like this: formulation from Cinque in his book. If it does not

come from the input, where does it come from? I claim that it comes from other properties of the language. In Grosu's terminology: is it derived or basic? Ideally, we would want it to be derived.

A similar avenue was pursued by Himmelreich 2017. She specific languages for having different types of agree (up, down) and different types of probes (active, non-active). Doing that, she successfully derived free relatives and parasitic gaps in different languages. Grosu 1994 linked richness of inflection to liberality. He actually talked about the richness of *pro*.

The crucial difference with I'm doing is that I'm not relying on an arbitrary value I assigned to a language (say null head is active probe, probing only happens upwards). Like I briefly mentioned in Chapter 3, Nanosyntax models crosslinguistic variation as differences in the lexicon, how the features are packaged together differently. That means that I look for patterns within the languages themselves, and let the facts of the headless relatives follow from those. Specifically, I derive the different behaviors from relative pronouns and the external head that I introduce in this chapter.

In Section 5.1 I discuss the situation in which the internal case wins the competition and the relative pronoun surfaces in the internal case. This situation is attested in all languages with case competition: the internal-only ones, such as Modern German, and the internal-and-external ones, such as Gothic and Old High German.

In Section 5.3 I discuss the situation in which the external case wins the case competition and the relative pronoun surfaces in the external case. This situation is not attested in all of the case competition languages. This situation arises if the external head contains all case features of the internal head. In addition, and this is what distinguishes the internal-and-external languages from the internal-only languages, the features of the relative pronoun are a subset of the features of the external head. So, *em* cannot delete *wen*, but *dem* can delete *den*.

From these two proposals follows that it is impossible to have third pattern, which is indeed also not attested. When the external case wins over the internal one, there is a situation in which the external case could delete the internal one. So, it is impossible to have the second option but not the first one.

5.1 Internal case wins

This section discusses the situation in which the internal case wins the case competition and the relative pronoun surfaces in the internal case. These examples are grammatical in languages that allow internal-and-external languages, such as Gothic and Old High German, and also in internal-only languages, such as Modern German.

In (1) I give examples from all three languages in which the internal accusative case wins the case competition over the external nominative, and the relative pronoun appears in the more complex internal accusative case.

- (1) a. Uns besucht **wen** **Maria** **mag**.
 we.ACC visit.3SG_[NOM] REL.ACC.AN Maria.NOM like.3SG_[ACC]
 ‘Who visits us, Maria likes.’
 (Modern German, adapted from Vogel 2001: 343)
- b. thíz ist **then** **sie**
 DEM.SG.N.NOM be.PRES.3SG_[NOM] REL.SG.M.ACC 3PL.M.NOM
zélent
 tell.PRES.3PL_[ACC]
 ‘this is the one whom they talk about’
 (Old High German, Otfrid III 16:50)
- c. þan -ei frijos siuks ist
 REL.SG.M.ACC -COMP love.PRES.2SG_[ACC] sick be.PRES.3SG_[NOM]
 ‘the one whom you love is sick’
 (Gothic, John 11:3, adapted from Harbert 1978: 342)

In this section, I set up the system in Modern German. Once I showed how the pattern is derived for Modern German, I show that the same mechanisms work for Gothic and Old High German.

In the situation described in this section, the relative pronoun appears in the internal case. This seems to suggest that the relative pronoun is syntactically part of the relative clause.

In Section 5.1.1 I give independent evidence from extraposition that the relative pronoun in Modern German indeed is part of the relative clause. Section 5.1.2

introduces two issues that arise when assuming that there is nothing more than a relative pronoun in the relative clause. The first issue is that there is no carrier for the external case. The second one is that there is no way to distinguish between languages like Modern German and Polish, which does not allow for any case conflicts in its headless relatives. In Section 5.1.3 I show that both these issues are resolved by introducing an external head. The existence of this element is independently motivated by languages that overtly show it. Section 5.1.4 I show that this element contains a subset of the features that the relative pronoun contains. Section 5.1.5 places the external head in a syntactic position from which it is c-commanded by the relative pronoun and it can receive case from the main clause predicate. In 5.2, I present my proposal for the situation in which the internal case wins in Modern German, Gothic and Old High German. If the case features of external head form a subset of the case features of the relative pronoun, the relative pronoun can delete the external head.

5.1.1 Relative pronouns in the relative clause

In this section I show that the relative pronoun in Modern German headless relatives is part of the relative clause. The evidence comes from extraposition (first given by Groos and van Riemsdijk 1981). In Modern German, it is possible to extrapose a CP (a clause), but not a DP (a noun phrase). In this section I first show that Modern German CPs can be extraposed and DPs cannot. I illustrate how that the same pattern appears in headed relative clauses: the relative clause can be extraposed, but not including the head of the relative clause. Headless relative pattern with their headless counterparts: relative clauses can be extraposed including their relative pronoun. This indicates that the relative pronoun is part of the relative clause.

The sentences in (2) show that it is possible to extrapose a CP. In (2a), 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 (2b).

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

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

(3) illustrates that it is impossible to extrapose a DP. The clausal object of (2) is replaced by the simplex noun phrase *die Sache* 'that matter'. In (3a) the object, marked in bold, appears in its base position. In (3b) it is extraposed, and the sentence is no longer grammatical.

- (3) 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 (4) 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*. In (4a), the relative clause and its head appear in base position. In (4b), the relative clause is extraposed. This is grammatical, because it is possible to extrapose CPs in Modern German. In (4c), the relative clause and the head are extraposed. This is ungrammatical, because it is possible to extrapose DPs.

- (4) 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.'

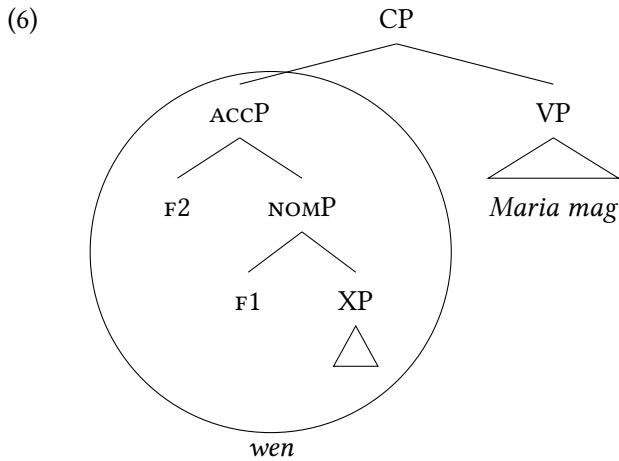
The same can be observed in relative clauses without a head. (5) is the same sentence as in (4) only without the overt head. The relative clause is marked in bold again. In (5a), the relative clause appears in base position. In (5b), the relative clause is extraposed. This is grammatical, because it is possible to extrapose CPs in Modern German. In (5c), 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.

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

In conclusion, extraposition facts show, independently of the case facts, that the relative pronoun in Modern German is syntactically part of the relative clause.

5.1.2 Two open issues

The previous section showed that the relative pronoun in a Modern German headless relative is syntactically part of the relative clause. The analysis is as follows: the relative pronoun (part of the relative clause) takes the case of the predicate in the relative clause. The sentence is grammatical if the external case is contained in the relative clause case.



Now there are two problems, two subjects that need more said about them.

(1) An important requirement here is that the external case is less complex than the internal one! Is this part of the derivation as well? Because it is clear that somehow reference needs to be made to it. So far we have this picture: no external case yet.

(2) why do not all languages behave like Modern German? Where is space for differences between languages? For Gothic and Old High German we are still ok, because we also allow for this type of case attraction there. But how about a language like Polish, that does not allow for it? How can this type of case attraction be excluded?

In this section I first lay out these two problems in more detail. The next section introduces a head, external to the relative clause, that solves both these problems.

5.1.2.1 How to get access to external case

The first open issue with the analysis in X is how the relative pronoun gets access to the external case.

The relative pronoun in Modern German headless relatives is sensitive to both the internal and the external case. Consider the examples in (7). In both sentences, the internal case is accusative, because the predicate in the relative clause *mögen* ‘to like’ takes accusative objects. The external case differs between the two sentences. In (7a) the external case is dative, because the predicate *vertrauen* ‘to trust’ takes

dative objects. In (1a), the external case is nominative, because *besuchen* ‘to visit’ takes nominative subjects.

- (7) a. *Ich vertraue wen **auch Maria mag.**
 I.NOM trust.1SG_[DAT] REL.ACC.AN also Maria.NOM like.3SG_[ACC].
 ‘I trust whoever Maria also likes.’ (adapted from Vogel 2001: 345)
- b. 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 sentence in (7a) is ungrammatical, and the one in (1a) is not. The internal case cannot be the source of ungrammaticality, because the relative clauses are identical regarding case, i.e. they both take accusative. The external case differs, however. In Chapter X I showed that headless relatives in Modern German are (just like e.g. Gothic) sensitive to the case scale: NOM < ACC < DAT.

(7a) is grammatical, because the internal accusative case wins over the external nominative. (1a) is ungrammatical, because the internal accusative case cannot win the case competition over the external dative. It can be concluded that the relative pronoun in Modern German headless relatives cares about both the internal and the external case.

In sum, even though the relative pronoun in Modern German headless relatives is always part of the relative clause, the relative pronoun also takes the external case into account. That means that the relative pronoun needs to have access to the main clause case. I propose that this can be achieved by introducing an external head to the relative clause. In Section X I show how this solves the issue.

5.1.2.2 How to disallow the pattern

The second issue with the analysis in X is how to disallow the Modern German pattern for other languages.

In Chapter X I showed that there are also languages that do not show case competition. Polish is an example of a language that only allows for headless relatives when the internal and the external case match (or when the relative pronoun is syncretic for these cases). The language is so-called ‘strictly matching’.

- (8) a. *Jan ufa kogokolkwiek wpuścił do domu.
 Jan trust.3SG_{DAT} REL.ACC.M.SG let.3SG_{ACC} to home
 ‘Jan trusts whoever he let into the house.’
 b. *Jan ufa komukolkwiek wpuścił do domu.
 Jan trust.3SG_{DAT} REL.DAT.M.SG let.3SG_{ACC} to home
 ‘Jan trusts whoever he let into the house.’
- (9) a. *Jan lubi kogokolkwiek dokucza.
 Jan like.3SG_{ACC} REL.ACC.M.SG tease.3SG_{DAT}
 ‘Jan likes whoever he teases.’
 b. *Jan lubi komukolkwiek dokucza.
 Jan like.3SG_{ACC} REL.DAT.M.SG tease.3SG_{DAT}
 ‘Jan likes whoever he teases.’

Consider the Polish and German example below.

- (10) a. *Jan lubi **komu** **(kolwiek) dokucza.**
 Jan like.3SG_[ACC] REL.DAT.SG.AN ever tease.3SG_[DAT]
 ‘Jan likes whoever he teases.’ (Polish)
- b. Ich lade ein **wem** **auch Maria** **vertraut.**
 I.NOM invite.1SG_[ACC] REL.DAT.AN also Maria.NOM trust.3SG_[DAT].
 ‘I invite whoever Maria also trusts.’
 (Modern German, adapted from Vogel 2001: 344)

Why is the German sentence grammatical and the Polish one not? I do not want to say that one language allows for case competition and the other one does not. Instead, the difference follows from something within the language.

On the surface forms of these headless relatives, there is nothing that differs between them. However, a closely related construction, the light-headed relative, does show a difference between the languages.

I propose that headless relatives are derived from a construction that contains an external head. This allows for making a distinction between languages that show case competition (like Modern German) and languages that do not (like Polish). In Section X I show how this solves the issue.

5.1.3 Solution: an external head

I propose a single answer to both issues raised in Section X: relative clauses in headless relatives have an external heads. So even though we say these relatives are headless relatives, at some point in the derivation there actually is a head of the relative clause.

This is the head of the relative clause, and it is deleted in Modern German (as long as it contains all cases of the relative pronoun). This external head in Polish is not deleted, because it does not add any extra definiteness or indefiniteness. Before I show how this works exactly, I show some independent evidence for assuming that there is this head.

5.1.3.1 Languages with two heads

There is also independent evidence for this head, namely from languages that actually let the head surface.

Here there are two identical copies of the head, one inside the relative clause, one outside of the relative clause.

- (11) [**doü** adiyano-no] **doü** deyalukhe
 sago give.3PL.NONFUT-CONN sago finished.AJD
 ‘The sago that they gave is finished.’ (Kombai, Dryer 2005)

I give an example of a language in which the external head follows the relative clause. There are also languages in which the head precedes the relative clause, e.g. xx

The external head is not always an exact copy of the head inside of the relative clause. An example from xx here shows that the head outside of the relative clause can also be a subset of what the element inside of the relative clause is. In this case, there is an *old man* and a *person*.

- (12) [**yare** gamo khereja bogi-n-o] **rumu** na-momof-a
 old man join.ss work DUR.do.3SG.NF-TR-CONN person my-uncle-PRED
 ‘The old man who is joining the work is my uncle.’

So, we have the head. Translating this to relative pronouns, there is the relative pronoun, and something identical or smaller than a relative pronoun outside of the relative clause. In Chapter X I show what the feature content of the head exactly is.

Let me now show how this solves the external case problems and how it helps exclude some languages.

5.1.3.2 Getting access to external case

–give here a table with on one side the tree repeated and on the other side the head, with XP at the bottom?– split the relative pronoun up in the *w* part and the other part, because this is already the subset relation

Now this accusative here can license an external nominative case. The idea is: it is inside this accusative already. We understand why it could not license a dative: *F3* is not contained in the accusative.

5.1.3.3 Disallowing the pattern

(13) Polish light-headed relative

(14) German light-headed relative

a. *das was*

b. *das das*

In German a sense of definiteness is added, because of the *D* in *das*. In Polish that is not the case, because *to* in Polish does not necessarily have definiteness. Evidence for that for Czech comes from Radek. I take that to exist for Polish as well.

So, Polish can involve a second head (the light head) without changing the meaning of the construction. German cannot. Now it is important to note the timing of this ‘repair’ strategy. This has to namely be in the course of the derivation, it cannot be something that is inserted ‘afterwards’. What I mean with this is that there needs to be an element (which is going to become the light head in Polish but not in German) that is available during the derivation. Depending on what this element looks like, Polish shows the light head.

(15) Polish

- a. rel clause with ACC
 - b. other element: NOM
 - c. t, c
- (16) German
- a. rel clause with ACC
 - b. other element: NOM
 - c. w (because d would change the meaning)

So, Polish has an ‘out’, which German does not have.

What is this external element? This is the external head, that actually shows up in some languages: double-headed relative clauses.

5.1.4 Featural content of the head

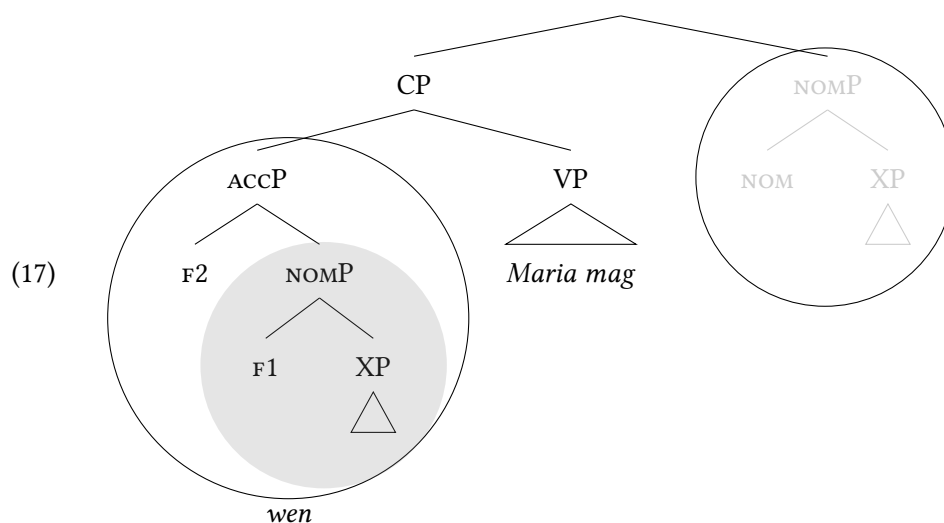
indefinite noun, as *cinque* and the content of the external head visible in some languages

5.1.5 Syntactic position of external head

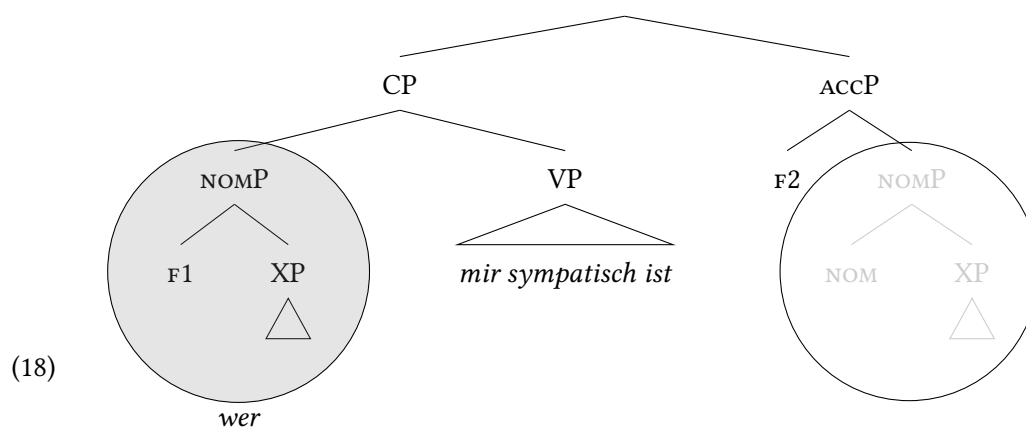
Where is this head in the syntactic structure?

- Somewhere where the relative pronoun can delete it: where it is c-commanded by the relative pronoun
- Somewhere where it can receive case from the main clause
- Where it normally is in SOV languages (does the thing in Polish move because it is a svo language?)

So this works.



But here it does not.



5.2 The proposal

as is deleted because it cannot surface on its own? why not?

what is this deletion to begin with?

Finnish is like German because its light-headed relatives also add some definiteness.

5.3 External case wins

main clause more complex: full double-headed structure, deletion of element in specCP

Why does this not happen in Modern German? no idea..

5.3.1 German

xx

5.3.2 Old High German

has attraction, so it could be derived from deletion under c-command under identity

5.3.3 Gothic

does not have attraction

5.4 Excluding the third pattern

5.5 Alternative analyses

5.5.1 Himmelreich

5.5.2 Grafting story

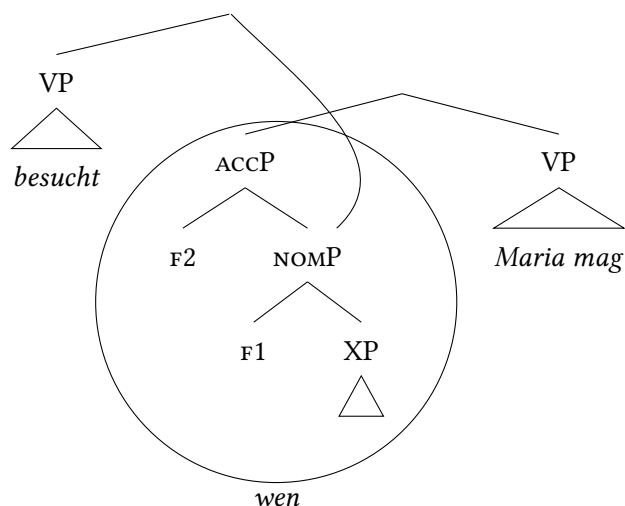
For this pattern a single element analysis seems intuitive, if you assume that case is complex and that syntax works bottom-up. First you build the relative clause, with the big case in there. Then you build the main clause and you let the more complex case in the embedded clause license the main clause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

Consider the example in (19). Here the internal case is accusative and the external one nominative.

- (19) 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.

(20)

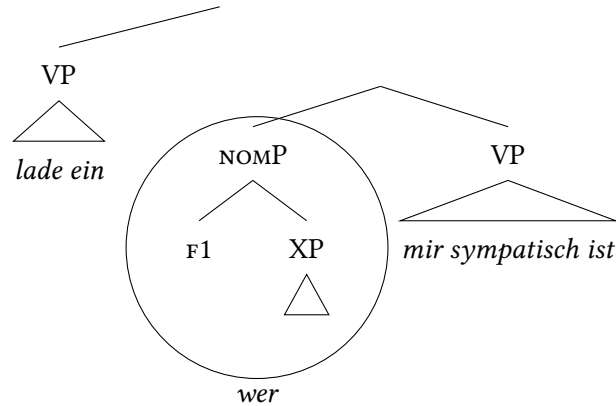


The other way around does not work. Consider (21). This is an example with nominative as internal case and accusative as external case.

- (21) *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.

(22)



So, this seems to work fine. The assumptions you have to do in order to make this are the following. First, case is complex. Second, you can remerge an embedded node (grafting). For the first one I have argued in Chapter 3. The second one could use some additional argumentation. It is a mix between internal remerge (move) and external merge, namely external remerge. Other literature on multidominance and grafting, other phenomena. Problems: linearization, .. But even if fix all these theoretical problems, there is an empirical one.

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

5.6 Summary

here

Part III

Going into detail

Chapter 6

Decomposing relative pronouns

Putting all of this together in detail

What will lead to the different derivations from the last chapter? The only source of crosslinguistic variation: different lexical entries.

That's why I talk about the internal structure of the relative pronoun and the external head

So all the behavior we see in this section is derived from how the relative pronouns and the external head is specified in the lexicon.

OHG d: spec, rel OHG wh: only interrogative

MG d: spec, rel MG wh: interrogative, rel

P d: deix, rel P wh: interrog, rel

6.1 The lexical entries

6.1.1 The paradigms

Is there any other observable difference between the languages? Yes! The shape of the relative pronouns.

This will be intuition later

- when a language's light-headed relatives are D - WH, non-matching is never allowed
- with WH morphology, the internal case can win

- with *D* morphology (or is it when the relative pronoun can take a complement?), both the external and the internal can win

Table 6.1: Relative pronouns in headless relatives in Modern German

	inanimate	AN
NOM	w-as	w-er
ACC	w-as	w-en
DAT	-	w-em

Table 6.2: Relative pronouns in headless relatives in Old High German

	N.SG	M.SG	F.SG
NOM	d-az	d-ēr	d-iu
ACC	d-az	d-ēn	d-ea/-ia/(-ie)
DAT	d-ēmu/-ēmo	d-ēmu/-ēmo	d-ēru/-ēro
	N.PL	M.PL	F.PL
NOM	d-iu/-ei	d-ē/-ea/-ia/-ie	d-eo/-io
ACC	d-iu/-ei	d-ē/-ea/-ia/-ie	d-eo/-io
DAT	d-ēm/-ēn	d-ēm/-ēn	d-ēm/-ēn

Gothic relative pronouns are built from the demonstratives plus the complementizer *ei*. Under *ei*, two phonological processes take place. First, *s* changes into *z*, e.g. in *þ-ōs* to *þ-ōz-ei*. Second, on bisyllabic elements, final vowels disappear e.g. *þ-ata* to *þ-at-ei*.

Table 6.3: Gothic demonstratives

	N.SG	M.SG	F.SG
NOM	þ-ata	sa	sō
ACC	þ-ata	þ-ana	þ-ō
DAT	þ-amma	þ-amma	þ-i-z-ái
	N.PL	M.PL	F.PL
NOM	þ-ō	þ-ái	þ-ōs
ACC	þ-ō	þ-ans	þ-ōs
DAT	þ-áim	þ-áim	þ-áim

The suffixes that appear on demonstratives are also found on 3SG pronouns. The only difference is that the demonstratives attach to a *þ(a?)*-stem and the pronouns attach to an *i*-stem. This does not hold for all forms, some seem to be suppletive.

Table 6.4: Gothic 3SG pronouns

	N.SG	M.SG	F.SG
NOM	i-ta	i-s	si
ACC	i-ta	i-na	i-ja
DAT	i-mma	i-mma	i-z-ái
	N.PL	M.PL	F.PL
NOM	i-ja	eis	i-jōs
ACC	i-ja	i-ns	i-jōs
DAT	i-m	i-m	i-m

6.1.2 Morphemes

d-pronouns, wh-pronouns

give this big table and and show which features they express with gray
 first phi and case features that form a bundle then wh
 So we also have a plural the
 and here there is the complementizer extra

6.1.3 The light head

Which features are contained in the light head?

German *das*, *was* - *an dem as*, *was* - *am*

so d is lacking

which feature is missing there? Florian Schwarz

6.1.4 Features

6.2 The spellout procedure

(1) Spellout Algorithm:

Merge F and

- a. Spell out FP.
- b. If (a) fails, attempt movement of the spec of the complement of F, and retry (a).
- c. If (b) fails, move the complement of F, and retry (a).

When a new match is found, it overrides previous spellouts.

(2) Cyclic Override (Starke, 2018):

Lexicalisation at a node XP overrides any previous match at a phrase contained in XP.

If the spellout procedure in (1) fails, backtracking takes place.

(3) Backtracking (Starke, 2018):

When spellout fails, go back to the previous cycle, and try the next option for that cycle.

If backtracking also does not help, a specifier is constructed.

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

If Merge F has failed to spell out (even after backtracking), 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.

(5) Merge F, Move XP, Merge XP

illustrate this by building the pronouns

Chapter 7

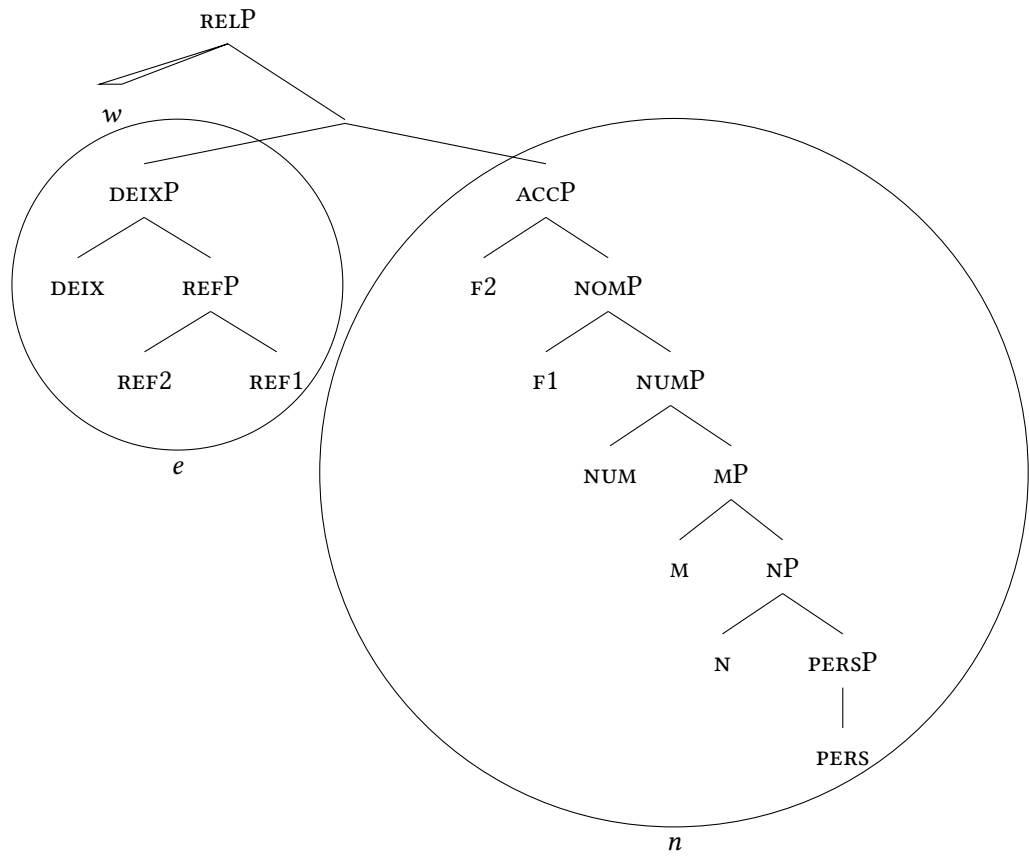
The deletion operation

7.1 Only the two heads

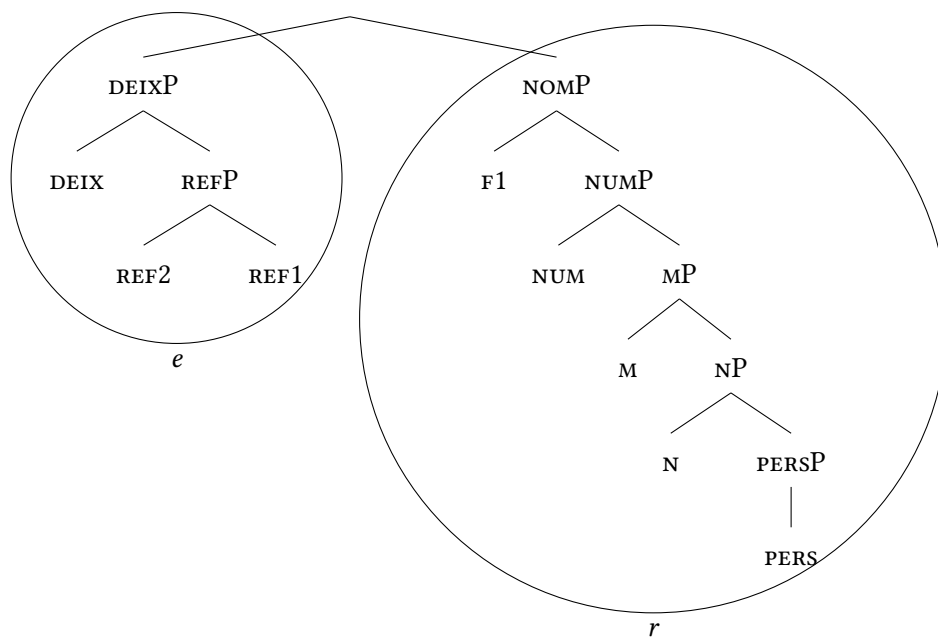
The relative pronoun deletes the second head

7.1.1 German deletion

So German relative pronoun:

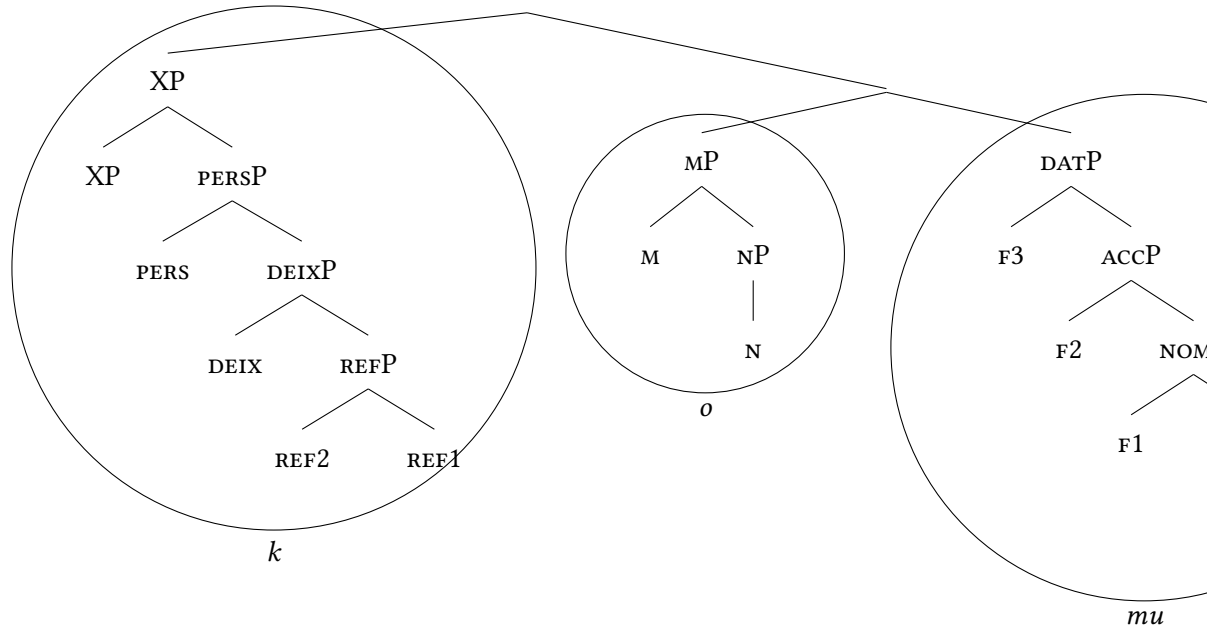


and German head:

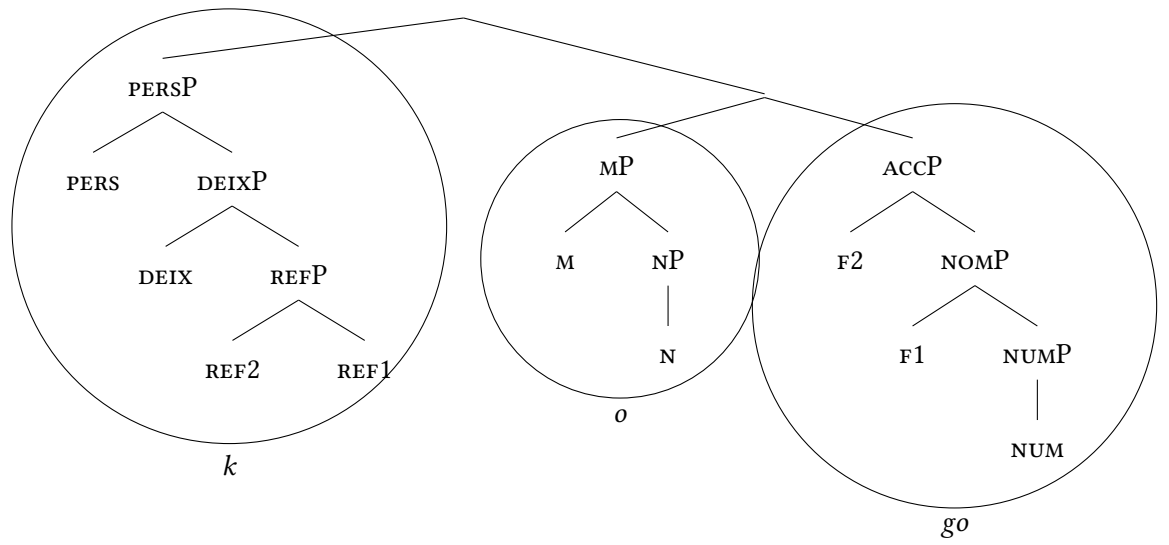


7.1.2 Polish deletion

Polish relative pronoun



Polish head



7.2 In a larger syntactic context

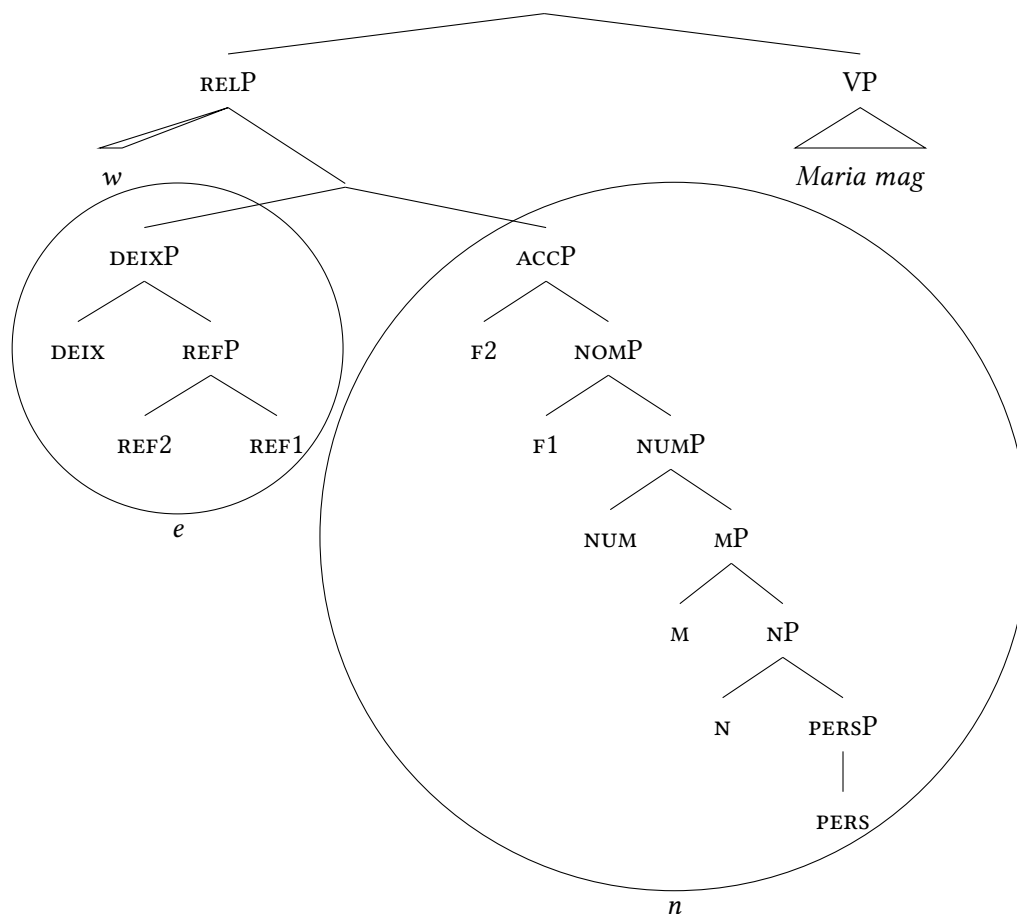
7.2.1 Internal deletes external

- (1) 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)

Internal structure of the relative clause.

w got merged as a complex spec. F1 and F2 ended up there via backtracking: taking *w* off, spec to spec movement, and spelling it out with the suffix.

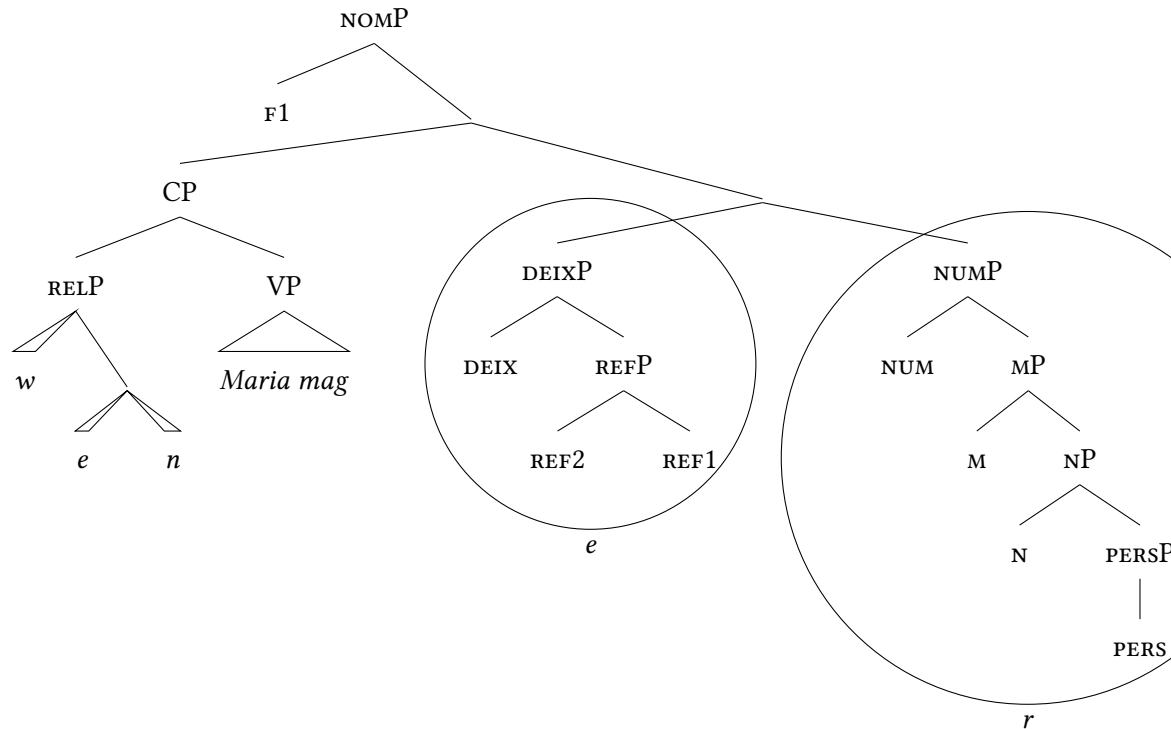
(2)



Structure of the relative clause + the external head that is going to be deleted.

Case is merged above the relative clause. Backtracking takes place, meaning that the relative clause and the head are going to be split up again. Then it can be spelled out with the suffix of the head after spec-to-spec movement.

(3)



7.2.2 External deletes internal

one like German other derived from d, d

Chapter 8

Discussion

8.1 Diachronic part

First, German only had the d-pronoun and attraction. The pattern of attraction that came with that pronoun is ext only. At some point, German invented the wh-pronoun. Helmut showed how it emerged. With that came the other pattern: int only. Some people lost the attraction (but everybody kept the d-pronoun) and with that the pattern disappeared. So the patterns in headless relatives follow from the relative pronouns in the language.

8.2 D also in Modern German

Wouldn't we now not expect that Modern German patterns with Old High German wrt attraction in headed constructions. Yes, we would. And yes, this is exactly what we see. Paper by Bader on case attraction.

First there was only the relative pronoun with a D. Then we did case competition with this one, in both directions. Later, we only did it with the wh, and we only had internal left. Because this competitor was introduced, the case competition with D disappeared.

8.3 Why FEM does not have WH-pronouns

8.4 Relativization in general

two features: topic and relativization
 topic = the movement
 relativization = the morpheme
 some languages have both, so it has be at least two features

Another language that only allows the internal case to surface after it wins the case competition.

valita 'choose' takes a partitive object

- (1) Valitsen mista sina piddt. choose-I.el what-el you like-you.part 'I choose what you like.'

pitää 'like' takes elative objects

- (2) *Pidan mista sind valitset.
 like-I.part what-el you choose-you.el
 'I like what you choose.'
- (3) *Pidan mita sind valitset.
 like-I.part what-el you choose-you.el
 'I like what you choose.'

Primary texts

Col.	Colossians, New Testament
Isid.	Der althochdeutsche Isidor
John	John, New Testament
Luke	Luke, New Testament
Men. DD.	Menander, The Double Deceiver
Mons.	The Monsee fragments
Nib.	Das Nibelungenlied
Otfrid	Otfrid's Evangelienbuch
Pl. Men.	Plato, Menexenus
Rom.	Romans, New Testament
Tatian	Tatian

Bibliography

- Arregi, Karlos and Gainko Molina-Azaola (2004). “Restructuring in Basque and the theory of agreement”. In: *Proceedings of the 23rd West Coast Conference on Formal Linguistics*. Ed. by Angelo J. Rodríguez Vineeta Chand Ann Kelleher and Benjamin Schmeiser. Somerville, MA: Cascadilla Press, pp. 43–56.
- Baerman, Matthew, Dunstan Brown, and Greville G Corbett (2002). “Surrey syncretisms database”. In: DOI: 10.15126/SMG.10/1.
- Baerman, Matthew, Dunstan Brown, and Greville G Corbett (2005). *The syntax-morphology interface: A study of syncretism*. Cambridge: Cambridge University Press.
- Behaghel, Otto (1923-1932). *Deutsche Syntax: Eine geschichtliche Darstellung*. Heidelberg: Winter.
- Bergsma, Fenna (2019). “Mismatches in free relatives — grafting nanosyntactic trees”. In: *Glossa: a journal of general linguistics* 4.1. DOI: 10.5334/gjgl.821.
- Bobaljik, Jonathan (2006). “Where’s Φ ? Agreement as a Post-Syntactic Operation”. In: *Phi-Theory: Phi Features Across Interfaces and Modules*. Ed. by Daniel Harbour, David Adger, and Susana Béjar. Oxford: Oxford University Press, pp. 295–328.
- Bobaljik, Jonathan (2012). *Universals In Comparative Morphology*. Cambridge: MIT Press. DOI: 10.7551/mitpress/9069.003.0001.
- Boretzky, Norbert (1994). *Romani: Grammatik des Kalderaš-Dialektes mit Texten und Glossar*. Wiesbaden: Harrassowitz Verlag.
- Bresnan, Joan and Jane Grimshaw (1978). “The Syntax of Free Relatives in English”. In: *Linguistic Inquiry* 9.2, pp. 331–391.
- Caha, Pavel (2009). “The Nanosyntax of Case”. PhD thesis. University of Tromsø.

- Caha, Pavel (2010). "The parameters of case marking and spell out driven movement". In: ed. by Jeroen van Craenenbroeck. Vol. 10. 1. Amsterdam/Philadelphia: John Benjamins Publishing Company, pp. 32–77. DOI: 10.1075/livy.10.02cah.
- Caha, Pavel (2013). "Explaining the structure of case paradigms by the mechanisms of Nanosyntax". In: *Natural Language and Linguistic Theory* 31, pp. 1015–1066. DOI: 10.1007/s11049-013-9206-8.
- Caha, Pavel (2019). *Case competition in Nanosyntax. A study of numeral phrases in Ossetic and Russian*.
- Caha, Pavel (2020). "Nanosyntax: some key features". In: *The Cambridge handbook of Distributed Morphology*. Ed. by Artemis Alexiadou et al. Cambridge: Cambridge University Press.
- Cinque, Guglielmo (2005). "Deriving Greenberg's Universal 20 and its exceptions". In: *Linguistic inquiry* 36.3, pp. 315–332. DOI: 10.1162/0024389054396917.
- Cinque, Guglielmo (2020). *The Syntax of Relative Clauses: A Unified Double-headed Analysis*. Cambridge: Cambridge University Press. DOI: 10.1017/9781108856195.
- Citko, Barbara (2005). "On the Nature of Merge: External Merge, Internal Merge, and Parallel Merge". In: *Linguistic Inquiry* 36.4, pp. 475–496. DOI: 10.1162/002438905774464331.
- Citko, Barbara (2013). "Size matters: Multidominance and DP structure in Polish". In: *Talk at the 13th Poznan Linguistic Meeting*.
- Daskalaki, Evangelia (2011). "Case Mis-Matching as Case Stranding". In: *University of Pennsylvania Working Papers in Linguistics*. Ed. by Lauren A. Friedman. Vol. 17. Philadelphia: Penn Linguistics Club, pp. 77–86.
- Dixon, Robert Malcolm Ward (1972). *The Dyirbal language of north Queensland*. Vol. 9. Cambridge: Cambridge University Press. DOI: 10.1017/cbo9781139084987.
- Einarsson, Stefán (1949). *Icelandic: grammar, texts, glossary*. The Johns Hopkins Press.
- Friedman, Victor A (1991). "Romani nominal inflection: Cases or postpositions". In: *Problemy opisu gramatycznego języków słowiańskich, (Studia gramatyczne, Vol. 11)*, pp. 57–63.
- Gilligan, Gary Martin (1987). "A cross-linguistic approach to the pro-drop parameter". PhD thesis. Los Angeles, CA.

- Gippert, Jost (1987). "Zu Den Sekundären Kasusaffixen Des Tocharischen". In: *Tocharian and Indo-European Studies* 1, pp. 22–39.
- Groos, Anneke and Henk van Riemsdijk (1981). "Matching Effects in Free Relatives: A Parameter of Core Grammar". In: *Theory of Markedness in Generative Grammar*. Ed. by Luciana Brandi Adriana Belletti and Luigi Rizzi. Pisa: Scuola Normale Superiore.
- Grosu, Alexander (2003). "A Unified Theory of 'standard' and 'transparent' Free Relatives". In: *Natural Language and Linguistic Theory* 21.2, pp. 247–331. doi: 10.1075/la.55.07gro.
- Harbert, Wayne Eugene (1978). "Gothic syntax: a relational grammar". PhD thesis. Urbana-Champaign.
- Harbert, Wayne Eugene (1983). "A note on Old English free relatives". In: *Linguistic inquiry* 14.3, pp. 549–553.
- Harley, Heidi (1995). "Abstracting away from abstract case". In: *Proceedings-NELS*. Vol. 25. University of Massachusetts. GLSA, pp. 207–222.
- Himmelreich, Anke (2017). "Case Matching Effects in Free Relatives and Parasitic Gaps: A Study on the Properties of Agree". PhD thesis. Universität Leipzig.
- Kakarikos, Konstantinos (2014). "Case Attraction in Free Relative Clauses of Ancient Greek: A Study of the Syntax–Morphology Interface". In: *Major Trends in Theoretical and Applied Linguistics*. Vol. 1. Berlin, Boston: De Gruyter, pp. 289–304. doi: 10.2478/9788376560762.p35.
- Keenan, Edward L and Bernard Comrie (1977). "Noun phrase accessibility and universal grammar". In: *Linguistic inquiry* 8.1, pp. 63–99.
- Kiparsky, Paul (1973). "'Elsewhere' in Phonology". In: *A Festschrift for Morris Halle*. Ed. by Stephen Anderson and Paul Kiparsky. New York: Holt, Rinehart, & Winston, pp. 93–106.
- Krause, Thomas and Amir Zeldes (2016). "ANNIS3: A new architecture for generic corpus query and visualization". In: *Digital Scholarship in the Humanities* 31.1, pp. 118–139. doi: 10.1093/llc/fqu057.
- Lockwood, William Burley (1977). *An introduction to modern Faroese*. Torshavn: Føroya Skúlabókagrunnur.

- Marantz, Alec (2000). "Case and licensing". In: ed. by Eric J. Reuland. Vol. 34. Amsterdam/Philadelphia: John Benjamins Publishing Company, pp. 11–30. DOI: 10.1075/la.34.04mar.
- McFadden, Thomas (2018). "*ABA in stem-allomorphy and the emptiness of the nominative". In: *Glossa: a journal of general linguistics* 3.1. DOI: 10.5334/gjgl.373.
- Miyagawa, Shigeru and Takae Tsujioka (2004). "Argument structure and ditransitive verbs in Japanese". In: *Journal of East Asian Linguistics* 13.1, pp. 1–38. DOI: 10.1023/b:jeal.0000007345.64336.84.
- Moravcsik, Edith A. (1978). *Agreement*. Ed. by Charles A. Ferguson Joseph H. Greenberg and Edith A. Moravcsik. Stanford. DOI: 10.2307/413494.
- Moravcsik, Edith A. (2009). "The distribution of case". In: *The Oxford handbook of case*. Ed. by Andrej Malchukov and Andrew Spencer. Oxford University Press, pp. 231–245. DOI: 10.1093/oxfordhb/9780199206476.013.0016.
- Nikolaeva, Irina (1999). *Ostyak*. München: Lincom Europa.
- Noussia-Fantuzzi, Maria (2015). "The Politics of Food in the Early Cynics". In: *Food and History* 13.1-3, pp. 197–211.
- Pittner, Karin (1995). "The Case of German Relatives". In: *The linguistic review* 12.3, pp. 197–231. DOI: 10.1515/tlir.1995.12.3.197.
- Smith, Peter W et al. (2019). "Case and number suppletion in pronouns". In: *Natural Language & Linguistic Theory* 37.3, pp. 1029–1101. DOI: 10.1007/s11049-018-9425-0.
- Starke, Michal (2009). "Nanosyntax: A Short Primer to a New Approach to Language". In: *Nordlyd* 36, pp. 1–6.
- Starke, Michal (2014). "Cleaning up the lexicon". In: *Linguistic Analysis* 39, pp. 245–256.
- Starke, Michal (2018). "Complex Left Branches, Spellout, and Prefixes". In: *Exploring Nanosyntax*. Ed. by Lena Baunaz et al. Oxford: Oxford University Press, pp. 239–249. DOI: 10.1093/oso/9780190876746.003.0009.
- Steel, Susan (1978). "Word order variation: A typological study". In: *Universals of Human Language: IV: Syntax*. Ed. by Charles A. Ferguson Joseph H. Greenberg and Edith A. Moravcsik. Stanford: Stanford University Press, pp. 585–623. DOI: 10.2307/413494.

- Van Baal, Yvonne and Jan Don (2018). "Universals in possessive morphology". In: *Glossa: a journal of general linguistics* 3.1. DOI: 10.5334/gjgl.395.
- Van Riemsdijk, Henk (2006). "Free Relatives". In: *The Blackwell Companion to Syntax*. Ed. by Martin Everaert and Henk van Riemsdijk. 2. Oxford: Blackwell Publishing, pp. 338–382. DOI: 10.1002/9780470996591.ch27.
- Vogel, Ralf (2001). "Case Conflict in German Free Relative Constructions: An Optimality Theoretic Treatment". In: *Competition in Syntax*. Ed. by Gereon Müller and Wolfgang Sternefeld. Berlin: Mouton de Gruyter, pp. 341–375. DOI: 10.1515/9783110829068.341.
- Zaenen, Annie, Joan Maling, and Höskuldur Thráinsson (1985). "Case and grammatical functions: The Icelandic passive". In: *Natural Language & Linguistic Theory* 3.4, pp. 441–483. DOI: 10.1163/9789004373235_005.
- Zoppi, Stanislao (2017). "Case decomposition meets dependent-case theories". MA thesis. Pisa.