



# The nanosyntax of case

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## 0.2 Abstract

This dissertation proposes a new approach to case. It unifies its syntax, morphology and semantics in a simple, fine-grained and restrictive picture.

One of the assumptions frequently made in works on case is that cases such as nominative and accusative are not primitive entities, but they are each composed of various features. The central hypothesis of this dissertation is that these features are universal, and each of them is its own terminal node in the syntactic tree. Individual cases thus correspond to phrasal constituents built out of these terminals.

The idea that syntactic trees are built by Merge from individual atomic features is one of the core principles of a cartographic approach to syntax pursued by M. Starke: *Nanosyntax*. Hence “The nanosyntax of case.”

I motivate the approach on the material of case syncretism. I propose a hypothesis according to which case syncretism across various languages obeys a single restrictive template. The template corresponds to a cross-linguistically fixed sequence of cases, in which only adjacent cases show syncretism. In order to derive this, I argue that case features are syntactic heads, ordered in a universal functional sequence.

If this is so, it follows that these sub-morphemic features interact with core syntactic processes, such as movement. The prediction is borne out: the interaction of (phrasal) movement and the fine-grained syntactic representation derives a typological generalization concerning cross-linguistic variation in the amount of case marking (Blake’s hierarchy).

Additional facts fall out from the picture: the role of functional prepositions, prepositional syncretism, case compounding, and preposition stacking.

I further investigate in detail the spell out of these highly articulate structures. I follow Starke (2005) and propose that individual morphemes spell out phrasal constituents of varying size, and that their insertion is governed by the Superset Principle. I argue that phrasal spell out is both empirically required, and theoretically beneficial: it simplifies the overall architecture of grammar. In particular, there is no part left to play for a separate morphological structure.

With the proposal in place, I observe that there are generalizations which connect the proposed representation and the DP external syntax. To account for this, I adopt the Peeling theory of movement (Starke 2005). The theory says that arguments are base-generated with a number of case projections on top of them, and they strand these projections when they move up in the tree. The theory is shown to capture the initial observations, as well as additional generalizations: Burzio’s generalization among them.

The resulting theory does not introduce any domain specific tools to account for case: its representation corresponds to a binary syntactic structure, its computation corresponds to syntactic movement.

### 0.3 Abbreviations

A	adjective
ABL	ablative
ABS	absolutive
ACC	accusative
AGR	agreement
AL	alienable
BEN	benefactive
COM	comitative
DAT	dative
DEF	definite
DEM	demonstrative
ERG	ergative
F(EM)	feminine
GEN	genitive
INAL	inalienable
INIT	initial
INS	instrumental
K	case
LOC	locative
M(ASC)	masculine
N	noun
NEG	negation
N(EUT)	neuter (gender)
NOM	nominative
NUM	numeral
OBL	oblique (case)
P	preposition
PART	partitive
PAST	past
PF	perfective
PL	plural
PREP	prepositional
PRES	present
SPEC.ART	specific article
SG	singular
SUBJ	subject
V	verb

# Part I

## Case representation



# Chapter 1

## The nanosyntax of case: an outline

My path begins by looking at syncretism, one of the pervasive features encountered in the domain of case (see, e.g., Baerman et al. 2005). The goal is to show that syncretism is restricted (e.g., nominative is not syncretic with instrumental), and develop a theory of syncretism which allows for the attested patterns and rules out the unattested ones. The theory I end up with has interesting consequences for the syntax and semantics of case. These consequences are investigated throughout the rest of the dissertation. The aim of the first chapter is to develop the basic proposal and give an idea what the predictions of the model are.

### 1.1 Syncretism and its limits: the Universal Adjacency

Syncretism arises when two distinct cases have the same form. Consider the following examples from Modern Greek:

- (1) Syncretism
- |    |         |                    |     |
|----|---------|--------------------|-----|
| a. | o       | maxiti-s           | NOM |
|    | the.NOM | fighter-NOM        |     |
|    |         | ‘the fighter, nom’ |     |
| b. | t-on    | maxiti-Ø           | ACC |
|    | the-ACC | fighter-ACC        |     |
|    |         | ‘the fighter, acc’ |     |
| c. | t-u     | maxiti-Ø           | GEN |
|    | the-GEN | fighter-GEN        |     |
|    |         | ‘the fighter, gen’ |     |

What we can observe here is that the shape of the noun *maxiti-* is the same for the accusative and the genitive: *maxiti-Ø*. In other words, genitive and accusative are syncretic. It is traditionally understood that there exists an underlying distinction between the ACC and the GEN, but this distinction is not reflected by the noun ‘fighter.’ I understand syncretism in this traditional sense as well.

The existence of an underlying distinction between (1b) and (1c) is supported by two facts. First, the definite article in Modern Greek agrees with the head noun in gender, number and case. Since the definite article is different in (1b) and (1c), it means that the distinction between accusative and genitive must be accessed by agreement, despite the fact that the noun *maxiti* ‘fighter’ does not reflect the distinction on its sleeve.

Second, nouns which belong to a different inflection class than ‘fighter’ show the distinction overtly:

- |     |    |      |                        |     |
|-----|----|------|------------------------|-----|
| (2) | a. | o    | anthrop-os             | NOM |
|     |    |      | the.NOM human-NOM      |     |
|     |    |      | ‘the fighter, nom’     |     |
|     | b. | t-on | anthrop-o              | ACC |
|     |    |      | the-ACC human-ACC      |     |
|     |    |      | ‘the fighter, acc’     |     |
|     | c. | t-u  | anthrop-u              | GEN |
|     |    |      | the-GEN human-GEN      |     |
|     |    |      | ‘the fighter, gen/dat’ |     |

Thus, I take syncretism to be a surface conflation of two distinct morphosyntactic structures. What is the mechanism underlying syncretism? The plan is to gain insight into this question by investigating restrictions on syncretism.

To establish what the restrictions are, let me then look at syncretisms in Modern Greek for a little longer. (The description of Modern Greek draws on Alexiadou and Müller 2005 and Johnston 1996.) As we have seen, Modern Greek has three cases: nominative, accusative and genitive.<sup>1</sup> Out of four logically possible syncretisms, only three are attested. The first column shows syncretism of NOM – ACC, the second column of ACC – GEN, and the third

---

<sup>1</sup>Modern Greek has also a vocative case. Vocatives are often ignored in theoretical approaches to case, and I ignore them here too. The reason vocatives are traditionally not incorporated into the description is because case is understood as a means by which languages mark the dependency of a noun on the governing expression (verb, preposition, adjective). Vocatives do not fit in that conception, because rather than expressing dependency, they are a form of an address. While I do not endorse this explanation without qualifications, I follow the tradition in not including vocatives.

Note though that Johnston (1996) does include vocatives in his sample, and integrates them successfully into a version of the overall picture which I end up adopting here.



column shows an indeclinable noun, where all cases fall together. What is missing is the last column: a NOM – GEN syncretism.

(3) Syncretism in Modern Greek

	maxit (fighter, pl.)	maxit, (fighter, sg.)	alpha	not attested
NOM	maxit-es	maxit-i-s	álpha	A
ACC	maxit-es	maxit-i-Ø	álpha	B
GEN	maxit-on	maxit-i-Ø	álpha	A

Both the attested and the unattested syncretisms in Modern Greek can be expressed as a total linear ordering of cases: NOM – ACC – GEN.<sup>2</sup> In this ordering, only adjacent cases show syncretism. I state this as (4). The statement rules out the option that NOM and GEN are syncretic “across” the ACC. It does not rule out the syncretism of all three cases (‘alpha’), because there is no skipping across a case.

(4) Syncretism in Modern Greek: Syncretism in Modern Greek targets contiguous regions in the sequence NOM – ACC – GEN.<sup>3</sup>

It has been proposed in the literature that such an adjacency constraint is not specific to Greek, but it holds for case paradigms quite generally (see in particular McCreight and Chvany 1991, Johnston 1996). I will call the generalization which emerges from their work Case Contiguity, or just Contiguity for short:

(5) (Case) Contiguity: In a given language, syncretism in case targets contiguous regions in a sequence which is fixed for that language.

Contiguity restricts quite severely the logical possibilities. To evaluate its predictive power in abstract terms, consider a language which has four cases, ordered in the sequence nominative – accusative – genitive – dative (or the reverse). The hypothesis then restricts the space of possible syncretisms, as depicted in the table (6). (Syncretisms marked by shading.)

(6) Predictions of Case Contiguity

<sup>2</sup>Bobaljik (2007) observes something similar for root suppletion in the sequence positive – comparative – superlative. His work served as a source of inspiration for the proposal to be developed, together with M. Starke’s work on *-ed/-en* allomorphy in English participles. Directly relevant is also the work of Pantcheva (2008a). See also Vangsnes (2008).

<sup>3</sup>The reverse order (GEN – ACC – NOM) leads to an equivalent statement. I put nominative first for reasons that will become clear later.

	NOM	ACC	GEN	DAT
possible				
possible				
possible				
possible				
possible				
possible				
*				
*				
*				
*				
*				

The allowed syncretisms form contiguous regions within a paradigm, the disallowed ones do not. There are 6 syncretisms which are allowed, and 5 which are not allowed.

The more cases a language has, the more severe the constraint looks. That is because the logical possibilities grow exponentially, but the allowed syncretisms grow linearly. For instance, in a system with 6 cases, there are 57 possible syncretisms. Out of these, Case Contiguity allows only 15. (7) gives formulas for counting,  $n$  denotes the number of cases in the system.

- (7) Syncretisms in a system with  $n$  cases
- a. Possible syncretisms:  $2^n - (n+1)$
  - b. Contiguous syncretisms:  $1 + 2 + \dots + (n-1)$

As the next empirical illustration, consider Ancient Greek of the period before 100BC (the discussion draws on Johnston 1996:§2.2.7).<sup>4</sup> In the neuter gender of all numbers, nominative and accusative are always the same. In the dual number, genitive and dative are always the same. These are syncretisms which target large classes of items. Apart from that, there is a small class of nouns where the accusative is identical to the genitive. These facts reveal the connection of the nominative to the accusative, of the latter to the genitive, and of the genitive to the dative. This inevitably leads to the ordering of cases as given in NOM – ACC – GEN – DAT (or its reverse). The results are summarized in the table (8) below, where I mark the attested patterns by a thicker gray shade.

- (8) Ancient Greek

<sup>4</sup>Ancient Greek also has vocative case. Vocatives, as mentioned above, are ignored throughout this dissertation.

	NOM	ACC	GEN	DAT
neuter	■	■		
not attested	■	■	■	
not attested	■	■	■	■
few nouns		■	■	
not attested		■	■	■
dual			■	■
not attested	■		■	
not attested	■		■	■
not attested	■	■		
not attested	■	■		■
not attested	■	■		■

The number of attested syncretisms does not exhaust the allowed possibilities, which is due to the fact that syncretism in Ancient Greek does not conflate more than two cases. This can be seen in other languages too, but it is a relatively weak tendency. What is crucial, no disallowed syncretism (below the line) occurs.

While Contiguity is a step in the right direction, it is still not restrictive enough. The main problem is that it does not capture commonalities between languages concerning the content of the ordering. For example, in both Ancient and Modern Greek, the order includes the sequence NOM – ACC – GEN. This is not an accident, and the same sequence will occur in more languages that we will look at in the course of this thesis. However, Case Contiguity does not capture this commonality and should therefore be strengthened to generalize over the orderings of cases.

Something similar has been observed before in a typological investigation by Baerman et al. (2005) (see also Baerman 2008). Note first that in the sequence under discussion, i.e. NOM – ACC – GEN, the accusative separates the nominative from the oblique cases (represented by the genitive). This means that if one of the two “core” cases will show syncretism with an oblique case, it will be the accusative, and not the nominative. And this is precisely what Baerman et al. (2005) observe in their sample of 200 languages:

- (9) Baerman et al. (2005)
- a. syncretism of core cases is common
  - b. if one of the core cases is syncretic with an oblique, it is the marked core case<sup>5</sup>

<sup>5</sup>There are exceptions to this, which lead Baerman et al. (2005) to state (9b) as an overwhelming tendency. I deal with some of the exceptions below, and show that they are irrelevant, because they are due to a phonological processes.

This fact, however, is not captured by Case Contiguity: the constraint is purely formal (contiguity in a language specific ordering), and does not encode whether the content of the language specific ordering is consistent with (9), or not. For instance, a language where syncretism would target contiguous regions in the sequence ACC – GEN – NOM (or the reverse) is consistent with Case Contiguity. However, such language allows for the nominative and the genitive to show syncretism to the exclusion of the accusative, and this should be ruled out.

This means that Case Contiguity should be strengthened into a hypothesis which generalizes across the content of the orderings arrived at for individual languages. I will call such a hypothesis the Universal Case Contiguity, and I give it in (10). (I will call the hypothesis sometimes just Universal Contiguity.) The hypothesis is stated in two parts. The first part states that there is an invariant sequence of cases, where only contiguous regions can be syncretic. The second part of the hypothesis gives the actual sequence. The main reason for the separation is that while the main claim (that there is such a universal sequence) will remain unchanged, the Case sequence itself will be subject to further refinements. For instance, in ch. §3 I incorporate the partitive and various local cases, and a special behavior of personal pronouns in various languages will be highlighted in ch. §8.

- (10) Universal (Case) Contiguity:
- a. Non-accidental case syncretism targets contiguous regions in a sequence invariant across languages.
  - b. The Case sequence: *nominative – accusative – genitive – dative – instrumental – comitative*

Of course, not all languages have all of these cases (like Ancient or Modern Greek), and some have more than that; I will consider both of these scenarios as we go. Importantly, Universal Contiguity applies also in these languages, namely to the relevant (sub-)set of cases which it mentions. Universal Contiguity is an interesting hypothesis which quite severely restricts possible syncretisms both within and across languages, and I discuss the empirical aspects of it in chs. §3 and §8. The main message which goes with it from the start is the following: it is not a *surface* generalization. A distinction must be made between accidental and non-accidental cases, and accidental cases must be put aside. How do we distinguish between the two cases?

One hallmark of accidental syncretism is that it holds under specific phonological conditions, and does not obtain in others, keeping all else equal. Such a situation indicates that the syncretism is the result of a phonological process,

---

Baerman et al. (2005) also look at languages with ergative systems, which I do not investigate here. In ergative languages, ergative is the marked core case (both from the perspective of syntax and syncretism).

rather than a reflex of the grammar of case. Usually, this phonological process is operative in the language quite generally, and then we can be assured that the syncretism is irrelevant for the examination of principles that govern syncretism in non-accidental cases.

- (11) Accidental syncretism can be the result of phonological processes which conflate two distinct underlying representation.

To see what a phonological conflation looks like, consider, for instance, Classical Arabic (see Johnston 1996:§2.2.2). The language has nominative, accusative and genitive, which can all be distinct (see ‘thief’ in (12)). There are two syncretisms. First, there is an accusative – genitive syncretism; see e.g., ‘Mecca.’ The same syncretism occurs in all plurals, which is illustrated here by the paradigm ‘queen.’ This syncretism obeys the Universal Contiguity.

- (12) Classical Arabic (from Johnston 1996)

	thief (fs.sg.)	Mecca (fs.sg.)	queen (cs.pl.)	judge (fs.sg.)
NOM	sāriq-u-n	makkat-u	malik-āt-u	qāḍin
ACC	sāriq-a-n	makkat-a	malik-āt-i	qāḍiyan
GEN	sāriq-i-n	makkat-a	malik-āt-i	qāḍin

In addition, however, there is an offending alliance of nominative and genitive to the exclusion of accusative (‘judge’). This syncretism goes against the Universal Contiguity and it also runs counter to the generalization noted by Baerman et al. (2005).

However, Johnston (1996) following the literature suggests that ‘judge’ in fact inflects just like ‘thief’ (compare the accusatives *sāriq-a-n* and *qāḍiy-a-n*), but it is subject to a regular phonological process of truncation in the nominative and genitive, see (13) reproduced from Johnston’s work. The underlying forms are to the left of the arrow in (14), and the output of truncation follows the arrow. Nominative and genitive undergo the process, but the accusative form is left unchanged, because *a* is not [+high].

- (13) Truncation:  $y + V[+high] \Rightarrow \emptyset / i\_$

- (14) a. NOM: qāḍiy-u-n  $\rightarrow$  qāḍin  
 b. ACC: qāḍiy-a-n  $\rightarrow$  qāḍiyan  
 c. GEN: qāḍiy-i-n  $\rightarrow$  qāḍin

The syncretism of nominative and genitive is thus the product of phonology, and it is treated here as accidental. Its characteristic is that it occurs in a specific phonological environment defined by the phonological rule: roots ending in *iy-*. This contrasts with the syncretism of ‘queen,’ whose extension is defined by a morphosyntactic environment: plural.

The following table (15) summarizes the facts.

(15) Classical Arabic

	NOM	ACC	GEN
not attested			
not attested			
plurals			
truncating nouns	!		!

The exclamation marks denote the accidental nature of the syncretism in question. Because of this accidental nature, the Arabic counterexample to Universal Contiguity does not have much force – it is orthogonal to the mechanisms which underlie syncretism in non-accidental cases, and it is these mechanisms which are the concern of the present work.

Let me now proceed to a language with more cases, Russian, drawing on McCreight and Chvany (1991), Johnston (1996), Caha (2008). Russian is interesting for two reasons. First, it provides an illustration of another type of accidental syncretism: accidental homophony. Second, it has more cases than the languages we have looked at so far. From the cases given in the Case sequence, it has nominative, accusative, genitive, dative and instrumental. In addition, it has a “prepositional.” As the name suggests, this is a case which is used only after prepositions (spatial locative, but also abstract ones like ‘about’).

In the table below, I illustrate the ordering of cases on sample paradigms. Syncretic pairs are in small caps and they gradually move one notch down from column to column. The dative – instrumental syncretism extends (irrelevantly for the present purpose) beyond a simple pair. The order of cases established in this way is nominative, accusative, genitive, prepositional, dative and instrumental; the same order has been proposed and illustrated in more detail in the works cited.

(16) *Syncretism in Russian I*

	window, sg.	teacher, pl.	both, m.i.	book, sg.	100
NOM	OKN-O	učitel-ja	dv-a	knig-a	st-o
ACC	OKN-O	UČITEL-EJ	dv-a	knig-u	st-o
GEN	okn-a	UČITEL-EJ	DV-UX	knig-y	ST-A
PREP	okn-e	učitel-jax	DV-UX	KNIG-E	ST-A
DAT	okn-u	učitel-am	dv-um	KNIG-E	ST-A
INS	okn-om	učitel-ami	dv-umja	knig-oj	ST-A

Russian, like most other Slavic languages, shows richness of allomorphy and syncretism patterns. This gives us the possibility to construct a table similar to (16), but using different paradigms with different markers. This increases the plausibility that the syncretisms illustrated above are not the result of a phonological process, because the facts are repeated in distinct phonological

environments, and with different phonological material. Put straightforwardly, the syncretisms reflect a deeper regularity in the grammar of case:

(17) *Syncretism in Russian II*

	table, pl.	student, sg.	we	bridge, sg.	good, f.sg.
NOM	STOL-Y	student- $\emptyset$	my	most- $\emptyset$	xoroš-aja
ACC	STOL-Y	STUDENT-A	NA-S	most- $\emptyset$	xoroš-uju
GEN	stol-ov	STUDENT-A	NA-S	most-a	XOROŠ-EJ
PREP	stol-ax	student-e	NA-S	MOST-U	XOROŠ-EJ
DAT	stol-am	student-u	na-m	MOST-U	XOROŠ-EJ
INS	stol-ami	student-om	na-mi	most-om	XOROŠ-EJ

The order of the relevant cases complies with the Case sequence as given above (see (10b)). The position of the prepositional is interesting: it comes sandwiched between the genitive and the dative, despite the fact that in the Case sequence, genitive is right next to dative. I will devote attention to this later in chapter §3.

On the general level, the important thing to note about the cases which are not mentioned in the Case sequence (so far) is that they fit into an overall contiguity picture within a given language: the prepositional has a designated place in the sequence of Russian cases. The reason why it is not mentioned in the Case sequence is thus not that it violates the contiguity requirement; the reason is that it is hard to find cross-linguistic analogues of such a case.

There is only one counterexample to the Universal Contiguity in the whole language, as far as I know. In one of the neuter paradigms of the first declension ('field'), there is a homophony of the prepositional *-e* with the nominative-accusative *-e*, a syncretism which illegally jumps over the genitive (18).

(18) *An offending syncretism in Russian*

	field, sg.
NOM	POL'-E
ACC	POL'-E
GEN	polj-a
PREP	POL'-E
DAT	polj-u
INS	pol'-em

The present system does not allow a different option than treating this as an accident. What is needed is the existence of two *-es*, one for the prepositional, and another one for the nominative and accusative. This is then like the homophony of English *bank*, or *two/too*. It is clear from the English examples that accidental homophony exists; in the case of the Russian declension, its occurrence is almost expected. Why? It is because many of the endings in the

Russian declension are just single vowels, the inventory of which is limited (5 or 6, opinions vary on this). With such a limited inventory, and a relatively large paradigm space, it is hard to avoid an accidental clash.

The treatment of the two *-e*-s in terms of accidental homophony is justified internally to Russian by the following considerations. First, as I have shown above, all the syncretisms which do not jump across a case are attested for multiple different markers. The syncretism shown above is attested only for a single marker, *-e*.

A second indication that the non-adjacent syncretism in (18) does not reflect a deeper regularity of the grammar of Russian case is quantitative. For instance, Timberlake (2004:p.117-148) gives in total 143 nominal, pronominal, adjectival and numeral case paradigms (since all these items inflect for case in Russian). In each of these paradigms, there is at least one syncretism.<sup>6</sup> In 142 of these paradigms, the syncretism is consistent with the Case sequence (10b). Only 1 paradigm (given above) stands out as incompatible.

Finally, the analysis which says that there are in fact two distinct *-es* is supported by the fact that the two *-es* show crossing distribution. The one for NOM – ACC extends to the paradigm ‘building,’ while the one for the prepositional extends to the paradigm ‘window.’ The offending pattern of ‘field’ thus looks like the meeting point of two independent *-e*-s:

(19) *An offending syncretism in Russian*

	window, sg.	field, sg.	building, sg.
NOM	okn-o	POL'-E	ZDANI-E
ACC	okn-o	POL'-E	ZDANI-E
GEN	okn-a	polj-a	zdanij-a
PREP	OKN-E	POL-E	zdani-i
DAT	okn-u	polj-u	zdanij-u
INS	okn-om	pol'-em	zdani-em

To conclude the discussion of Russian, consider the distribution of syncretism expressed in numbers.

- (20) Russian system: 6 cases, 57 logically possible syncretisms
- Contiguous syncretisms: 15, out of these 8 are attested (cca 50%)
  - Non-contiguous syncretisms: 42, out of these 1 attested (cca 2%)

The number of attested syncretism is smaller than what is allowed (cca 50%). This is mainly due to the fact that syncretism does not cover “long” stretches of the Case sequence. Out of the 8 syncretisms in (20a), 4 involve pairs and 2 are triplets. Out of the syncretisms predicted to be impossible by the Universal

<sup>6</sup>This point is made in Bobaljik (2002) who uses it to argue against the independent status of the notion of a paradigm.



Contiguity, only 1 is attested (cca. 2%).

On the general level, I make the following conclusions for the distinction between accidental and non-accidental syncretism. While accidents are hard (if not impossible) to prove as accidents, we have seen that an analysis in terms of accidental homophony leads to a set of expectations. First, accidents should not repeat. We have seen that in Russian, all the syncretisms of adjacent cases can be replicated for two (or more) markers. The syncretism of NOM – ACC and PREP is attested only for one marker.

- (21) a. Accidental syncretisms are limited to a single exponents.  
 b. Non-accidental syncretisms tend to be replicated by various different exponents.

Similarly, there is a difference in the proportion of the paradigms which are compatible with Universal Contiguity, and paradigms which are not:

- (22) a. Accidental syncretisms are confined to a single paradigm.  
 b. Non-accidental syncretisms show up across paradigms.

The reason for this is that when we have two independent, but homophonous markers, the accidental syncretism arises in environments for which their distribution intersects (see (19) for a graphic illustration). The extension of the intersection is then narrower than the individual distribution of any of these markers, a single paradigm in prototypical instances.

These are good criteria for languages which show a great deal of allomorphy (like Russian). But what about languages with little allomorphy? Here, it is better to use a criterion which is complementary to (21): non-accidental syncretism targets morphosyntactic classes. For example, the syncretism of nominative and accusative in Russian is found for all masculine inanimates and neuters. The syncretism of accusative and genitive is the rule for masculine animates. The syncretism of genitive and prepositional is characteristic of all adjectives in the plural. Now to the extent that the respective categories show distinct allomorphs for the relevant cases, to that extent will the syncretisms be repeated by various markers. (21) can thus be seen as a near equivalent of (23):

- (23) a. Accidental syncretisms do not target morpho-syntactic classes.  
 b. Non-accidental syncretism targets morpho-syntactic classes.

(23) can in turn be used as a distinguishing criterion in languages which show little allomorphy.<sup>7</sup>

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<sup>7</sup>This last criterion may be too strong, because if a language shows no allomorphy whatsoever, two homophonous entries will be present for all items of the given category, since all of these items belong just to a single paradigm.

The last language I introduce in this chapter is Sanskrit. There are 7 cases: nominative, accusative, genitive, dative, instrumental, ablative and locative. The first five are mentioned in the Case sequence, the last two are not. Thus, we expect that the order of NOM, ACC, GEN, DAT and INS is fixed, while (so far) no prediction is made about the ordering of the last two cases. However, they are still expected to fall on some place in the ordering, rather than show incompatibility with any ordering.

These expectations are borne out (Plank 1991, Johnston 1996), in fact, one of the possible orderings has been adopted by the old Sanskrit grammarians themselves. I list the attested syncretisms, indicating the morpho-syntactic classes where they occur. This serves also as an indication of their non-accidental nature:

- (24) Syncretisms in Sanskrit
- a. NOM – ACC: neuters, dual
  - b. LOC – GEN: dual
  - c. GEN – ABL: singular, except one declension
  - d. ABL – DAT: plural, except personal pronouns
  - e. ABL – DAT – INS: dual

(24a) shows that Sanskrit has syncretism between its core cases, and among the oblique cases (24b-e). The syncretisms among obliques are arranged so that a linear order emerges just from reading the bullet points (24b-e) top down. However, there is no syncretism between these two groups, and so the system itself allows for four distinct orders (and their inversion). The order (25b) is compatible with the Case sequence (10b).

- (25) Four possible orderings for Sanskrit
- a. (NOM – ACC) – (INS – DAT – ABL – GEN – LOC)
  - b. (NOM – ACC) – (LOC – GEN – ABL – DAT – INS)
  - c. (ACC – NOM) – (INS – DAT – ABL – GEN – LOC)
  - d. (ACC – NOM) – (LOC – GEN – ABL – DAT – INS)

The facts should be compared to what is possible. There are 120 possible syncretisms, 21 are compatible with the Universal Contiguity, 99 are not. All of the attested syncretisms are of the former kind.

- (26) Sanskrit in numbers: 7 cases, 120 possible syncretisms
- a. Contiguous syncretisms: 21, out of these 5 are attested (cca 25%)
  - b. Non-contiguous syncretisms: 99, unattested (0%)

To sum up the whole section: I have briefly reviewed the system of syncretism in 5 languages (Ancient and Modern Greek, Classical Arabic, Russian and Sanskrit) to support the plausibility of a hypothesis, called the Universal Con-

tiguity (10), which restricts syncretism within and across languages. Further empirical investigation of this hypothesis is postponed until chapter §8, with relevant discussion also in ch. §3. I now turn to the implementation.

## 1.2 What does this tell us?

Jakobson (1962), one of the classics of the syncretism literature, draws the conclusion (correct, to my mind) that syncretism points to the existence of a hidden level of linguistic organization inside an apparently indivisible unit: the morpheme. For Jakobson, individual cases are not atomic; they represent collections of equipotent features (like [+/- marginal], [+/- ascriptive]), each of which *cross*-classifies the set of cases into two groups. This has the immediate advantage that natural classes of cases can be referred to with the help of such features, and syncretism can be restricted to these classes.

In this thesis, I propose that the tight constraint on syncretism, the Universal Contiguity, can be captured only if such features exhibit cross-linguistically rigid internal organization. I argue that in order to derive the constraint, the organization of these features must be modeled in the same way as the internal working of phrasal syntax: by a binary branching tree structure (or an equivalent mechanism).

If correct, this suggests that there is only one mode of grammatical organization of smaller units into bigger chunks, no matter how small (sub-morphemic features) or big (phrases) the units are; (sub-)morphology and syntax are one. This hypothesis has been proposed and defended in classes taught by M. Starke, and this dissertation applies the idea to the phenomena of case. To support such an approach to case, I will show later in this chapter that the individual features needed for syncretism interact (individually) with core syntactic phenomena such as NP movement. This can only be so if each of these features is a separate terminal in the syntactic tree.

Let me start by small steps, though, demonstrating first the shortcomings of the Jakobsonian model of cross-classification and its later incarnations. First, the expressive power of cross-classification by equipotent features goes beyond Contiguity (as pointed out by both McCreight and Chvany 1991 and Johnston 1996). Consider the cross-classification of 4 cases, NOM, ACC, GEN and DAT, by two features, X and Y (27).

(27) Cross-classification

	+Y	-Y
+X	NOM	ACC
-X	GEN	DAT

The natural classes definable by such a decomposition are given in (28).



However, this is a deadly fix. The result is that any syncretism becomes possible. The reasoning is this: the entry (30b) can, in principle, insert /phon B/ to any of NOM, ACC, GEN, DAT. Consequently, we can get any triplet of these by assuming that any one of the cases is spelled out by an entry similar to (30a). We can also get any pair by assuming (30b) and that two cases of our choice are spelled out by two rules similar to (30a).

The general format of the reasoning is the following: assume a “default” entry which can go anywhere, and restrict its application in arbitrary ways by competing lexical entries targeting individual cases; the logic works reliably in any system with cross-classification and the Elsewhere condition. Conclusion: the combination of these two tools makes no predictions concerning the range of possible/impossible syncretisms. If we want a theory with empirical content, we either have to abandon these tools, or account for the restrictions in some other way. In the latter case, however, the very motivation for decomposition (to capture natural classes targeted by syncretisms) disappears. Further, since cross-classification without the Elsewhere Condition is both too weak and too strong (to capture Universal Contiguity), we are justified in looking for alternative systems of representation.

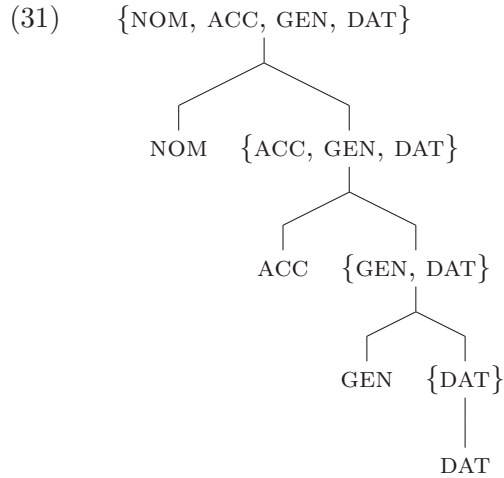
One possibility is to abandon the feature based analysis of categories altogether, as do McCreight and Chvany (1991). A less radical alternative, which has been suggested in this context by Johnston (1996), and which I adopt here, maintains the idea that cases decompose into features, but in a different way than Jakobson has proposed. Rather than cross-classified, the set of cases is *sub*-classified by the features.<sup>10</sup>

The gist of this approach is that we start from the set of  $n$  categories, and sub-divide it into component parts. (This strategy is similar to Williams 1981 and also various morphological feature geometries, going back to Bonet 1991 and Harley 1994.) The way the sub-division is done below is by taking out one member of the maximal set at a time, and putting it aside, see (31). We stop once we take the last member out.<sup>11</sup>

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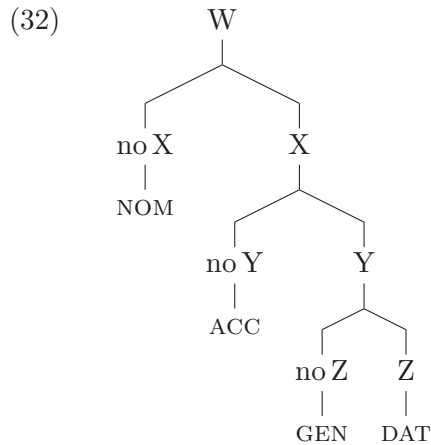
<sup>10</sup>McFadden (2009) makes a similar point.

<sup>11</sup>Each partition starts with a short line going down. This line has no significance, apart from the attempt to graphically distinguish sub-classificatory tree from a syntactic tree, which otherwise look quite similar.



There are more ways to perform a sub-classification. The one shown above has three important features. First, we divide each set into two parts, rather than three or more. Second, we take away one case at a time, rather than two or more. These two properties will have the effect, as we see shortly, of deriving Contiguity. Third, the cases branch off in the order given by the Universal Contiguity – which will have the effect of strengthening Contiguity in the desired way. Hence, the crucial question will be where in the grammar is such a sub-classification encoded, and what do its formal properties follow from.

Let me first show how the results follow. What we have so far in (31) are individual categories at the terminal nodes, and sets containing one or more of these categories at the non-terminal nodes. By convention, each set can be characterized by a unique property, understood here as a feature. In the tree below, I apply this convention, and replace each set of (31) by the feature which uniquely characterizes it. Since the case which has been set aside does not belong to the set characterized by the relevant feature, I also add the information that this case does not have that feature.



The tree above can now be read as follows: we take the set of all cases, characterized by the feature  $W$ , and partition it into those which have the feature  $X$  in addition (these are on the right), and those which don't (on the left). Then we similarly divide any set as long as the set has any members. The feature make-up of individual cases can then be read from the non-terminal nodes which dominate them, and I give it below:

- (33) Cumulative classification
- a. NOM =  $W$
  - b. ACC =  $W, X$
  - c. GEN =  $W, X, Y$
  - d. DAT =  $W, X, Y, Z$

I will call this a cumulative classification, because categories are sub-classified by cumulating features as we go down the classificatory tree. The cumulative sub-classification allows us to single out the natural classes enumerated in (34). The round brackets in the notation below indicate that omission of any combination of the bracketed features defines the same set as all the features taken together.

- (34) Natural classes definable by cumulative classification
- a.  $[W]$  = {NOM, ACC, GEN, DAT}
  - b.  $[(W,) X]$  = {ACC, GEN, DAT}
  - c.  $[(W, X,) Y]$  = {GEN, DAT}
  - d.  $[(W, X, Y,) Z]$  = {DAT}

It is clear that the natural classes allowed by the cumulative system are consistent with Contiguity (the order NOM – ACC – GEN – DAT and its reverse), but it is too weak. It does not allow for any combinations which do not include DAT. Consider now what happens if we add the Elsewhere Condition (29) to the system. Suppose ACC and GEN are syncretic to the exclusion of other

cases. We can capture this by postulating the following two entries:

- (35)    a. [W, X]:            {ACC, GEN, DAT} → /phon A/  
           b. [W, X, Y, Z]: {DAT}                    → /phon B/

/phon B/ applies in a proper subset of cases compared to /phon A/, therefore it takes precedence for DAT. This restricts /phon A/ to ACC and GEN.

The cumulative system does not suffer from the same shortcomings as the cross-classifying system. For instance, it cannot encode the non-contiguous syncretism of ACC and DAT across GEN. What one would have to do to encode such a syncretism is the following. We would have to assume the general rule in (35a), and make sure that a special rule will apply to GEN only, taking it away from the triplet in (35a). That would lead to ACC and DAT being syncretic to the exclusion of GEN.

However, there can be no rule targeting GEN only, and hence, no such syncretism. Consider why. As shown in the cumulative classification (33), GEN is characterized by [W, X, Y]. Consequently, the rule would have to have such a specification, see (36).

- (36)    [W, X, Y]: {GEN, DAT} → /phon C/

However, [W, X, Y] does not define only GEN, but the pair GEN, DAT. Hence, such a rule takes precedence over the general rule (35a) for both GEN and DAT, and not only for GEN. Consequently, the interaction of the two rules (35a) and (36) leads to the result that ACC = /phon A/, and GEN, DAT = /phon C/.

And the conclusion? In any cumulative sub-classification combined with the Elsewhere Condition, only “structural neighbors” can be syncretic. This formally constrains syncretism in exactly the same way as Contiguity. What allows the model to capture the stronger Universal Contiguity, is the way individual cases branch off, such that neighbors in the Case sequence are also neighbors in the sub-classification (33).

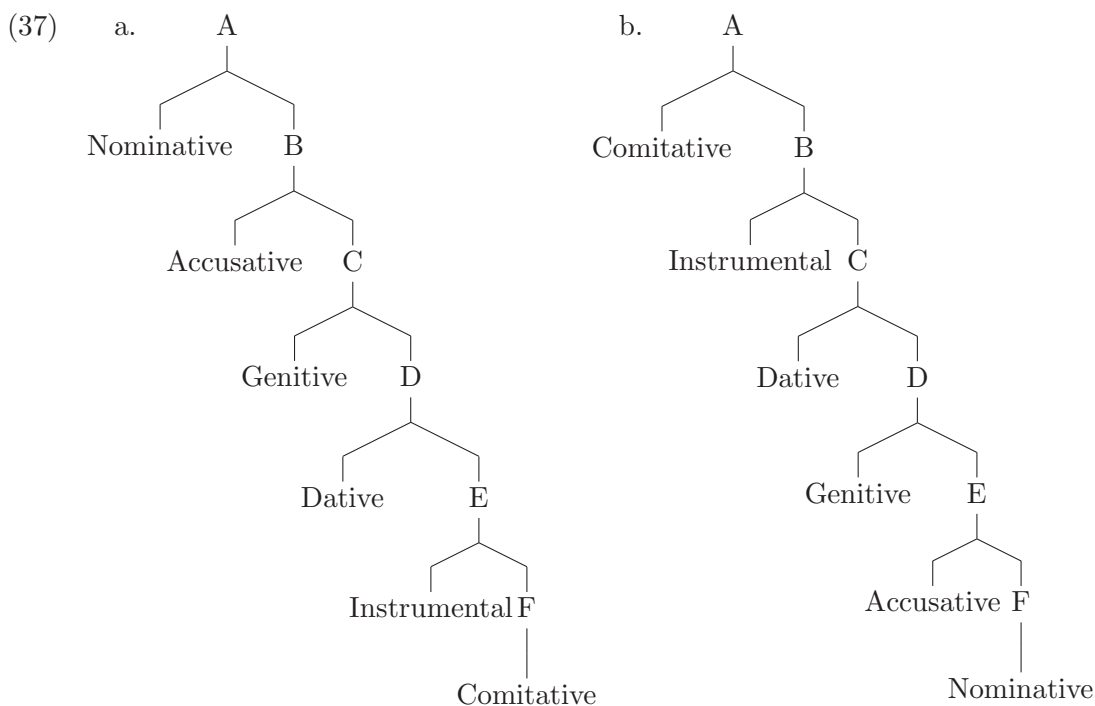
Note that this way of deriving the Universal Contiguity crucially involves an abstract level of linguistic organization. We need two things: that cases are decomposed into features by cumulative sub-classification, and that these feature structures are related to the surface forms by a procedure which incorporates the Elsewhere condition. In other words, the Universal Contiguity is not encoded as a surface constraint that restricts the actual surface properties of the paradigm.

As a consequence, two things can blur the underlying system: phonological conflation of two forms into one, and accidental homophony. In none of these two cases is the Universal Contiguity violated at the level where it is proposed to hold: at lexical insertion.



## 1.3 Split K

As a result of the abstract discussion, we know that (37a,b) show two possible sub-classifications of cases capable to capture the Universal Contiguity (granted the proposed Case sequence).



I will adopt the one in (37a). The decision is motivated by the traditional observation (correct to my mind) that nominative is the most unmarked case, and that the oblique cases form a group differentiated from the “core” cases, nominative and the accusative. This intuition is nicely captured in (37a), where nominative and accusative are also unmarked in terms of feature composition.<sup>12</sup>

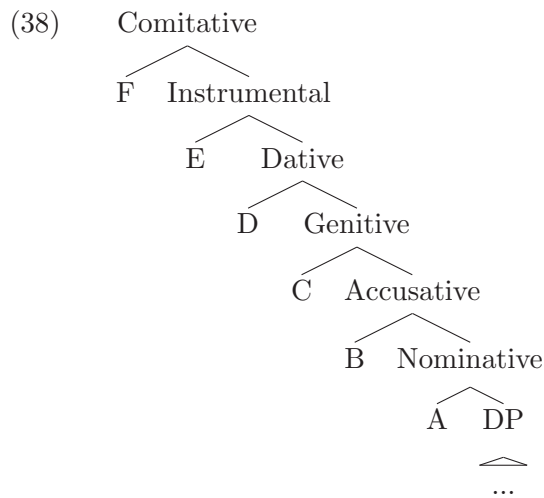
<sup>12</sup>See Neeleman and Weerman (1999:ch.2) for data showing that nominative has certain characteristics which set it aside from all other cases: agreement, frequent lack of an affix, failure to “attract” other cases, possibility of replacing other cases during language acquisition. The conclusions the authors draw about classification of case is close to the one adopted here.

Bayer et al. (2001) provide arguments that set nominative and accusative aside from obliques: obligatory morphology for obliques in various contexts, failure of obliques to turn to a genitive in nominalizations etc.

I myself provide evidence later on at various places of the dissertation that cases which have more features according to (37a) morphologically contain cases with fewer features. Such containment relationships transparently reveal (37a) as the relevant structure.

The crucial question is now where in the grammar the tree (37) is encoded, and what its formal properties follow from.

The lead I take is that (37) has a strong resemblance to the properties of the syntactic structure. The classificatory tree is binary (just like the syntactic one, see a.o., Kayne 1984, Kayne 1994, Chomsky 1995b), and the features according to which cases split are ordered in a sequence (just like nodes in syntax, see, e.g., Cinque 1999, Starke 2004). Given the formal similarity between cumulative subclassification and syntax, it is tempting to hypothesize that they are both products of the same device: the operation Merge (for which see Chomsky 1995a). The hypothesis is depicted in (38).<sup>13</sup>



The tree encodes the proposal that a nominative DP is a type of constituent, in which the DP is the complement of the feature [A]. An accusative is a similar constituent, one which is built on top of the nominative by the addition of [B], and so on.

Note that the feature [B] is not “accusative.” Accusative is the name of a constituent which arises as the result of merging [A] and [B] on the top of the DP in this order. To make this clear, I avoid calling the terminals “accusative,” but reserve that label only for the non-terminal projections. The labels of the non-terminal nodes, such as *accusative* or *genitive* are chosen for clarity of

<sup>13</sup>The hypothesis bears resemblance first to proposals which distinguished between a DP type and a KP type of constituent: Bittner and Hale (1996), Neeleman and Weerman (1999), Bayer et al. (2001). Some more recent approaches add layers of case, taking the reasoning further in the direction of the present proposal: Asbury (2006), Asbury (to appear) Pesetsky (2007), Jayaseelan (2007). Details vary considerably.

The present framework (originating in Starke 2005) has been developed in parallel with works such as Taraldsen (2006), Medová (2008), Medová (2007), Medová and Taraldsen (2007), Taraldsen (2008c) and Taraldsen (2008a) which develop and use such (or similar) decomposition in their analyses of various phenomena.

presentation, and they do not imply that the label is qualitatively different from the head. I assume that the “true” label of the accusative constituent is BP, but I avoid calling it that way because such a label is quite opaque.

I also note already here that in languages like Russian, where instrumental case is expressed as a single morpheme, this morpheme will be taken to spell out a syntactic constituent containing (minimally) the features A-E (and possibly others such as number). Similar remarks apply to other case morphemes. The system of phrasal spell out is developed in ch. §2.

With the terminology clarified, I note that the syntactic tree (38) encodes the same feature composition of individual cases as the sub-classificatory tree (37a): the two are equivalent representations of the feature composition needed to capture the Universal Contiguity.

The proposal depicted in (38) then makes Universal Contiguity follow from three components:

- (39) Components of the theory
- a. Individual cases are built of atomic features by Merge
  - b. The features are ordered in a universal functional sequence
  - c. Spell out incorporates the Elsewhere Condition

(39a,c) derive Contiguity. (39b) strengthens it into Universal Contiguity.

The gist of the proposal is that the cumulative sub-classification, needed to capture the Universal Contiguity, is the product of syntax. Reversing the perspective, we can say that syncretism exhibits the abstract adjacency requirement *because* the representations this requirement derives from are built by syntax. The proposal has additional consequences for two domains.

First, the proposal supports Starke's nanosyntactic view, according to which sub-morphemic features are combined in the same way as phrases and sentences. According to this view, syntax does not start from words, morphemes, or bundles of features – syntax “builds” them. Nothing except for atomic features precedes syntax (the successive application of Merge). Packaging of features into morphemes is performed by lexical insertion, which takes place only after syntax has done its job.

Second, the proposal is loaded with empirical content beyond syncretism: the features and the phrases headed by these features ought to undergo all sorts of operations that are the bread-and-butter of traditional syntax. And so they do.

## 1.4 Blake's hierarchy

In this section, I show that the features proposed to account for syncretism interact with one of the core operations of syntax, namely movement. Specifically, I show that movement of the noun-phrase targets positions between the

proposed features, and that this derives one part of a typological generalization known as Blake’s hierarchy. The main point is this: if syntactic movement can access positions between these features, these features must each have an independent position in the syntactic representation.

Consider first the question how a case affix ends up as a suffix on the noun. Here, I am taking for granted the approach of Kayne (1994), according to which *c*-command maps onto linear precedence. Combining Kayne’s theory with the proposal that case features are base-generated above the NP, we are led to conclude that if nothing happens, case marking will be prefixal. Consequently, a case marker becomes a suffix only as a result of noun movement. Approaches differ regarding the nature of this movement.

Until recently, the ordering of morphemes within a morphologically complex word has been the job of head movement exclusively (see, e.g., Baker 1988). This would mean that case affixes are suffixed as a result of successive cyclic head movement of the noun. However, in later developments of the generative theory (see Koopman 2003 for an overview), certain orderings of morphemes were argued to be the result of phrasal movements as well. (Recent contributions include, a.o., Koopman and Szabolcsi 2000, Koopman 2005a, Nilsen 2003, Julien 2007, Muriungi 2008, Leu 2008). This led to the idea that head movement can be eliminated, and understood as a special instance of phrasal movement, so-called “roll-up.” In such case, case suffixes are phrasal suffixes.<sup>14</sup>

Here, I will adopt the theory which derives affix orders by phrasal movements, and I discuss empirical data supporting this choice in chapter §7. I will further take for granted the restrictions on movement argued for in Cinque (2005), which I give in (40).

- (40) Rules of movement: Cinque (2005)
- a. Movement is only to the left
  - b. Move only constituents containing the head-noun

(40a) is the consequence of two independent conditions. One, movement only targets *c*-commanding positions, and two, *c*-command maps on linear precedence. (40b) is intended to rule out two things. First, it rules out independent movements of the modifiers of the noun. However, it is not intended to rule out movement of possessors and other DPs that occur embedded inside the extended NP (such movements must in fact be assumed for many languages).

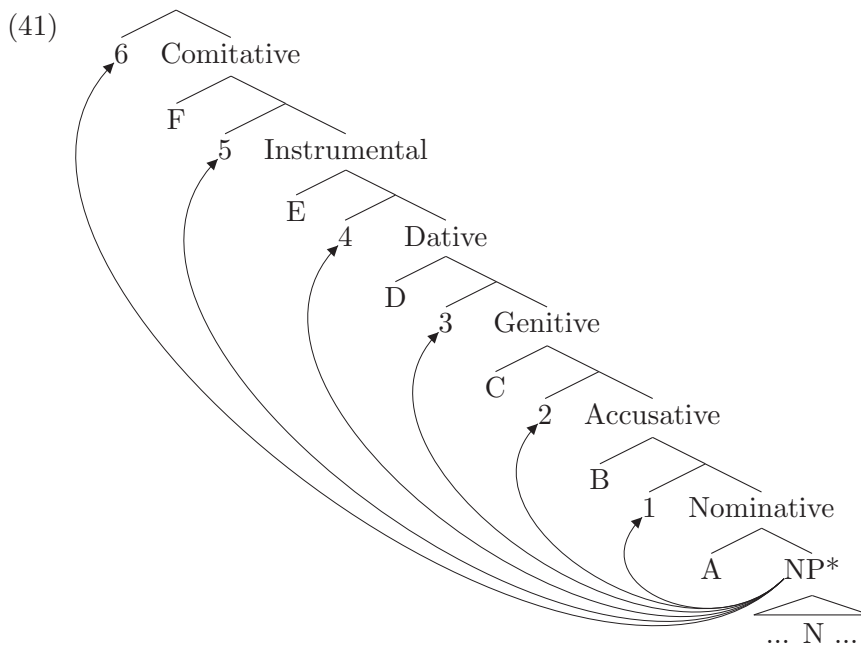
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<sup>14</sup>At the descriptive level, a distinction is sometimes made between case suffixes and postpositional case clitics (see, e.g., Dryer 2008b). Both are phonologically firmly attached to their hosts, but the former attach to the stem, and the latter to the phrase. As an interesting example of the latter, Dryer (2008b) mentions Somali, where the subject “is realized by a change in tone on the last syllable of the noun phrase.”

This suggests that at least some suffixation is phrasal, and that stem-level noun suffixes are just a special case of phrasal affixation (when the phrase is noun-final).

It also rules out remnant movement of a constituent from which the head of the extended projection has been extracted. The motivation for these assumptions is that they constrain movement in a way that allows to derive all attested orders (within the domain that Cinque looks at), and disallows all the unattested ones. These principles will turn out to be important later.

In (41), I then give a schematic illustration of what must happen in a language if a particular case is to be expressed as a suffix: a constituent containing the noun must move to the left of all the features that a particular case is composed of. I denote the moving constituent as NP\*, which stands for a constituent that is minimally an NP, but which can also be bigger.



The numbers 1-6 indicate the landing sites of NP\*. 1 is the landing site which turns the nominative into a suffix. 2 represents the same position for the accusative and so on.

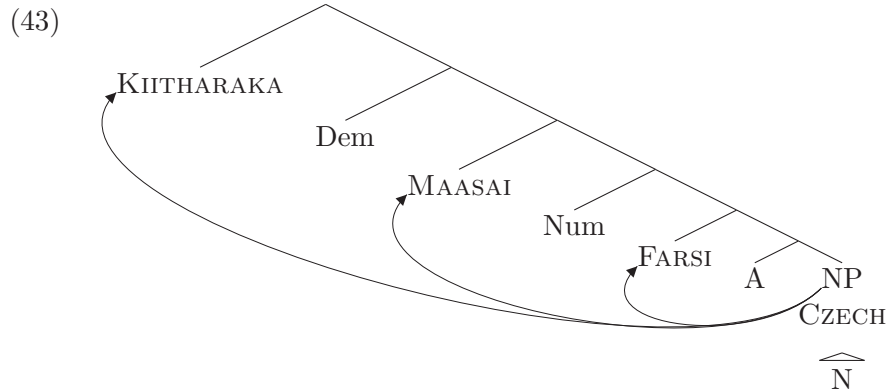
I have to mention that in (41) and in what follows, I ignore any additional cases a language might have beyond the ones mentioned in the Case sequence (10b). For instance, Russian has the prepositional case, but since we have not placed it yet in the (universal) functional sequence, we have to postpone the full account which incorporates such cases. I come back to this issue in chapter §3, where I discuss the status of such cases.

I now proceed to combine this picture with the view, recently defended in Cinque (2005), that languages differ regarding the maximum height of noun movement within its extended projection. To see how this works, consider the following paradigm, which illustrates four different ordering possibilities of the Noun (N) and its modifiers; the adjective (A), the Numeral (Num), and the

Demonstrative (Dem).

- (42) Variation in N movement: Czech, Farsi, Maasai, Kiitharaka<sup>15</sup>
- |    |               |               |               |               |
|----|---------------|---------------|---------------|---------------|
| a. | ty            | tři           | velmi tlusté  | <b>knížky</b> |
|    | those         | three         | very thick    | <b>books</b>  |
| b. | un            | seta          | <b>ketabe</b> | kheili koloft |
|    | those         | three         | <b>books</b>  | very thick    |
| c. | kùndâ         | <b>mésai</b>  | àré           | sàdan         |
|    | those         | <b>tables</b> | two           | nice          |
| d. | <b>mabuku</b> | mara          | mathatu       | manene muno   |
|    | <b>book</b>   | those         | three         | big very      |

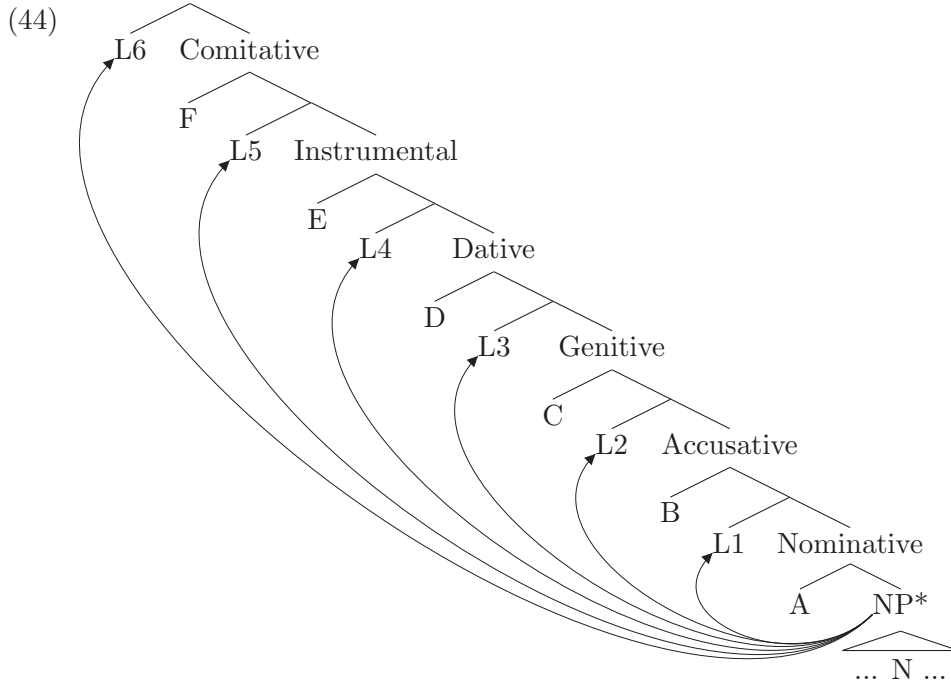
Cinque (2005) analyzes the variation by proposing that the Czech order, seen in (42a), represents the base generated order of Dem Num A and N. In Farsi (42b), however, the order of A and N is the reverse compared to Czech. This leads Cinque to propose that the order in Farsi is derived by a leftward movement of the NP (containing just the N) to the left of A and no further, see (43b). In Maasai, (42c), the phrasal movement of NP crosses both A and Num. And finally in Kiitharaka, movement of N goes all the way up. The derivations are depicted below:



Now given the variation we find in the lower domain of the extended NP, we expect that languages will also differ in how high a noun can move in the region of the extended NP where case features are generated. Not all languages will move their NP\* to the top of the tree (41), i.e., all the way to 6. Hence, we predict the existence of languages which can only move the NP\* as high as 5, or 4 (etc.), but not higher. (44) shows this, L1, L2 etc. stand for “language which moves the NP\* maximally as high as 1, 2 etc.” The only difference (and one which is relevant here) is that while in (43), movement crosses whole

<sup>15</sup>Sources of data as follows. Czech: the author, Farsi: Marina Pantcheva (p.c.), Maasai: Koopman (2005b:ex.3), Kiitharaka (diacritics omitted): Peter Muriungi (p.c.).

phrases, it crosses atomic features in (44), features, which can all be hidden inside a single morpheme.<sup>16</sup>



What empirical facts does (44) predict? First note that languages which cannot move their NP\* as high as the position 6 will split the features of the comitative case into two sets. Some features will be to the left of the noun, and some will be realized to its right. This is similar to what we have seen above in Farsi and Maasai, where some noun modifiers are to the right of NP\*, and some are to the left. In the present case, features to the left of the NP\* will be spelled out as a (functional) preposition, features on the right as a case suffix. Comitative in these languages is thus spelled out as P+NP\*+K.<sup>17</sup>

Further, languages will differ in the same way if we look at the instrumen-

<sup>16</sup>The movement of NP\* across the case features does not necessarily put the noun to the left of its modifiers. The modifiers can be pied-piped inside the NP\*, yielding an order Dem > Num > A > N > K. Further, any complements a noun has must be evacuated to a high position, as already noted in Cinque's (2005) proposal, otherwise they would intervene between N and K.

<sup>17</sup>From now on, I start calling the prepositions which necessarily show up with phrases denoting accompaniment, instruments, recipients or possessors functional prepositions, and oppose them to spatial, temporal and various other relational adpositions (such as A because of B, etc.). One of the consequences of the setup is that these functional prepositions spell out the same features which are spelled out as a case suffix in other languages. I test the empirical accuracy of this consequence in the next section.

tal. Languages which move to 5 (or higher), will express instrumental as a suffix. Languages which move to 4 or lower, will split the features into a suffix, and a functional preposition. The same variation arises at every point of the tree. In general terms, the consequence of the proposal I have put forth for syncretism is that the features which form a case suffix in one language can be split by movement of the NP\* in another language.

Importantly, the variation between languages in the height of NP\* movement directly translates onto the variation in the inventory of case suffixes in a language. Consider why. If NP\* can move as high as X, it can also move to all positions lower than X. Hence, we generate a series of implications of the form: if a language expresses accusative as a suffix (NP\* moves to 2), nominative is also a suffix (NP\* moves to 1). Or: if a language expresses the genitive as a suffix (NP\* moves to 3), it also expresses the accusative as a suffix (NP\* moves to 2). These implicational statements are conflated into the following generalization:<sup>18</sup>

- (45) *The inventory of case suffixes:*
- a. If a given case in the Case sequence is a suffix, all cases to its left (if present in the language) are also suffixed.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM

Thus, the theory of syncretism developed in the preceding section leads to the consequence that it restricts the inflectional cocktail of case suffixes across languages, and yields an independent test of the hypothesis. In what follows, I show that the prediction is correct.

In (46), I give examples of languages which instantiate the predicted types, drawing mainly on Blake (1994), who conducts a closely related investigation on which I report below in more detail. I do not list any languages under (46a,b), for the reason that nominative is overwhelmingly unmarked. This makes it impossible to decide whether it is a prefix, or a suffix.<sup>19, 20</sup>

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<sup>18</sup>It should be mentioned that I follow here a similar track as Calabrese (2008), linking case syncretism, functional prepositions and case availability in an overall account. While the implementation here is rather distinct from Calabrese's, much of what I say here finds parallels in his work. I discuss some aspects of Calabrese's proposal further in ch. 2.

<sup>19</sup>This also leads to some caveats concerning the status of nominative in the other languages.

<sup>20</sup>I repeat that in (46), I ignore any additional cases a language might have beyond the ones for which the prediction is made on the basis of the Case sequence (10b).



(46)

	movement	the inventory of suffixes	example languages
a.	none	∅	—
b.	to 1	NOM	—
c.	to 2	NOM, ACC	Bulgarian, French, English (taking <i>of</i> rather than <i>'s</i> to be the genitive)
d.	to 3	NOM, ACC, GEN	Modern Greek, semitic languages (in general), Nubian languages (Nilo-Saharan), Comanche (Uto-Aztecan).
e.	to 4	NOM, ACC, GEN, DAT	German, Yaqui and several Nilo-Saharan languages including Fur, Nuer and languages of the Didinga-Murle group
f.	to 5	NOM, ACC, GEN, DAT, INS	many Slavic languages, e.g., Russian, Czech, Polish, Slovenian. Further Latvian and Classical Armenian, Latin, Old and Middle High German, Old English
g.	to 6	NOM, ACC, GEN, DAT, INS, COM	Dime (Omotic), some Dravidian languages, e.g. Tamil, Toda, Irula, Kodaga and Kasaba

The next question is whether there are any counterexamples. To give a brief overview of the situation, consider a hierarchy of availability of case proposed in Blake (1994), henceforth Blake's hierarchy.

(47) *Blake's hierarchy* NOMINATIVE > ACCUSATIVE / ERGATIVE > GENITIVE > DATIVE > LOCATIVE > ABLATIVE / INSTRUMENTAL > other

Blake (1994:§5.8) says the following: "This hierarchy is to be interpreted as follows. If a language has a case listed on the hierarchy, it will usually have at least one case from each position to the left". This hierarchy is then related to the prediction we make, because if the NP\* moves only to the left of the genitive, the language will have a genitive, but it will not have a dative in the traditional sense (it will lack the dative suffix, and the features of the dative will be split into a functional preposition and case suffix). This means that the ordering of cases should be the same both for the Case sequence (as

manifested in syncretism) and Blake's hierarchy (47). To see if that is the case, I leave out from Blake's hierarchy those cases which we have not encoded in our functional sequence yet. (For these cases, no prediction is made so far.) As a result, the hierarchy (48) emerges as a modification of the original Blake's hierarchy.<sup>21</sup>

- (48) *Modified Blake's hierarchy* NOMINATIVE > ACCUSATIVE >  
GENITIVE > DATIVE > INSTRUMENTAL > other

(48) looks exactly as we predict, it is identical to our Case sequence (10b), the only difference being that Blake does not mention the comitative, which is then hidden inside the label "other." Blake's hierarchy thus supports the present theory, because if it is correct, there are no counterexamples to our prediction.

Note though that there are two points of difference between Blake's proposal and the present one, which both point to the conclusion that Blake's hierarchy is a stronger statement than the prediction made here. First, Blake's hierarchy is not a hierarchy which distinguishes only the division between K (case) and P (preposition), but also between case and postpositions. This distinction is usually much harder to make, and it presents a type of variation that has not been touched upon here yet. (This variation has to do with pied-piping, and possibly other factors.)

Second, Blake's hierarchy has "surface" counterexamples (mentioned and dealt with by Blake himself) which do not threaten the proposal here. For instance, Hungarian has many cases, but it lacks the genitive; Hungarian possessors are either dative, or nominative. This is a counterexample to the letter of Blake's hierarchy, but not to the present proposal. The present proposal predicts only as much as the following: since Hungarian has a dative suffix, genitive is not expressed by a preposition (which is vacuously correct for Hungarian, because there is no genitive case in the traditional descriptive sense).

In principle, there are two ways to approach the facts of Hungarian, both of which are consistent with our theory. (i) Hungarian never allows the constituent corresponding to the genitive to surface. It uses a different structure. (ii) Hungarian does use the genitive constituent, but this constituent is always syncretic with the dative (a conceivable option, since they are structural neighbors). The general point is that our hypothesis makes a prediction about the height of NP\* movement and the split between P and K this gives rise to; but we do not predict that a constituent corresponding to a particular case is spelled out by a piece of morphology that uniquely identifies it, or that this constituent gets a chance to surface.

Both of these caveats point to the conclusion that the hypothesis concern-

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<sup>21</sup>I have left out the ergative, the locative and the ablative. I come back to the locative in chapter §3.

ing the division between K and P is weaker than Blake's statement; every counterexample to the present proposal is also a counterexample for Blake, but not vice versa. Hence, to the extent that Blake's hierarchy stands to empirical data, so does the present theory.

To conclude the section, I repeat the prediction which follows from the proposal that features responsible for case syncretism each occupy a designated syntactic position:

- (49) *The inventory of case suffixes:*
- a. If a given case in the Case sequence is a suffix, all cases to its left (if present in the language) are also suffixed.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM

Now given that (49) is both a prediction of the current system, and an empirically accurate picture of the variation in case inflection in the languages of the world, I conclude that the two parts of the proposal which directly feed into such a prediction gain an independent confirmation:

- (50) Components of the theory
- a. Individual cases are built from atomic features by Merge
  - b. The features are ordered in a universal functional sequence

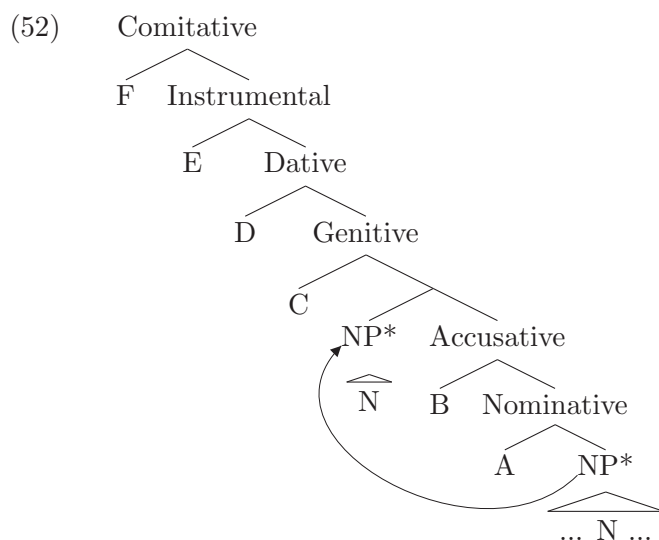
## 1.5 On functional prepositions

The proposal of the preceding section accounts for the variation and its apparent regularity in the domain of case suffixes; but at the same time, it predicts that the same regularity holds in the domain of functional prepositions. Since functional prepositions in one language spell out the same features as case suffixes in another language, the same laws must apply:

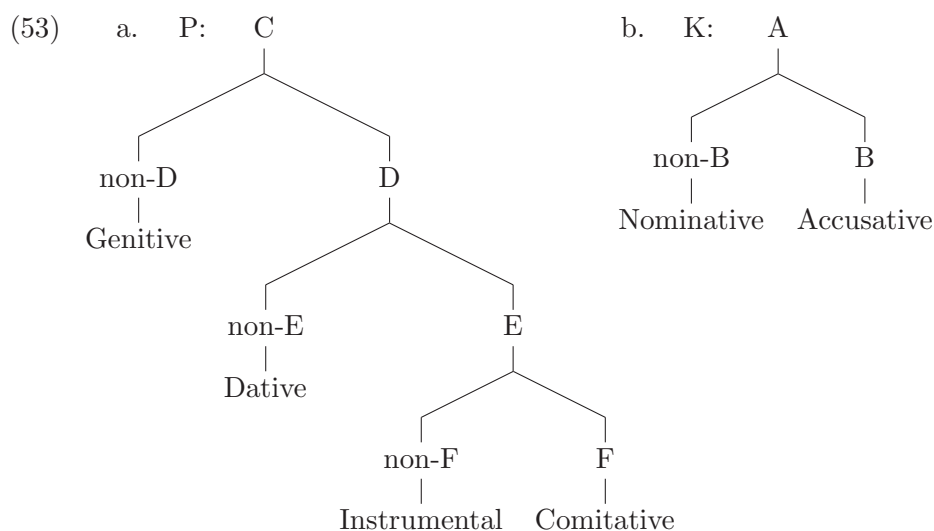
- (51) Universal Contiguity (Functional prepositions):
- a. Only adjacent prepositional markers show systematic syncretism in the Case sequence.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM

Consider the reasoning. Movement of the noun partitions the universal set of case features into two, each forming a contiguous sequence. Within the set of suffixes K, only adjacent terms can be syncretic, due to cumulative sub-classification and the Elsewhere Condition. But the same cumulative sub-classification applies to the set P. As shown in section §1.2, the set of syncretisms thus generated is equivalent to a linear constraint (51). Consider some examples.

In Bulgarian, full nouns bear only a nominative or accusative suffix.<sup>22</sup> The highest landing site of the noun is then between B and C.



This gives the two following sub-classificatory trees for the set of cases (K) and the set of functional prepositions (P):



In (53a), only structurally adjacent functional adpositions can be syncretic. Bulgarian instantiates two of these syncretisms. Genitive and dative are expressed by the preposition *na* ‘to/of,’ and instrumental and comitative are expressed by the preposition *s* (the same syncretism as English) ‘with.’ Both

<sup>22</sup>The distinction between nominative and accusative is made only with definite DPs.

adpositions select for the accusative case (composed of A,B), showing that noun movement has crossed these two features.<sup>23</sup>

In the Bantu language Kiitharaka (Muriungi 2006), spoken in Kenya, the noun bears no dedicated case morphology when it is a subject or a direct/applied object. Then there are three prepositions. Genitives are marked by the so-called associative marker *a*. Another preposition, *kiri*, marks (broadly) animate goals and sources (e.g. take/throw something to John), similar to what a subset of datives would do in my native Czech. The last one of the prepositions is *na*, which marks the instrumental and comitative. There are no other prepositions, spatial markers are postpositional. Kiitharaka then appears similar to Bulgarian, except that there is no genitive/dative (prepositional) syncretism.

As the next example, consider German. German has four cases: nominative, accusative, genitive, dative. Instrumental and comitative are each expressed by a preposition, which turns out to be the same: *mit* ‘with.’ In both cases, it attaches on top of a dative noun. In theoretical terms, the noun (phrase) in German moves above D (the topmost feature of the dative case), partitioning the universal functional sequence into two bits:  $P = \{E,F\}$ ,  $K = \{A, B, C, D\}$ . *K* is spelled out as dative on the noun, and *mit* ‘with’ spells out either E only (instrumental), or both E and F (comitative).

So far, we have seen examples of all predicted syncretisms among the oblique cases, except for the syncretism of DAT/INS. To fill the gap, I turn to Gitksan, a Tsimshianic language spoken in Canada (Hunt 1993, Peterson 2007b). In this language, all case marking is prefixal, hence, no NP\* movement across the case features takes place. There are two classes of nouns: proper nouns, and common nouns. The common nouns are always preceded by the so-called connective *t* (sometimes written also as *hl*), and as such they occur in the absolutive, ergative and genitive environments.<sup>24</sup> In the dative and instrumental, a preposition *?a* precedes the connective *t*, yielding a complex preposition *?a-t*. The whole paradigm is given in the first column of the table (54). I also note here that I equal the absolutive case with nominative (in Gitksan), but this assumption is not crucial.

(54) Gitksan marking

	COMMON	PROPER
ABS=NOM	ł	t
ERG/GEN	ł	s
DAT/INS	?a-ł	?a-s

<sup>23</sup>Source: Marina Pantcheva (p.c.).

<sup>24</sup>The connective is enclitic, and it is written as a part of the immediately preceding word. However, it belongs to the following noun morpho-syntactically. The same remarks apply to the two following connectives *s* and *t* which appear with proper nouns.

The proper nouns are preceded by the connectives *t* in the absolutive, and by *s* in the ergative and genitive.<sup>25</sup> The dative/instrumental preposition *?a* attaches to the genitive form, yielding *?a-s*. In Gitksan, we thus witness two facts of interest. First, we have an example of a DAT/INS prepositional syncretism, an option predicted by the theory.<sup>26</sup> Second, we have seen that the DAT/INS preposition *?a* stacks on top of the genitive marker. This latter fact can be nicely captured by the proposed decomposition, since both dative and instrumental in fact contain a genitive. I turn to this issue in the next section.

The facts are summarized below:

(55) Prepositional syncretism

	NOM	ACC	GEN	DAT	INS	COM
English	—	—	of	to	with	with
Bulgarian	—	—	na	na	s	s
German	—	—	—	—	mit	mit
Kiitharaka	—	—	a	kiri	na	na
Gitksan	ɬ/ t	(ERG)	ɬ/ s	?a+GEN	?a+GEN	?
Maasai	—	—	—	t-	t-	t-

I do not know of problematic cases of prepositional syncretism, but this topic is much less studied in the literature than case syncretism. As a result of that, I might have missed some counterexamples. Conclusion: functional prepositions show the same types of syncretism as case suffixes. This is because P and K are made of the same ingredients, another consequence of the initial setup.

## 1.6 Containment

In the proposed case representation, there are structural containment relations among cases. Thus, the accusative contains the nominative, the genitive contains the accusative (and by transitivity also the nominative) and so on. Straightforward evidence for this can be provided by languages which show the proposed structural containment morphologically.<sup>27</sup> In fact, the account

<sup>25</sup>Hunt (1993) proposes that the genitive is built on top of the nominative, i.e., it corresponds to *s-t*. Consequently, the DAT/INS form would be *?a-s-t*. I do not reflect this here, since the *t* is never pronounced in such examples (and Hunt has to introduce a special morpho-phonological rule which deletes this *-t*). The reasons given in Hunt (1993:p.16-17) for assuming an underlying *-t* are inconclusive to my mind. Nothing hinges on this here, though.

<sup>26</sup>DAT/INS/COM prepositional syncretism is attested also in Maasai, Nilo-Saharan (Storto 2003:ex.7, Koopman 2003).

<sup>27</sup>Similar cases of morphological containment serve as a motivation for syntactic decomposition in related proposals by Bobaljik (2007) and Pantcheva (2008a).

predicts such containment to be not only possible, but also puts restrictions on such a compound expression of case:

- (56) Universal (Case) Containment:
- a. In the Case sequence, the marking of cases on the right can morphologically contain cases on the left, but not the other way round.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM

The positive evidence is clearest for the oblique cases, where we often see the combination of two morphemes: a functional preposition and a case suffix, as reviewed in the sections above. Thus, in Russian, the comitative is expressed by a functional preposition which attaches on top of the instrumental (showing that the comitative contains the instrumental). In German, instrumental is expressed as a functional preposition and a dative (showing that the instrumental contains the dative). In Arabic, the dative *li* ‘to’ (and also the instrumental *bi*, among other meanings ‘with’) attach on top of the genitive. Finally, in English or Bulgarian, all oblique cases are based on the accusative. I sum up below:

(57) Case containment

language	case	expression
English	GEN	<i>of</i> + ACC
Arabic	DAT	<i>li</i> + GEN
German	INS	<i>mit</i> + DAT
Russian	COM	<i>s</i> + INS

Such examples have the structure P-N-K, i.e., with a noun intervening between the two markers which spell out case. This is the most common scenario, since once the case features are at the same side of the noun, they tend to be packaged together in a single morpheme. However, even in these instance examples of containment occur; I have given above a P-stacking example from Gitksan (P-P-K), and I mention some examples of N-K-K containment in the next chapter, see §2.6.2.

## 1.7 On (no) variation in case assignment

The present view takes case to be a universally present set of syntactic projections, rather than a feature of the noun. This allows for a neater approach to language variation. Consider the following pair of examples from van Riemsdijk (1983):

- (58) a. ein [ ihm ungeläufiges ] Wort  
       a he.DAT unfamiliar word  
       b. a word unfamiliar { $\emptyset$ /to} him

For van Riemsdijk (following Chomsky 1981), case is a feature of the noun, which is not projected in syntax. From that perspective, the German example (58a) represents a case where an adjective is complemented directly by an (extended) NP. This option is unavailable to English, shown in (58b), where adjectives only allow PP complements. Adopting further the proposal that NPs must be licensed by case, van Riemsdijk is led to conclude that the difference between English and German is that adjectives in German can assign case to their complement, while English adjectives can't.

This is certainly a possible way to approach the variation, but it leads to the following question (posed by van Riemsdijk himself): “why does there appear to be a correlation between the existence in a language of morphological case system and the possibility for adjectives to assign case?” (p.223)

The answer to this question is clear in a theory where dative is projected in syntax. In such case, adjectives in German and English select for exactly the same constituent, the dative, and they differ in the height of N-movement. The extended NP in German moves above the dative, which leads to the existence of (i) a “rich” case system, and simultaneously (ii) it gives the impression that the NP is selected directly. In English, the NP stays low, which leads (i) to the emergence of the preposition, and at the same time, (ii) the impression that adjectives select for PP.

This view also gains support from the syntactic behavior of such phrases. If (for instance) dative-like arguments must project a PP in English, but they need not do that in languages such as German, we would expect that the presence of the additional P projection in English will lead at least to some syntactic consequences. However, as Řezáč (2008) observes on the basis of his study, this is not the case. Whether oblique case is expressed by a preposition or by a suffix “is irrelevant to its syntactic behavior” (p.87). This is predicted if every language projects the same features in syntax, and languages differ only in the height of noun movement. This state of affairs is, however, not predicted by the traditional approach. That is because that approach makes a distinction between cases and functional prepositions, taking case to be a feature of the noun, but understanding functional prepositions as projected in syntax.

The present approach is also more plausible in view of the fact that variation comparable to (58) can be found within a single language, as in the Bulgarian paradigm (59). In (59a) (compare (58a)), we see an adjective whose argument is expressed by the dative clitic *mi*. (The clitic leaves the AP and appears adjacent to the verb, the clitic position in Bulgarian.) In (59b) (compare (58b)), the argument is headed by a lexical noun, in which case a preposition



must appear.

- (59) a. Tazi duma mi e nepoznata.  
           that word I.DAT is unfamiliar  
           ‘That word is unfamiliar to me.’  
       b. Tazi duma e nepoznata {\*Ø /na} Kamen.  
           that word is unfamiliar to Kamen  
           ‘That word is unfamiliar to Kamen.’

Under van Riemsdijk’s view, adjectives in Bulgarian can assign case to clitics, but they cannot assign case to full nouns. The question is, of course, where in the grammar this is stated, and whether any restriction can follow from this.

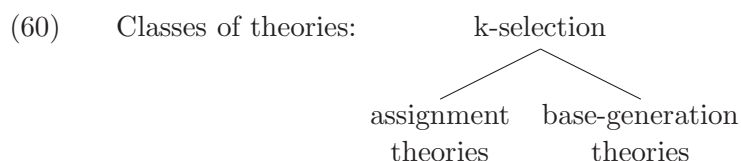
Under the alternative view, the variation is a matter of movement: clitics move higher within the extended NP than full nouns. We know independently that clitics occupy positions which are different from those of full nouns (see, e.g., Cardinaletti and Starke 1999), and hence the emerging picture seems more plausible also on these grounds.

## 1.8 The computation of case

The present view has interesting consequences for a theory of case computation, i.e. the question of how a noun comes to bear a particular case in a given syntactic context. In particular, the expanded representation of case proposed here eliminates in some cases the need for its computation. In order to state this in more precise terms, and also in view of certain proposals to be made later, let me start by a brief terminological and classificatory remarks.

I will be using here the term case selection (k-selection for short) in order to refer to the relation between a syntactic context on the one hand, and the case marking required by this context on the other. For example, I will be saying that the preposition *mit* ‘with’ in German k-selects the dative on its object, or that the finite T in English k-selects the nominative. The purpose of introducing this notion is to avoid any implications concerning the nature of this relation.

Specifically, most current theories understand k-selection as case assignment, i.e. as an addition of either a feature, or the value of a feature (Chomsky 1998, Řezáč 2004, Marantz 1991, McFadden 2004, Matushansky 2007, Pesetsky 2007, Kayne 2004, Jayaseelan 2007). There are important differences among these theories concerning the implementation, but I gloss over that here. Instead, I contrast these theories with another broad class of approaches where arguments are base-generated bearing a case. An example would be the checking theory of Chomsky (1995b) or the “licensing” theory of Neeleman and Weerman (1999).



With the territory thus devided, it is clear that the account of functional prepositions offered above belongs in the camp of base-generation theories of k-selection. This said, however, there is also one significant difference which I turn to below.

### 1.8.1 K-selection by functional prepositions

In current practice, both classes of theories are “relational:” case is determined by a relation between the extended NP and a k-selector. This practice reflects traditional conceptions, according to which nominal case is a category designed to represent or reflect syntactic relations the noun enters into. As Blake (1994:p.1) puts it: “Case is a system of marking dependent nouns for the type of relationship they bear to their heads.”

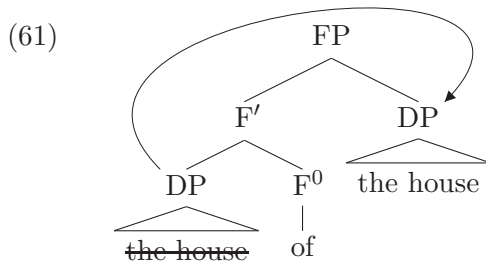
In traditional grammar, and in the theories I know, the same relational approach carries over to functional prepositional phrases. I quote Blake again as a textbook example: “Cases can also be governed by prepositions or postpositions” Blake (1994:p.2). Thus, the preposition *of* in English is said to govern the accusative, and *mit* ‘with’ in German can be said to govern the dative, where the accusative/dative marking on the noun is understood as a reflex of the dependent status of the noun on the preposition.<sup>28</sup>

This view on functional prepositions has been also incorporated in the generative theories. As an example, consider the proposal by Rooryck (1996). His paper attempts to analyze prepositional phrases with functional prepositions within the “minimalist assumptions about Case marking (checking) as a Spec-Head relation” (p.226). To achieve this, Rooryck proposes that the DP complement of the functional adpositions must check its case by moving to the Spec of the functional preposition, as depicted in (61):<sup>29</sup>

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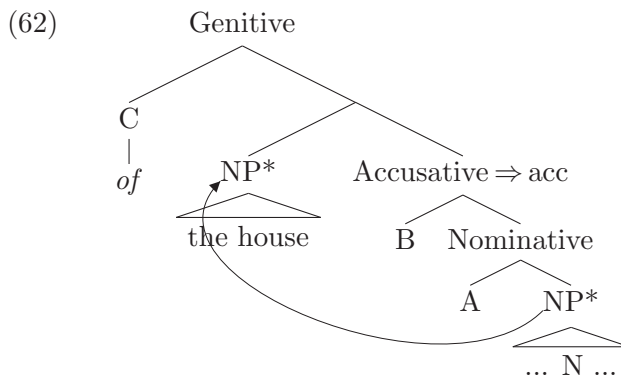
<sup>28</sup>For instance, Vincent (1999) takes this view to be so uncontroversial that he uses it to argue that there is in fact no (categorical) distinction between functional and full prepositions: “[an] objection to treating case-marking uses of apparent prepositions as nonprepositional lies in the fact that, in those languages that have overt morphological case, both types assign their own case” (p.1115).

<sup>29</sup>(61) is from Rooryck (1996:2b). Rooryck argues that movement targets a right Spec. Of course, there are LCA compatible renderings of such a structure, the crucial point here is only that the DP checks case in Spec,FP.

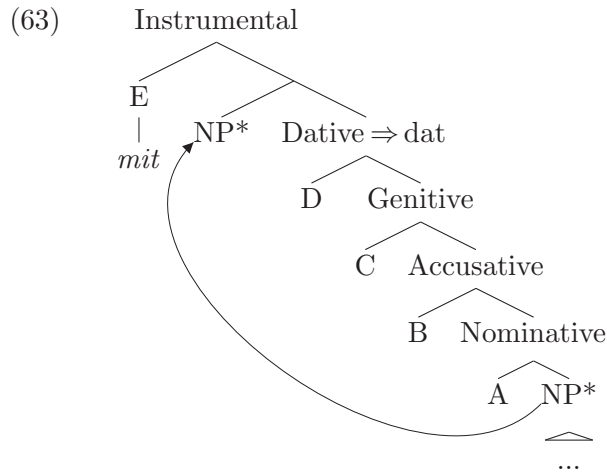


In the approach proposed here, however, k-selection by functional adpositions is non-relational, and amounts to selection in the functional sequence. Thus, functional prepositions combine with the right case in exactly the same way as T (or Aspect, or simply the relevant head) selects for *v*P. The need for any relational mechanism of case assignment or checking beyond complement selection disappears.

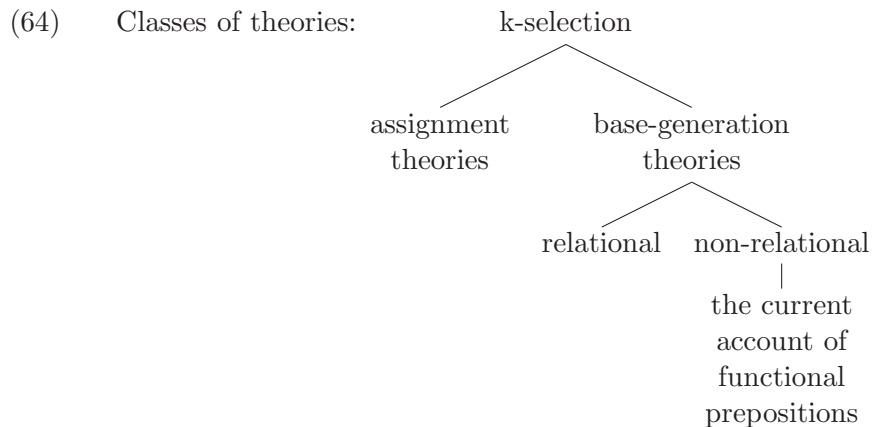
This is illustrated in (62): *of* is the spell out of the feature C, which comes on top of the constituent corresponding to the accusative in the functional sequence. The accusative, null in English, is spelled out as a case suffix on the raised NP\*. The fact that *of* k-selects accusative is a consequence of the proposal that NP\* in English moves to the position between the features B and C.



Similarly in (63), the German *mit* spells out the topmost instrumental feature E, and this feature in turn comes directly on top of the dative in the functional sequence. The dative is spelled out as a suffix on NP\*, a consequence of the proposal that NP\* in German moves to the position between these features.



Thus, while the present account of k-selection in functional adpositions belongs to base-generation theories, it differs from accounts such as Rooryck (1996) in that it is non-relational: the movement of NP\* does not establish any new relation between the features spelled out as P and those spelled out as K. I reflect this reasoning by splitting the base-generation approaches into two branches in the tree below, and also indicate schematically where the current theory belongs.<sup>30</sup>



For functional prepositions, k-selection thus reduces to the functional sequence and noun movement within that sequence, independently needed tools. No special mechanism of assignment or checking is needed to account for these data: in this domain, the fine-grained representation of case eliminates the need for its computation. This has been enabled by the assumptions (65a,b). (65a) makes sure that case features can be split by movement, and (65b)

<sup>30</sup>I do not split the assignment theories, since they cannot be sub-divided in the same way. If case is assigned, it is always assigned by something, and hence, the assignment theories are relational by definition.

negotiates the terms of the division.

- (65) Components of the theory
- a. Individual cases are built from atomic features by Merge
  - b. The features are ordered in a universal functional sequence

In addition to the reduction of the computational load, the theory makes a prediction concerning the case that functional prepositions assign. Consider this on the example of German. Since dative is expressed as a suffix, NP\* moves above the dative. There is no instrumental, and thus, NP\* lands below instrumental. From these two statements, it naturally follows that the instrumental feature is spelled out as a functional preposition which k-selects the dative case.

In general terms, the prediction is that functional prepositions should always k-select the “biggest” case a language has, because that is where NP\* movement stops. Consider briefly additional examples reviewed above: Russian has the instrumental as the biggest case, and the comitative preposition k-selects the instrumental. In Arabic, GEN is the biggest case, and it is also the case k-selected by the functional prepositions: the dative *li* ‘to,’ and the instrumental *bi*, among other meanings ‘with.’ I summarize the examples in the table below, a similar table that we saw in the preceding section:

- (66) K-selection by functional prepositions

language	NP* moves above	k-selection
English	ACC	ACC ( <i>of, to, with</i> )
Arabic	GEN	GEN ( <i>li</i> ‘to’, <i>bi</i> ‘with’)
German	DAT	DAT ( <i>mit</i> ‘with’)
Russian	INS	INS ( <i>s</i> ‘with’)

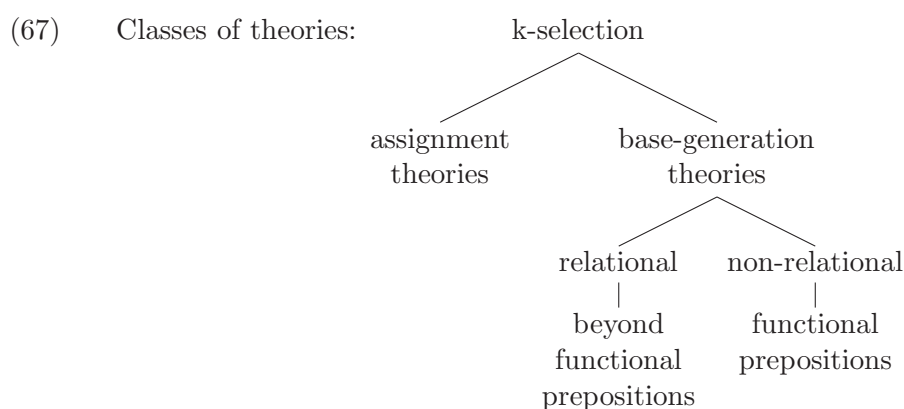
For almost all of the languages I looked at, the prediction is borne out, and counterexamples are rare. The only clear counterexample I know of is the preposition *me* ‘with’ of Modern Greek, which assigns accusative instead of the otherwise available genitive (see Lechner and Anagnostopoulou 2005). Leaving this problematic example (and possibly others) aside for now, the conclusion is that the proposed account not only simplifies the picture theoretically, it also makes a fairly accurate empirical prediction concerning the case k-selected by functional prepositions.<sup>31</sup>

<sup>31</sup>Within the confines of the present model, languages like Modern Greek call for the introduction of an additional principle with the effect that the NP\* does not raise as high as otherwise possible. Instead, for reasons to be determined, NP\* has to land lower, i.e., right above the accusative in the case of Modern Greek. An account of this fact will be provided in the next chapter (§2.9), once I introduce the so-called Anchor condition on spell out.

## 1.8.2 K-selection in VPs: the Peeling Theory

Consider now how k-selection can be implemented beyond the domain of functional adpositions, granted our decompositional approach. As a starting point, I note that while a relational theory of k-selection has been abandoned for functional prepositions, I adopt it for k-selection in other domains. The reason is that k-selection outside of functional PPs does not concern the height of NP\* movement, but the size of the constituent required by a K-selector. To give an example: the finite T k-selects the nominative constituent across languages irrespectively of how high the NP\* moves within a particular language.

While adopting the relational approach, the plan is to stay within the camp of base-generation theories:

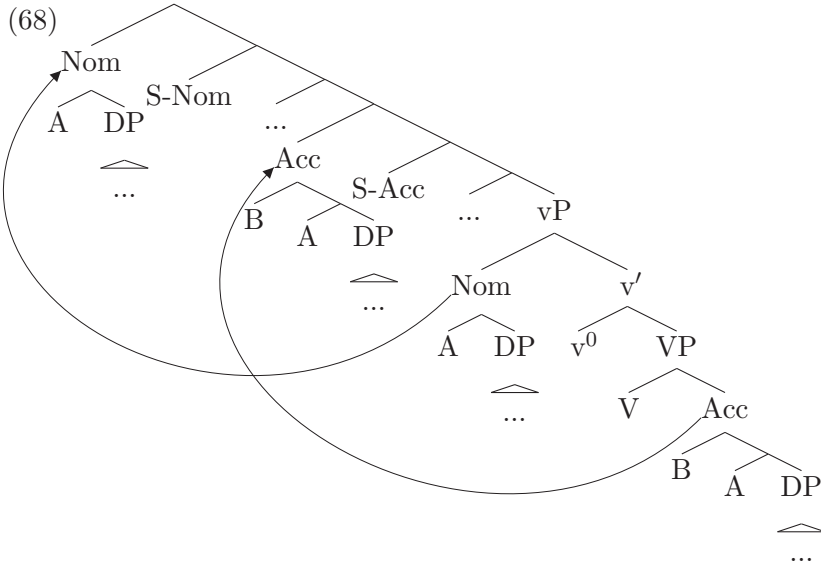


The reasons to adopt a base-generation account are both technical and, as we will see later, empirical. On the technical side, the difficulty we face is constituency. We have to base-generate an NP\* without case features, and stack an appropriate number of them on top of that NP\* in the course of the derivation, with each feature a separate head. To achieve this, one possibility would be to give up the Extension Condition of Chomsky (1995b), i.e. the idea that merge always applies to the root node. (See Řezáč 2004:ch.5, Sportiche 2005, Pesetsky 2007 for theories along these lines.) Alternatively, we have to make recourse to heavy remnant movement (similar to what has been proposed in Kayne 2004).

From this perspective, base-generation theories are a better match for the current model of case decomposition, since they do not meet with the constituency problem (at least not in the form encountered above). To show this, I first try to integrate the proposed decomposition within the checking theory of Chomsky (1995b). Then I observe certain shortcomings of the combination, and show that the facts fit more neatly in the Peeling theory of case, as proposed by Starke (2005).

In Chomsky's checking theory, DPs are base-generated bearing a particular case. I reflect this in the tree below, see (68), by merging the subject and object

in their respective positions as constituents of the relevant size. To ensure convergence, the DPs must check their case against a particular k-selector by either overt or covert movement. I gloss over the details here, and call the nominative k-selector S-Nom, and the accusative one S-Acc (S for k-selector). The accusative k-selector is assumed to be higher than the base-position of the subject, for details concerning the crossing paths of movement see Chomsky (1995b).



This proposal ensures, for instance, that in a regular transitive sentence, there would be no convergent derivation if the subject was base-generated in the accusative. If that was the case, the movement of the Acc constituent to Spec,S-Nom would not lead to a proper checking relation, and the derivation would crash.<sup>32</sup> Similarly if the object was generated in nominative, checking in Spec,S-Acc would fail. To conclude, there does not seem to be a major theoretical obstacle for integrating the present proposal within the checking theory.

However, I do not adopt the checking theory as highlighted above for reasons that will be discussed in more detail in ch. §4. In a nutshell, the checking theory as it stands is incapable to deliver certain empirical generalizations which connect k-selection and the proposed decomposition. In particular, there is an obvious connection between the syntax of nominative (the most prominent structural case), and the representation of nominative (the smallest case). However, this connection is immaterial for the checking theory, since it only requires that there is a match between a k-selector and the case of a

<sup>32</sup>This, of course, depends on the definition of the proper checking relation. In the present case, we would have to require that a proper checking relation can only involve the top-most feature of the Spec.





Nom position is projected, the object will be marked accusative only if its raising to this position is blocked by a different argument. This conclusion is desirable. It represents a generalization which emerged from later reformulations of an initial observation by Burzio, known as Burzio's generalization (see Burzio 1986, Yip et al. 1987, Marantz 1991, and Woolford 2003):

- (70) Woolford (2003:ex.4): *New Descriptive Generalization:*  
 The object gets nominative Case when there is no (nominative) subject

Most theories account for (70) by formulating conditions on the assignment of the accusative case (as in the original approach by Burzio). The Peeling theory offers a different perspective. The accusative is *always* assigned to the object, but it can be lost due to a further raising to nominative. (70) states when this happens: the nominative position is projected, but left unfilled. The nominative then sub-extracts from within the object to satisfy a requirement of the attracting position.

The movement of the internal argument to the nominative position strands a layer of case, as a result of which the argument is “peeled.” Hence, the Peeling theory of case. The gist of the theory is that any movement looks exactly like the second step of the derivation, and that this follows from a general condition which I will call “Criterial Freezing,” following Rizzi (2004): a phrase which lands in a checking position (the Criterial Position in Rizzi's terms) is frozen, and cannot move any further. However, sub-extraction from within that phrase is possible, because lower features have not reached their Criterial Position yet.<sup>33</sup> Note also that Rizzi (2004) motivates his Criterial Freezing by A'-movement processes, and thus, Peeling type of movement is not specific to case theory.

The combination of the Peeling theory and the proposed decomposition has strong predictions. In particular, case can change only from “bigger” to “smaller:” there can be no change of nominative to dative (as this would be a type of an “improper movement”), but the reverse is expected (and attested, as I argue later). I spell the prediction out as (71):

- (71) *Peeling and the Case sequence:*
- a. In the Case sequence, case on the right can change to any case on its left under movement, but not the other way round.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM

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<sup>33</sup>I comment on certain differences between Peeling and Criterial Freezing in ch. §4.

## 1.9 Conclusions and Prospects

To round up: I have started with the discussion of case syncretism, and I have argued that syntax has the right generative capacity to constrain (case) syncretism in a way that yields the so-called Universal Contiguity. (Universal Contiguity is further discussed in chapter §8 and §2.) This conclusion led me to adopt Starke’s nanosyntactic view and propose that individual cases are built of features which are arranged in a hierarchy, the functional sequence.

The proposal leads to a number of empirical predictions. One which I have addressed in this chapter concerns the interaction of the decomposition and NP\* movement. Taking the theory by Cinque (2005) for granted, I have shown that the account makes very specific predictions concerning the division of labour between functional prepositions and case suffixes. First of all, the inventory of case suffixes a language has is not random, and increases in accordance with the Case sequence. Second, the same syncretism patterns that were observed for case markers are attested for functional prepositions. The correctness of these two predictions strongly supports the plausibility of the initial account.

The proposal also reduces the theoretical apparatus due to the fact that k-selection by functional prepositions reduces to functional sequence and NP\* movement within that sequence. When it comes to k-selection in VPs, I have shown that the current “split-K” proposal is compatible with existing base-generation theories, Chomsky’s checking theory in particular. However, there are connections between the syntax of case and its feature composition, which are not captured by the checking theory. For instance, the fact that nominative and accusative are the “smallest” cases in the proposed decomposition is very likely connected to their syntactic behavior; yet this correlation does not follow from anything in the checking system.

I have thus sketched the essence of a new theory of k-selection (and movement in general) due to Starke (2005), namely the Peeling theory. One of the interests of the theory is that it derives the fact that accusative marking on the internal argument is dependent on the presence of a higher nominative, a generalization which is in line with later reformulations of an initial observation by Burzio (Burzio’s generalization). In ch. §4, I explore the Peeling theory in more detail, and argue that it accounts for the observed interactions between the case decomposition and the syntax of case.

Perhaps the most exciting, yet the most difficult part of any work on case is to work out the semantics of cases, and the individual features a case is composed of. I take up part of this issue in chapter §5, and I propose that the feature which derives the dative from the genitive introduces a change of state semantics. If this is correct, then this particular part of the syntactic decomposition shows compositional mapping from structure to meaning.

For the immediate future, however, I turn to Spell out, the packaging

strategy of grammar which wraps all the case features – stretched in a long line – into morphemes.

## 1.10 Appendix: The case sequence

This appendix contains the five empirical hypotheses which were proposed in the course of this chapter, each of which is sensitive to the same Case sequence. What I have proposed is that these effects can be unified if the Case sequence equals to the functional sequence.

- (72) *Universal (Case) Contiguity:*
- a. Non-accidental case syncretism targets contiguous regions in a sequence invariant across languages.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM
- (73) *The inventory of case suffixes:*
- a. If a given case in the Case sequence is a suffix, all cases to its left (if present in the language) are also suffixed.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM
- (74) *Universal Contiguity (Functional prepositions):*
- a. Only adjacent prepositional markers show systematic syncretism in the Case sequence.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM
- (75) *Universal Containment:*
- a. In the Case sequence, the marking of cases on the right can morphologically contain cases on the left, but not the other way round.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM
- (76) *Peeling and the Case sequence:*
- a. In the Case sequence, case on the right can change to any case on its left under movement, but not the other way round.
  - b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM



# Chapter 2

## Spell out and the architecture of nanosyntax

### 2.1 Introduction

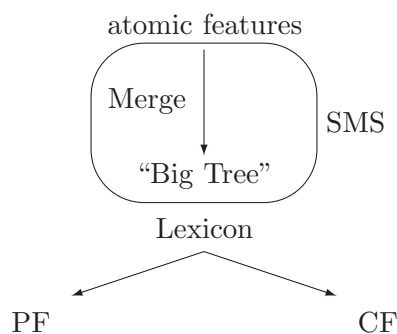
The purpose of this chapter is to explore (post-syntactic) spell out, the mechanism by which morphemes relate to syntactic features (McCawley 1968, Halle and Marantz 1993, Starke 2005). This discussion is necessary in view of the proposal by which I have spread the case features across several terminals, without there being a widely known mechanism which allows for multiple terminals to be swallowed by a single morpheme. In presenting such a mechanism, I draw mainly on Starke (2005) and propose that morphemes are allowed to spell out non-terminal nodes, which accounts for the mismatch between the number of terminals and the number of morphemes (see also McCawley 1968, Weerman and Evers-Vermeul 2002, Neeleman and Szendrői 2007).

The existence of phrasal spell out, which I defend here, has been recently argued against by Embick and Marantz (2008), who claim that only terminal nodes can be spelled out. However, I show that the abstract test cases which Embick and Marantz (2008) claim to provide evidence against the non-terminal spell-out, actually provides evidence in its favor. Further, I show that the architecture of grammar can be simplified if phrasal spell out is adopted. In particular, the need for certain morphological operations proposed within the framework of Distributed Morphology (Halle and Marantz 1993) disappears. Since these operations are assumed to operate in a separate module of the grammar, the module itself becomes emptier and we make important steps towards its elimination. The organization of grammar which emerges (the proposal is due to Starke 2005) is such that the interface between syntax and phonology is direct, mediated only by lexical access. Not only is there no lexicon before syntax, there is no morphology after it; it has been consumed by syntax.

On this view, then, syntax starts from a large number of atomic meaningful features which are combined by Merge into a “big tree.” The tree is responsible for aspects of grammar which are traditionally considered not to be part of syntax proper. Besides the domain of the traditional morphology, it covers much of what is traditionally thought of as formal semantics. For instance, the end-product of syntax can be a collection of features which says that “a discourse salient plurality of animate individuals caused a certain amount of a mass individual to undergo a process as a result of which the mass individual changed location.”<sup>1</sup> This module is called SMS by Starke, which stands for Syntax-Morphology-Semantics.

The structure generated by SMS is handed over to the lexicon. Via lexical access, the tree is translated into two distinct representations: phonological representation, and conceptual representation (on which I remain silent here).

- (1) Starke’s Version of the Y Model of Grammar



## 2.2 Generating a simple paradigm

To see first the mechanics of insertion, let me show how a simple paradigm of Modern Greek arises, given the decomposition of case argued for here.

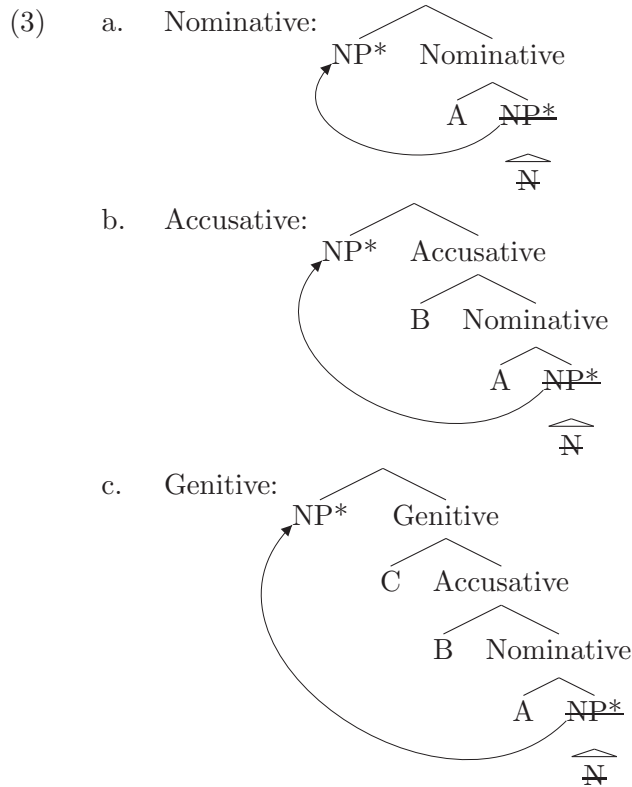
- (2) Modern Greek, Class I and V (from Alexiadou and Müller 2005)

	anthropos (man, sg.)	vun (mountain, sg.)
NOM	anthrop-os	vun-o
ACC	anthrop-o <sup>2</sup>	vun-o
GEN	anthrop-u	vun-u

<sup>1</sup>E.g., *The guys poured some water out.*

<sup>2</sup>Alexiadou and Müller (2005) give an alternative possibility, *-on*. Johnston (1996) does not mention it. I ignore it in the following discussion.

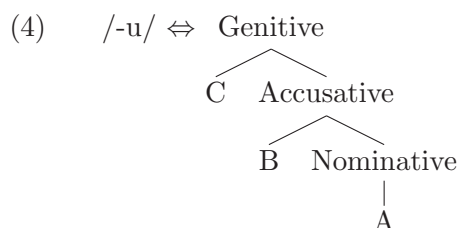
It has been proposed in ch. §1 that the noun (phrase) moves to a position such that it c-commands the features which are expressed as a suffix. This leads to the three following syntactic structures for nominative, accusative and genitive respectively:



These structures are subject to (post syntactic) Spell out. I follow Starke's (2005) proposal sketched above and understand Spell out to be a translation of syntactic structure onto phonological (and conceptual) structure mediated by the lexicon.<sup>3</sup> The lexicon thus contains (at least) pairs of the sort <syntax, phonology>, ignoring conceptual information for now.

If the present proposal is on the right track, the genitive *-u* (present in both paradigms) is the pronunciation of the features A, B and C. This can be encoded by a lexical entry which pairs the constituent containing the features A, B and C with *-u*. I will use the symbol  $\Leftrightarrow$  to indicate such pairing.

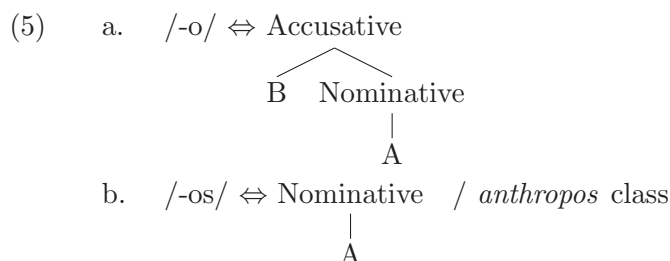
<sup>3</sup>This is similar to the theory of Distributed Morphology, Halle and Marantz 1993. I focus on the differences of the present proposal and DM in later sections.



The entry (4) takes the structure (3c) as an input, and produces *-u* as an output; that is because the “genitive” constituent in (3c) (created by evacuation of the noun) matches the right part of the entry (4). “Matching” can (for now) be understood as an identity of the syntactic node to be spelled out and the lexical entry, with a proviso made for traces. In (3c), the feature A has a trace for its sister, but the lexical entry does not mention the trace. Henceforth, traces are ignored in judging identity.<sup>4</sup>

Both paradigms also feature the accusative *-o*, a lexical entry of which I give in (5a).

In the nominative, there is a split: *anthropos* has the nominative ending *-os*, see (5b), while *vuno* persists with *-o*. To account for the split, I include a contextual specification (introduced by “/”) for *-os*, to limit its application to the relevant declension class. While the nanosyntactic theory ultimately does not use contextual specifications of the sort given in (5b), I include it here for ease of discussion, and replace it only later.<sup>5</sup>



What about the nominative *-o* of *vuno*? Does it need a separate entry? So far it does, because things work in such a way that a syntactic constituent can be targeted only by an entry which (as a whole) is identical to it. That makes (5a) a bad candidate for (3a). However, we can allow (5a) to appear in the nominative, if we relax our definition of matching beyond identity. I thus follow Starke (2005) and propose that the lexical entry matches a syntactic tree if it *contains* that tree (ignoring traces). In such case, the nominative

<sup>4</sup>An alternative would be to include traces in the lexical entry.

<sup>5</sup>The idea is that apart from case features, the entries spell out features relevant to the determination of the declension class. The work of Taraldsen (2009c) on Bantu noun classes shows that at least four distinct projections must be distinguished in this domain.



constituent in (3a) can be lexicalized by (5a), because (5a) contains the tree for nominative. (The relevant subpart of (5a) excludes B and its projection.) The principle I have just described is what Starke (2005) calls the Superset Principle:<sup>6, 7</sup>

- (6) *The Superset Principle, Starke (2005)*: A phonological exponent is inserted into a node if its lexical entry has a (sub-)constituent that is identical to the node (ignoring traces).

Now that we have relaxed the identity requirement, we see that *-o* can not only appear (correctly) in the nominative of *vun-o*, but also (incorrectly) in the nominative of *anthrop-os*. In fact, when it comes to the nominative of the Greek noun ‘man,’ three different exponents can be inserted: the genitive *-u* (see (4)), the “accusative” *-o* (5a), and the nominative *-os* (5b); this is because each of the entries contains a constituent identical to the nominative. However, only the last one of them actually appears there.

The situation is resolved by the Elsewhere Condition, which, as we have concluded in chapter 1, must be part of Spell out:

- (7) *The Elsewhere Condition*: In case two rules,  $R_1$  and  $R_2$ , can apply in an environment E,  $R_1$  takes precedence over  $R_2$  if it applies in a proper subset of environments compared to  $R_2$ .

Now given that *-o*, see (5a), can apply in both nominative (A) and accusative (A,B) (as witnessed by the paradigm *vun-o*), it loses to the rule introducing *-os*, see (5b), in case both can apply. The reason is that (by the Superset Principle,) *-os* applies in a proper subset of environments than *-o*.

The same reasoning extends to competition between *-u* (4) and *-os*; the rule introducing *-os* applies in a proper subset of cases compared to *-u*, and hence, *-u* loses where both are applicable. There are more assumptions to come concerning spell out; however, let me first go through the beneficial consequences that we can experience right away.

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<sup>6</sup>The name is inspired by the Subset Principle of Distributed Morphology (see, e.g., Halle 1997 for a classical formulation), which allows matching in the opposite case, i.e., just in case the syntactic node contains the lexical entry.

<sup>7</sup>The idea of non-terminal spell out is also proposed in Weerman and Evers-Vermeul (2002) and Neeleman and Szendrői (2007). For work related to Starke’s proposal see Ramchand (2008), Taraldsen (2009c), Pantcheva (2008c), Taraldsen (2009b), Abels and Muriungi (2008), Muriungi (2008), Lundquist (2008), Jabłońska (2007), Bašić (2007) and Fábregas (2007).

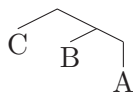
## 2.3 Deriving the Universal Contiguity

Consider now how the proposed system derives the Universal Contiguity. To see that it does, suppose that we want to encode a syncretism which would violate it: the nominative and genitive are the same to the exclusion of the accusative, as in (8). If it turns out that such a syncretism cannot be encoded by the Spell out system operating on the proposed decomposition, we will prove that the system derives Universal Contiguity.

(8) An offending paradigm

case	form
NOM	$\alpha$
ACC	$\beta$
GEN	$\alpha$

To generate the offending paradigm, we have to come up with an entry  $A$  which can appear both in the genitive and the nominative. Such an entry is (9).


(9)  $/\alpha/ \Leftrightarrow$  

By the Superset Principle, the entry can spell out the genitive (C, B, A), the accusative (B, A) and the nominative (A). The range of applicable environments is shown in (10):

(10) The applicability of  $\alpha$

case	form
NOM	$\alpha$
ACC	$\alpha$
GEN	$\alpha$

Now we need an entry which can spell out the accusative (B, A) but not the genitive (C, B, A). Such an entry will provide a perfect match for the accusative, and due to competition, remove it from the set of cases where the “genitive” entry (9) applies. Such an entry is given in (11).

(11)  $\beta \Leftrightarrow$  

However, the the entry (11) can also apply in the nominative (the feature [A]). Hence, the entries (9) and (11) clash not only for the accusative, but also for the nominative:

(12) The applicability of  $\alpha$  and  $\beta$

case	form
NOM	$\alpha, \beta$
ACC	$\alpha, \beta$
GEN	$\alpha$

In such a situation, the rule introducing  $\beta$  takes precedence over  $\alpha$  also in the nominative, because it is a better match:

(13) The paradigm generated

case	form
NOM	$\alpha, \beta$
ACC	$\alpha, \beta$
GEN	$\alpha$

Thus, whenever we get  $\alpha$  in the genitive and  $\beta$  in the accusative, we necessarily get  $\beta$  also in the nominative. This leads to the result that the system derives the Universal Contiguity, because it is unable to generate paradigms which violate it.

## 2.4 Eliminating Fusion: Negation in Korean

The Nanosyntactic conception of spell out and grammar in general has common points with the theory of Distributed Morphology (Halle and Marantz 1993 and much subsequent work). What is shared is the assumption that lexical insertion is post-syntactic, and that the lexicon is seen as a passive list of instructions mediating between the syntactic structure and the output systems: PF and CF. However, there are also significant differences between the two models.

For instance, most of the work done within Distributed Morphology assumes that insertion is restricted to terminal nodes. More importantly (and partly as a consequence of the first assumption), it is assumed that the mapping from syntax to pronunciation is not isomorphic. A number of operations have been proposed which adjust the syntactic structure before and after insertion takes place, see Embick and Noyer (2007), Harley and Noyer (1999). These operations are located in a separate module of the grammar, called Morphology.

The point of this section is to show that the need for some of the core morphological operations disappears, once it is acknowledged that insertion can target non-terminal nodes. In this section, I show that the spell out of non-terminal nodes is equivalent to the combination of the morphological

operation called Fusion and the spell out of terminals.<sup>8</sup> The implication is that it is better to have only one thing (spell out) than two things (spell out and Fusion). Eliminating Fusion is also the first step on the way to make the morphology module job-less, and thus eliminate the need for it in the architecture of grammar.

The empirical illustration of the point comes from suppletive negative forms in Korean, discussed in detail in Chung (2007). The starting point is the fact that sentences in Korean can be negated by attaching one of the two negative prefixes *ani* or *mos* to the verb (14a,b). Chung (2007) shows that each of the negations is a head in the clausal spine and the verb combines with it by syntactic movement.<sup>9</sup>

- (14) a. ca -n -ta  
 sleep -PRES -DECL  
 ‘is sleeping’  
 b. mos/an(i) ca -n -ta  
 NEG sleep -PRES -DECL  
 ‘cannot sleep / is not sleeping’ (Korean, Chung 2007:ex.1,2,4)

The second relevant fact is that the verb *al-* ‘know,’ see (15a), does not combine with any of these markers (15b), but shows a suppletive form *molu-* instead, as in (15c).<sup>10</sup>

- (15) a. al -n -ta  
 know -PRES -DECL  
 ‘know(s)’  
 b. \*mos/\*an(i) al -n -ta  
 NEG know -PRES -DECL  
 c. molu -n -ta  
 NEG.know -PRES -DECL  
 ‘do(es) not / cannot know’ (Korean, Chung 2007:ex.45)

Finally, if the same verb *al-* ‘know’ is causativized by *-li*, meaning ‘inform, let know’ (16a), the negation switches back to the non-suppletive form (16b), and the suppletive form becomes ungrammatical (16c).

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<sup>8</sup>Fusion is an operation which applies to two nodes of the syntactic representation, and turns them into a single node, which can be subject to insertion.

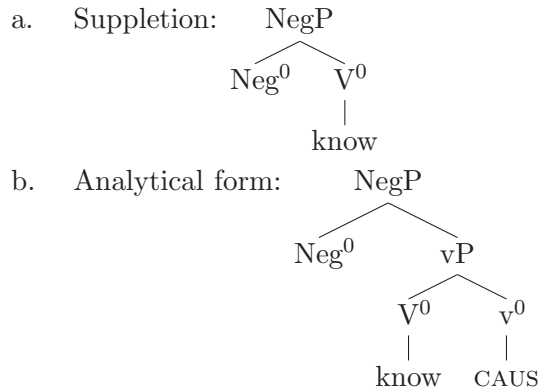
<sup>9</sup>The meaning of the negations differs slightly, *ani* is a simple negation, *mos* has a modal component, and means ‘cannot, is not allowed to.’ The modal negation does not have an epistemic reading.

<sup>10</sup>Chung (2007) shows that for a number of reasons, *molu* ‘not know’ cannot be analyzed as a conceptual counterpart of ‘know’ (similar to, e.g., *learn* and *forget*), but as a form which incorporates an independent syntactic negation.

- (16) a. *al* -*li*-  
 know -CAUS  
 ‘let know, inform’
- b. *ani* / *mos al* -*li* -*ess* -*ta*  
 NEG NEG know -CAUS -PAST -DECL  
 ‘did not /could not inform’
- c. \**molu* -*li* -*ess* -*ta*  
 NEG.know -CAUS -PAST -DECL  
 (Korean, Chung 2007:ex.58)

As Chung (2007) points out, the contrast between *al-* and *al-li* means that the effect is not due to phonological contraction under adjacency; the negation and the root *al-* ‘know’ are in the same phonological and linear configuration, but one “contracts” and the other does not. Rather, the emergence of the suppletive form is determined by structure. With *al-* ‘know,’ the negation is a sister to the verb (17a), whereas with *al-li*, it is not. The verb is first causativized, the affix being the head, and only later negated, see (17b). (The structure (17b) corresponds to the scope in (16c)). Crucially, only when Neg is the sister of ‘know,’ i.e. in (17a), suppletion occurs.

- (17) Structures from Chung (2007:exs.81,86)



Chung (2007) concludes that within theories like Distributed Morphology, which allow insertion only under terminals, there is only one (partly) satisfactory solution. We have to propose that the structure (17a) is turned into a flat node by the operation of Fusion. The procedure is given in (18a), taken from Chung (2007:ex.82). The lexical entry (18b) is then allowed to apply, since Fusion has turned the structure into a flat node:<sup>11</sup>

<sup>11</sup>An alternative would be to say that ‘know’ is spelled out as *molu-* when in the context of Neg, and Neg is spelled out as  $\emptyset$  when in context of *molu-*. (Such a solution represents another strategy to mimic phrasal spell out of two independent head positions, H1 and H2: H1 is said to be spelled out by zero morphology, and at the same time triggers a context specific allomorph of H2.)

- (18) a. Fusion in Korean:  $\text{NegP} \Rightarrow [\text{Neg}, \text{know}]$
- $$\begin{array}{c} \text{NegP} \\ \swarrow \quad \searrow \\ \text{Neg} \quad \text{V}^0 \\ \quad \quad | \\ \quad \quad \text{know} \end{array}$$
- b.  $/\text{molu}/ \Leftrightarrow [\text{Neg}, \text{know}]$

Clearly, Fusion (as shown in (18a)) cares about two things: (i) constituency (Fusion merges Neg with the verb ‘know’ only when they are sisters, and not when ‘know’ is embedded in vP) and (ii) the content of the nodes (Fusion applies when the V is ‘know,’ but not ‘read’).

These are exactly the same properties which fall out from the present model. Keeping the assumptions about structure constant, the suppletive form  $/\text{molu}/$  has the entry (19): it is the negated form of V, and if we insert this item, the concept KNOW will be sent to the conceptual form.

- (19)  $/\text{molu}/ \Leftrightarrow \text{NegP} \Leftrightarrow \text{KNOW}$
- $$\begin{array}{c} \text{NegP} \\ \swarrow \quad \searrow \\ \text{Neg}^0 \quad \text{V}^0 \end{array}$$

The Superset Principle ensures that the item (19) cannot lexicalize the syntactic structure of the negated causative (17b): the lexical entry does not have a part identical to it. Hence, insertion must target terminals, and as a result, *al-* is chosen as the lexicalization of the V head.<sup>12</sup>

To sum up where we are: the insertion under non-terminals achieves the same results as insertion under terminals augmented with Fusion. Given a choice between the two systems, spell out of non-terminals is a more parsimonious option, because it renders superfluous one of the operations which are assumed to take place in a specific morphology module.

In addition, the solution in terms of Fusion leads to a paradox (identified in Chung 2007:ftn.22), consider the reasoning. On the one hand, Fusion must precede lexical insertion, because lexicalization targets the structures which Fusion creates. On the other hand, Fusion happens only when the lexicon contains a portmanteaux for the fused heads. Thus, an operation which precedes lexicalization is triggered by lexicalization.

On the phrasal spell out hypothesis, this (apparently) paradoxical situation is in fact the predicted scenario, because “Fusion” of terminal positions into one morpheme is the product of phrasal lexicalization.<sup>13</sup>

<sup>12</sup>Chung (2007:ftn.22) considers the solution proposed here as a possible alternative to Fusion, but (correctly) points out that such a solution would not work under the standard formulation of the Subset Principle. I do not go into the details of why the Subset Principle fails to deliver the correct outcome here, referring the interested reader to the quoted footnote in Chung’s paper.

<sup>13</sup>The paradox is subject to an ongoing research in Distributed Morphology. For instance, Chung (to appear) proposes that insertion is cyclic, and Fusion applies

## 2.5 Bundles and Fission

In many cases, a single morpheme corresponds to a number of features. E.g., *-s* in English corresponds to 3rd person, singular, present tense. In the present model, this is because the morpheme spells out a constituent which contains these features. However, if we follow Distributed Morphology and claim that insertion targets only terminal nodes, the features which a morpheme corresponds to must be located within a single terminal. As a consequence, the computation cannot start from features, but from collections of features instead. These collections of features are similar to traditional lexical items from which the syntactic computation starts, and they are called feature bundles in Distributed Morphology.

While I comment on Distributed Morphology in particular, Starke (2005) makes his point on a more general level:

“A core component of the Received View of Language is that syntax is a system which groups pre-packaged lexical units. [...] There is some amount of debate about the “size” of these pre-packaged lexical units: they are sometimes taken to be “word” (lexicalism), and sometimes “morphemes.” There is however no debate about the general picture: everybody agrees that there are some such prepackaged units, and syntax is merely a grouping mechanism operating on them. This consensus [...] is indeed one of the very few assumptions that has remained virtually unquestioned for centuries.

Much recent research however suggests that it is wrong. [...] A wide array of recent work points to the direction that the atoms of syntax are much smaller than words or morphemes. From that it immediately follows that syntax is not merely an “arranger of preconstructed units.” Rather, it both builds the units and arranges them into larger syntagms.”<sup>14</sup>

On the empirical level, there is at least one problematic aspect of feature

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between the cycles.

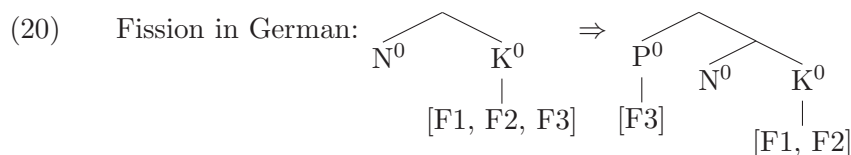
Another relevant contribution to the debate is Siddiqi (2006:ch.3). Quite independently of the paradox, Siddiqi argues that if Fusion is taken to be the norm (rather than the exception), then it becomes possible to eliminate some other Morphology specific devices, like readjustment rules, context specifications of lexical items, as well as many zero morphemes that Distributed Morphology needs to postulate. I do not discuss the details, noting only that if the proposal is correct, then these operations are avoided also under the phrasal spell out hypothesis.

However, the attempt to eliminate some of the Morphology specific operations in favor of Fusion runs up against the same paradox which has been noticed by Chung: Fusion precedes lexicalization, yet it must fail when the lexicon has no suppletive form. The way Siddiqi deals with the paradox is by including negative specifications to lexical entries, essentially prohibiting their insertion into certain fused positions. This is not necessary here, since the (apparent) paradox is explained: packaging of features is the product of phrasal lexical insertion, and that’s why it can’t happen when the lexicon has no suppletive form.

<sup>14</sup>Taken from <http://uit.no/castl/projects/2>

bundles. In particular, they lead to the necessity of another operation assumed within DM: Fission (see, e.g., Halle and Marantz 1993, Halle 1997 for two distinct conceptions). Fission is an operation which applies to a bundle of features and splits them into two distinct terminals, each subject to insertion. Fission is used in cases where features which are assumed to be located under one terminal (e.g., agreement features) are spelled out by two distinct pieces. Fission has no motivation in the present approach, which dispenses with the idea that features are bundled into terminal nodes to begin with; each feature is a terminal of its own.

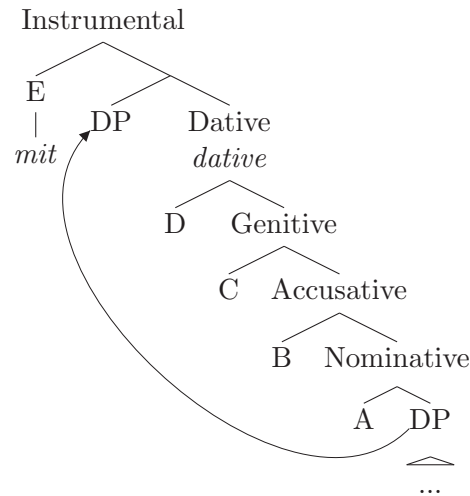
As an example of an approach which uses Fission, consider Calabrese's (2008) treatment of functional prepositions. Calabrese's theory formally encodes within DM the same intuition which I follow here, namely the idea that functional prepositions in one language spell out the same features which are realized as a case suffix in another language. Thus, for instance, *mit* 'with' plus dative in German spell out the same features as the instrumental in Latin or Russian. In order to implement the idea in a framework which allows insertion under terminals, Calabrese assumes (for independent reasons) that all case features are located inside a single terminal, and consequently, they can easily be spelled out by a single marker in Latin or Russian. To account for the German facts where we have two morphemes, Calabrese proposes that some of the case features can be split off by Fission to form another terminal, located to the left of the whole DP.



An alternative solution which has no need for Fission, and still follows the same intuition (namely that *mit* 'with' in German spells out some of the features that are spelled out by a case suffix in other languages) has been proposed in §1.8.1. I repeat it below in (21).

(21) Fission as movement:





The basic difference in the approaches is that in (21), the features of the instrumental have never formed a “bundle,” and hence, they can be split into two parts by an independently needed operation, namely syntactic movement. The reason why the features do not have to form a bundle is because they can be packaged together by insertion, allowed to target non-terminals.<sup>15</sup>

Summing up this section: Distributed Morphology maintains that insertion happens at terminal nodes. Since there are less morphemes than features, the features must come in packages/bundles which roughly correspond to the desired output. Sometimes, however, the “same” feature bundle (the instrumental case) can receive either one exponent (Latin, Russian) or more than one exponent (German, English). Hence, the (case) features both must and mustn’t form a terminal. Fission is introduced to remove the contradiction: the features do form a terminal, but they can be split after syntax has finished. In the present system, there is no place for Fission, because features are not bundled to begin with. The reason why they don’t have to be bundled is that their packaging can be done at lexical insertion (as in (21)), which is not restricted by the terminal-only requirement.

<sup>15</sup>The classical instance of Fission discussed in Noyer (1997) and Halle (1997) is agreement in Arabic and Hebrew. Also here, movement based alternatives can and have been pursued, see, e.g., Shlonsky (1989), Fassi Fehri (2000), Nevins (2002). The starting point of the movement approaches is that there are more positions hosting agreement, and their ordering is derived by syntax. See also Harbour (2005) for the defense of Fission.

## 2.6 Enriching the theory: Matching vs. Movement

Let me recapitulate where we are in a broader perspective: I have shown the basic mechanics of phrasal Spell out and we have seen that the proposal leads to interesting consequences. First, the most important thing is that in combination with the proposed decomposition of case, it derives the Universal Contiguity as a theorem. Second, it straightforwardly allows for the elimination of Fusion and feature bundles, tools which are needed in order to mimic the empirical effects of non-terminal spell out. It also dispenses with Fission, since Fission is only needed as a consequence of feature bundles. This simplifies the overall system, and we have taken a big step towards eliminating a whole component of grammar where these operations take place. In the new system, the atoms of syntax correspond to individual features. The features are packaged together into morphemes by lexical insertion. Lexical insertion is seen as the only device which maps the syntactic representation on phonological representation.

In this section, I flesh out the proposal in more detail, taking additional data into consideration. It will be shown that to incorporate that data, we must enrich our theory in one of two conceivable directions: either we make the insertion procedure more powerful, or we make use of movements which go beyond the ones assumed so far. Each of the alternatives has its own merits and drawbacks, and I discuss them as we go. Ultimately, I end up enriching the insertion procedure, and keep the theory of movement due to Cinque (2005). The core principles of Cinque's theory are repeated below from ch. 1.

- (22) Rules of movement: Cinque (2005)
- a. Movement is only to the left
  - b. Move only constituents containing the head-noun<sup>16</sup>

The main motivation for the decision to enrich the insertion procedure is the desire to show that Spell out of non-terminals is a useful tool which can work well together with current theories of movement and constituent structure. Revising these theories under the influence of non-terminal spell out (and the constituency its strong version requires) is a step that can be taken later. The decision will not have much influence on the analyses proposed in this thesis, and for the most part, the two types of solution map directly one on the other.

### 2.6.1 Right branches

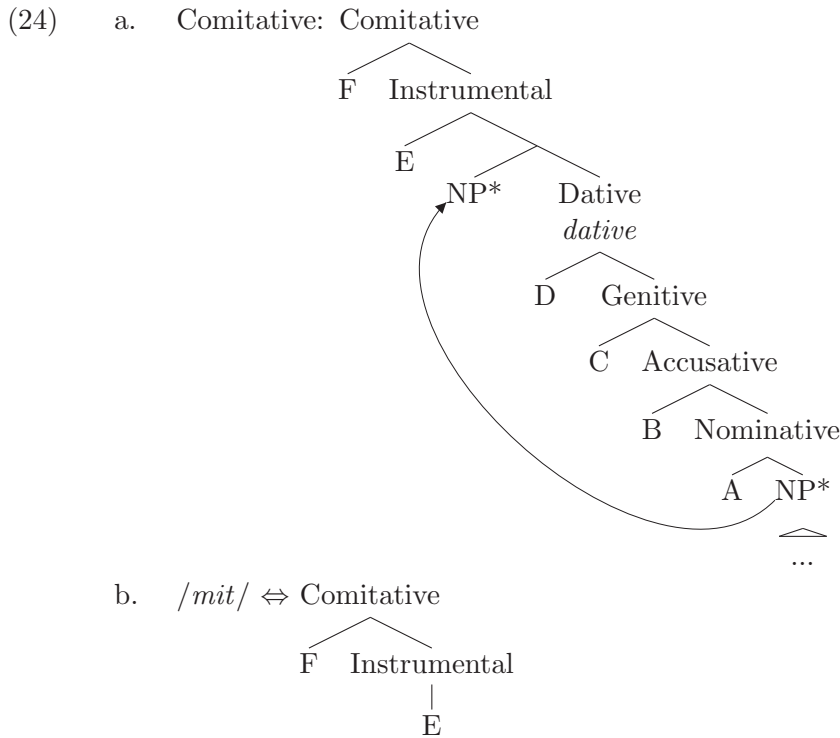
Consider the expression of the comitative in German, given in (23).

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<sup>16</sup>With an exception made for focus related movement.

- (23) mit dem Hund  
 with the.DAT dog  
 ‘with the dog’

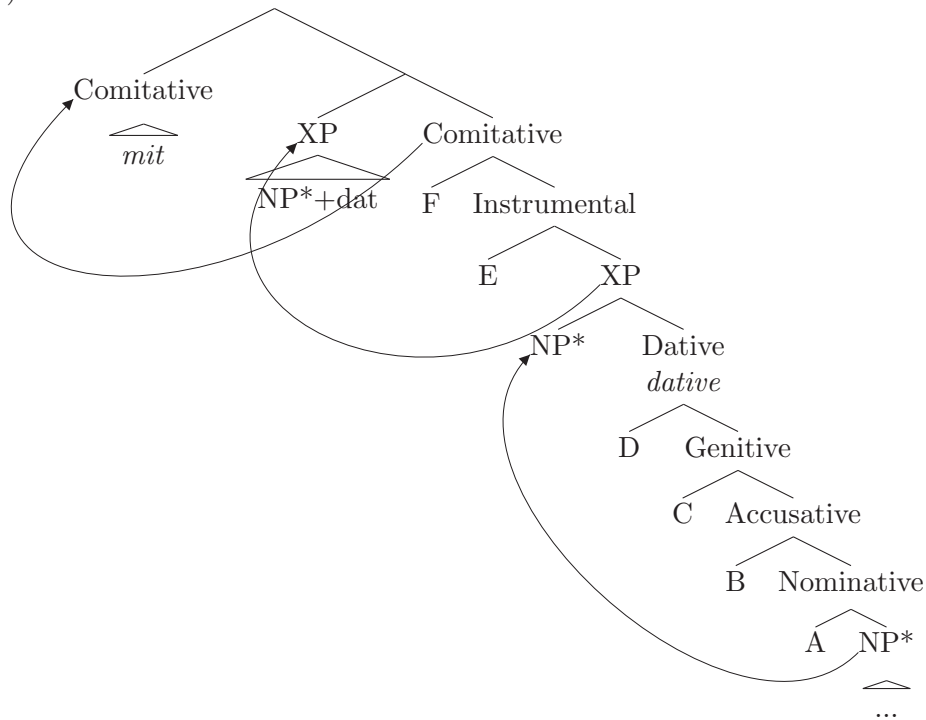
Its structure derived by the principles introduced so far is depicted in (24a). The lexical entry for *mit* is given in (24b), and it reflects the fact that *mit* attaches on top of the dative case, and it is ambiguous between the comitative and the instrumental. (The instrumental reading arises when *mit* ‘with’ is inserted only under the feature E.)



As things stand, however, *mit* cannot spell out the two features E and F in (24a), since the syntactic constituent which contains E and F (the root node in (24a)) is not identical to a part of the lexical entry. In addition to E and F, the syntactic constituent contains a NP\* and the dative case, which the lexical entry does not mention. Since this result is empirically incorrect, we have to make additions. I will now review two possible analyses: first an analysis based on remnant movement, and then a second possible analysis which enriches the theory of insertion. I will adopt the latter solution.

Consider another possible derivation of the comitative structure shown in (25). The NP\* first moves on top of the dative (as before), then pied-pipes the dative across the comitative head, and finally, it is crossed by remnant movement of the comitative. The derivation is depicted in (25):

(25) Comitative:



If this is the correct analysis, we do not have to enrich the theory of insertion, since each of the morphemes can now be said to lexicalize a separate constituent. (Henceforth, I call such an approach the “rigid matching” approach.) The problem with the analysis, however, is that the remnant movement of the comitative violates one of Cinque’s (2005) principles of movement, namely never to move constituents which do not contain the noun.<sup>17, 18</sup>

Another possibility is to revise the theory of insertion, which will allow us to maintain the Cinque compatible analysis of comitative depicted in (24a). (Henceforth, I call this approach the relaxed matching approach.) To this effect, I introduce a separate condition in addition to the Superset Principle, which relaxes conditions on matching between the lexical entry and the syntactic structure. The condition on matching is stated in such a way that the insertion procedure ignores both those constituents which have undergone spell out, and those which have been moved away.

<sup>17</sup>This analysis also changes the present account of Blake’s hierarchy. On the rigid matching approach, the hierarchy is no longer about the height of NP\* movement (NP\* in German crosses D, but not E), but about the amount of remnant movement (features from E upwards are subject to remnant movement).

<sup>18</sup>Another alternative derivation compatible with rigid matching avoids remnant movement, but introduces rightward movement. Taking (24a) as an input, we can (string-vacuously) move the NP\* and the dative to a right-adjoined position above F, thus creating the relevant constituent for the insertion of *mit*.

- (26) *The Superset Principle:* A phonological exponent is inserted into a node if its lexical entry has a (sub-)constituent which matches that node.
- (27) *Match:* A lexical constituent matches a node in the syntax if it is identical to that node, ignoring traces and spelled out constituents.

Looking back at (24a), we can now insert *mit* (repeated in (28)) to spell out both E and F, since both the DP and the dative constituent have undergone spell out. As a consequence of (27), they are ignored for insertion (and behave as if they have moved away, which the rigid matching analysis must perform literally).

- (28)  $/mit/ \Leftrightarrow$   $\begin{array}{c} \text{Comitative} \\ \swarrow \quad \searrow \\ \text{F} \quad \text{Instrumental} \\ \quad \quad | \\ \quad \quad \text{E} \end{array}$

The presence of the non-branching node in (28) encodes the fact that the sister of that node is a trace or a locus of spell out. The presence (or absence) of such nodes in lexical entries is important. To see why, re-consider the Korean examples from section 2.4, repeated below.

- (29) a. The syntax of verbal negation:  $\begin{array}{c} \text{NegP} \\ \swarrow \quad \searrow \\ \text{Neg}^0 \quad \text{V}^0 \\ \quad \quad | \\ \quad \quad \text{know} \end{array}$
- b. The syntax of a negative causative:  $\begin{array}{c} \text{NegP} \\ \swarrow \quad \searrow \\ \text{Neg}^0 \quad \text{vP} \\ \quad \quad \swarrow \quad \searrow \\ \quad \quad \text{V}^0 \quad \text{v}^0 \\ \quad \quad | \quad \quad | \\ \quad \quad \text{know} \quad \text{CAUS} \end{array}$

(29a,b) are syntactic structures of simple negation of the verb ‘know,’ and a negated causative respectively. Recall that the simple negative form of the verb ‘know’ is suppletive, and it is spelled out by the entry (30).

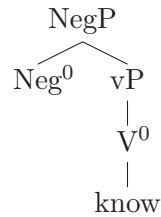
- (30)  $/molu/ \Leftrightarrow \text{NegP} \Leftrightarrow \text{KNOW}$   
 $\begin{array}{c} \swarrow \quad \searrow \\ \text{Neg}^0 \quad \text{V}^0 \end{array}$

However, the negation of the causative form decomposes into three morphemes; the Neg head and the V ‘know’ are each spelled out separately in

the presence of a causative.

The explanation of this that I have offered above was that the lexical entry (30) does not contain the causative morpheme, and so it does not match (29b). The result still holds, even after we have introduced the proviso that the little *v* ([v-caus]) can be ignored once it has been spelled out. To see that, I show the structure with the causative ignored in (31):

(31) The negative causative with *v* spelled out:



Empirically, (30) cannot be used in the case of (31). Thus, we have to rely here on the fact that the entry for the negated verb ‘know’ does not contain a non-branching vP node, and hence, it cannot be used even though the right branch has been spelled out. This feature of the system preserves in it the notion of structural intervention, even after we have allowed to ignore spelled out material.

## 2.6.2 Compound case marking

One of the reasons that led Cinque (2005) to propose the constraints on movement (22) is the observation that material preceding the noun always comes in the base-generated order, and it is never scrambled. However, material following the noun can reorder. The results follow from Cinque’s theory because reordering is seen as a by-product of N-movement to the left, caused by pied-piping by N. This entails that the material which precedes the noun cannot be scrambled, because it has never been crossed by N.

Remnant movement, however, allows for derivations where elements are first scrambled when being pied-piped, and then fronted back to the left of the head, leaving us with no account of the asymmetry (if nothing else is said). In this section, I want to show that the same facts hold for case as well, and hence, there are reasons to remain Cinque-compatible and keep the ban on certain types of remnant movement (until we know what to replace it with).

To see the ordering asymmetries in the domain of case, we have to start looking deeper into a phenomenon that is called “compound case marking” (see, e.g., Blake 1994), or “derivational case marking” (see, e.g., Austin 1995). This term covers examples where the marking for the case X contains a marker for the case Y, and we have already seen some examples of this phenomenon in §1.6. In such examples, we have the opportunity to observe two morphemes

which are clearly related to case, and we can see what their mutual order is, and how that correlates with NP\* movement.<sup>19</sup>

The situation where both markers follow the NP\* is illustrated below on West Tocharian (Gippert 1987, Krause and Werner 1960, Krause and Slocum no datea-a, Noonan 2008), an Indo-European language documented by texts from 6 - 8 century AD. Four example paradigms are below, GEN/DAT is a case which fuses the functions of the adnominal complement and the indirect object:

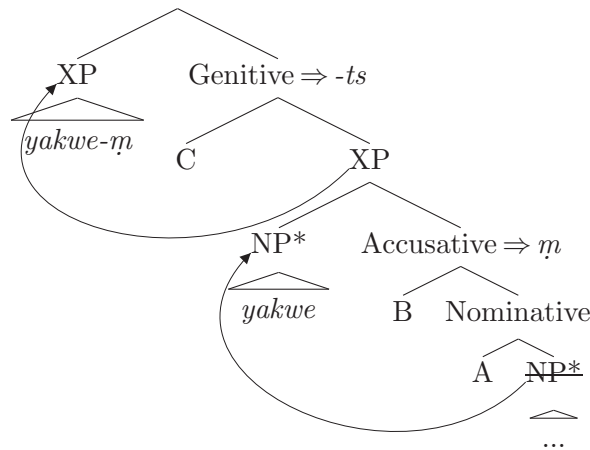
## (32) Compound case marking in West Tocharian

	horse, SG	horse, PL	man, SG	man, PL
NOM	yakwe	yakwi	eñkwe	eñkwi
ACC	yakwe	yakwem̄	eñkwem̄	eñkwem̄
GEN/DAT	yakwents	yäkweṃts	eñkwents	eñkwem̄ts

We see that the GEN/DAT plural (*ṃ-ts*) is based on the ACC plural (*ṃ*). This does not hold for the singular, where the GEN/DAT (*-nts*) attaches to the stem.<sup>20</sup>

The phenomenon receives a straightforward implementation in the present framework: the structure of the genitive/dative case universally contains the structure for the accusative, and the plural in West Tocharian simply shows this on its sleeve. The language splits the genitive plural into component parts: first the accusative case is spelled out, and then separately the additional feature which turns the accusative into the genitive.

## (33)



<sup>19</sup>Case compounding is different from the so called case stacking, popularized recently in Richards (2007). In case stacking, a noun bears multiple case markers reflecting (in traditional terms) multiple dependency relations.

<sup>20</sup>Similar situation probably arises in some Latin declensions. For instance, *femin-ās* 'woman, ACC.PL' adds *-um* in GEN.PL to yield *femin-ār-um*, with the historical change of *s* to *r* in intervocalic positions attested independently (*es-se* 'be-INF' vs. *laudā-re* 'praise-INF').



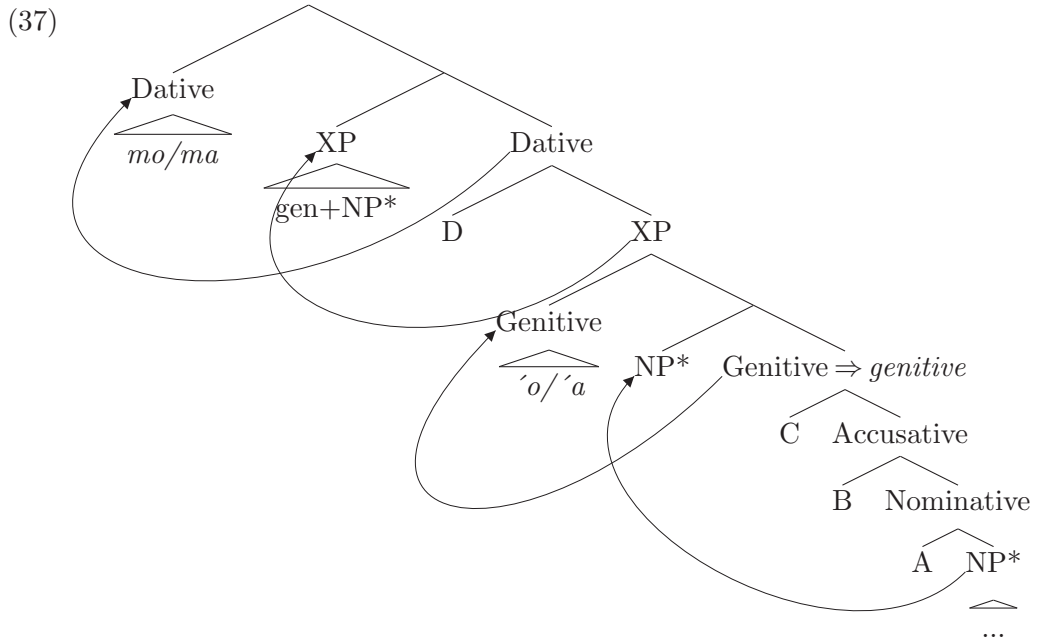


- a. Na'a nau langa 'a e fale **mo'o** Siale.  
 PAST 3PL.INIT build ABS DEF house BEN.INAL Siale  
 'They built a house for Siale' (Tongan, Asbury 2006:ex. 36a)
- b. Na'a nau tanaki 'a e pa'nga **ma'a** Siale.  
 PAST 3PL.INIT collect ABS DEF money BEN.AL Siale  
 'They collected some money for Siale'  
 (Tongan, Asbury 2006:ex. 36b)

As Asbury proposes, this is explained if benefactives are built on top of possessives by attaching a preposition; we can take the preposition to be a *mV*, where the final V harmonizes with the following vowel. In (36), I take a step beyond Asbury's description and equate the possessor with the genitive case, and the benefactive with the dative case. Abstractly, the structures are in (36):

- (36) a. genitive: [ P<sub>1</sub> [ DP ] ]  
 b. dative: [ P<sub>2</sub> [ P<sub>1</sub> [ DP ] ] ]

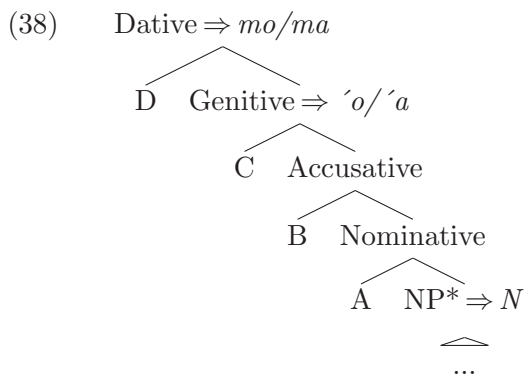
This situation supports the present proposal, where the dative is proposed to contain the genitive universally, Tongan being a language where this is visible on the surface. What is important now is that on the remnant movement analysis of (36), NP\* will have to move all the way above dative, and the markers for genitive and dative will have to remnant move back to its left. One possible derivation is below:



In (37), we first derive the genitive by remnant movement: NP\* moves on top

of the genitive, and this constituent performs a step of remnant movement. (This is the same type of derivation as for the German comitative.) Then we add the dative feature on top, making justice to the intuitive idea that the dative is built on top of the genitive. After we add the feature D, we again perform the two familiar movements: NP\* raising (with pied-piping), and a remnant movement of the prepositional case marker. Now each morpheme corresponds to a separate constituent, and each constituent can be targeted by spell out with rigid matching.<sup>24</sup>

Under the theory of Cinque (2005), the Tongan examples do not involve any movement: the NP\* could not have moved, because it ends up to the right of the markers. Since there is no NP\* movement, and the features cannot move by themselves, the order is identical to the one which has been base-generated. What is needed to turn this structure in a PF representation by non-terminal spell out is the requirement that spelled out constituents are ignored.



To conclude: either theory can handle the data. The challenge that the remnant movement analysis faces is to explain why the series of movements has to be always performed in a way such that the movements can never change the base generated order of the prepositional case markers. I am not aware of constraints on remnant movement which would deliver this result, whereas the theory of Cinque (2005) predicts it.

### 2.6.3 Left branch spell out vs. NP sub-extraction

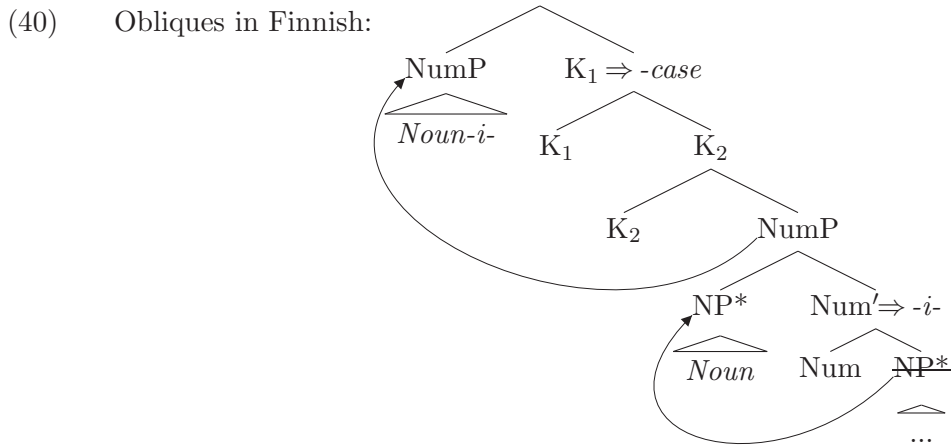
In the preceding section, I have considered two ways to get rid of the complement of a phrasal morpheme: the so called rigid matching with movement, and the so called relaxed matching. The same issues arise for left branches. To see this, consider the following (partial) Finnish paradigm:

<sup>24</sup>The second round of movements is strictly speaking not required, since the feature D can be also spelled out as a terminal. I take this to be a coincidence, and use this example to illustrate the larger issue. Even in this example, we still need to make sure that the remnant movement of the genitive 'o/'a will not cross the feature D.

(39) Finnish oblique cases

	bear, sg.	bear, pl.
GEN	karhu-n	karhu-j-en
PART	karhu-a	karhu-j-a
ESS	karhu-na	karhu-i-na
TRANS	karhu-ksi	karhu-i-ksi
INE	karhu-ssa	karhu-i-ssa
ELA	karhu-sta	karhu-i-sta
ILL	karhu-un	karhu-i-hun
ADE	karhu-lla	karhu-i-lla
ABL	karhu-lta	karhu-i-lta
ALL	karhu-lle	karhu-i-lle
ABE	karhu-tta	karhu-i-tta

The relevant observation is that the plural oblique cases in Finnish decompose into the plural marker *-i-*, and a case marker shared between the singular and plural.<sup>25</sup> This leads to a derivation where the NP\* first moves across the plural, and pied-pipes it across the case layers:



Consider now what happens in nominative and accusative:

(41) Synthetic expression of case and number in Finnish

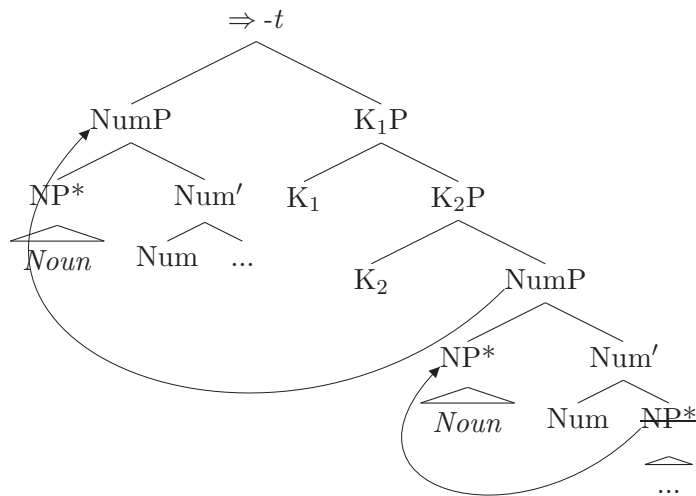
<sup>25</sup>I assume that the underlying *-i-* is realized as *-j-* between vowels.

There is an issue concerning the genitive plural, which one would expect to be *\*karhu-i-n*. Daniel Karvonen (p.c.) tells me that this form used to be the norm in older stages of Finnish (and survives in some fixed expressions). It is not clear to me whether the form *karhujen* is the result of a phonological process, or whether two distinct allomorphs of the genitive ending are needed, the singular *n* and the plural *jen*. Further, some genitive plurals have the ending *den*. The illative raises similar issues. Thanks to Dan Karvonen for a discussion of this.

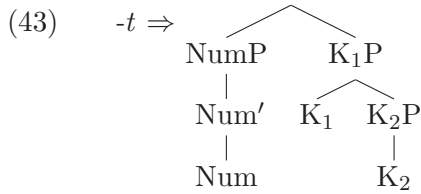
	bear, sg.	bear, pl.
NOM	karhu	karhu- <b>t</b>
ACC	karhu-n	karhu- <b>t</b>
GEN	karhu-n	karhu-j-en
PART	karhu-a	karhu-j-a
ESS	karhu-na	karhu-i-na
TRANS	karhu-ksi	karhu-i-ksi
INE	karhu-ssa	karhu-i-ssa
ELA	karhu-sta	karhu-i-sta
ILL	karhu-un	karhu-i-hun
ADE	karhu-lla	karhu-i-lla
ABL	karhu-lta	karhu-i-lta
ALL	karhu-lle	karhu-i-lle
ABE	karhu-tta	karhu-i-tta

What we find is a portmanteaux morpheme *-t* (in bold) which spells out both case and number. The problem is that in the proposed derivation (40), repeated in (42), case and number do not form a constituent to the exclusion of the NP\*:

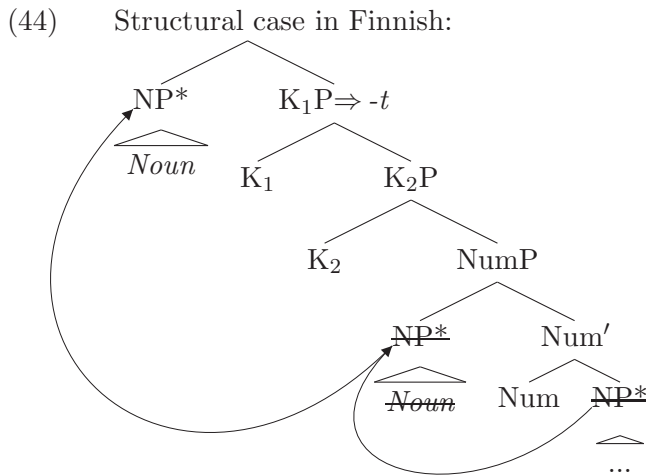
(42) Structural case in Finnish:



This is a version of the same issue that we have encountered for complements, and the same range of solutions is applicable also here. Under the assumption that spelled out constituents can be ignored by matching, we can actually assume that (42) is the relevant structure for the structural cases as well. Once NP\* is spelled out by the stem, it can be ignored by further insertion process, and the Finnish *-t* can be specified as follows:



On the other hand, under the rigid matching view, NP\* has to extract out of the constituent which is to be lexicalized by  $-t$ . There are two ways this can happen. First, the NP\* can extract directly, as in (44). (We would then need a different entry than (43).)

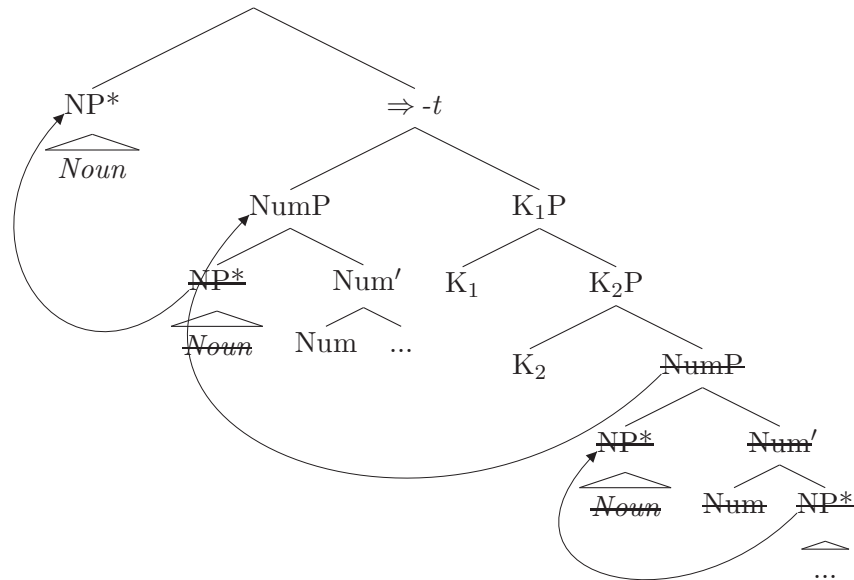


The derivation (44) is simple on its own, but it raises non-trivial questions about triggering of movement and pied-piping. Why does NP\* pied-pipe NumP in oblique cases, but it doesn't do that in structural cases? An interesting answer has been suggested (in a different context) by Starke (2005), and explored also in Muriungi (2008:ch.5): pied-piping in (44) fails so that the derivation creates a constituent for  $-t$  to spell out. This means that the content of the lexicon has the power to influence the manner in which derivations proceed. In the present case, the derivation without pied-piping wins over the derivation with pied-piping, because the lexicon will be able to use  $-t$ , a portmanteau for case and number. The proposal, however, is not adopted or worked out here.<sup>26</sup>

<sup>26</sup>An alternative way to look at the issue would be to say that if the derivation had proceeded differently than as shown in (44), it would be filtered out because the output would receive no lexicalization. This cannot be the whole story, though, because the derivation of structural cases with the pied-piping of Num *can* be lexicalized even under the rigid matching theory. The lexicalization would come out the same way as in all the other cases: as a combination of the plural  $i$  and the singular case marker. I note here, though, that I will use the strategy suggested in this footnote later on, but for data where an alternative spell out is not available.

Second, NP\* can sub-extract from within the fronted NumP in (42), leading to (45).

(45) Structural case in Finnish:



The last step of the derivation creates the needed constituent which contains both Num and case to the exclusion of NP\*. This derivation has the property that it can be straightforwardly extended to the oblique cases, since NP\* sub-extraction does not change the surface order. (It only creates the right type of constituent for packaging Num and case into one morpheme.) The drawback of the derivation is the fact that sub-extraction is quite a rare type of movement, and Cinque (2005) uses it for only one (possibly spurious) type of order.

To conclude: the proposal which allows complements of phrasal morphemes to be ignored once they are spelled out, allows us to ignore also left branches of constituents. Taking traditional constituency for granted, this is a good result, because such cases are empirically attested. To account for these data, analyses based on the rigid matching have to make recourse either to movements which are sensitive to the structure of the lexicon (prefer derivations which allow for economical spell out), or an additional step of NP\* sub-extraction. Deciding between these options is a task I leave for future research. Importantly for the present purpose, the analysis which allows for spelled out constituents to be ignored, is compatible with standard assumptions about movements: they are not driven by lexicalization, and NP\* sub-extraction is not required to make things work.

### 2.6.4 Intermediate branches are not ignored

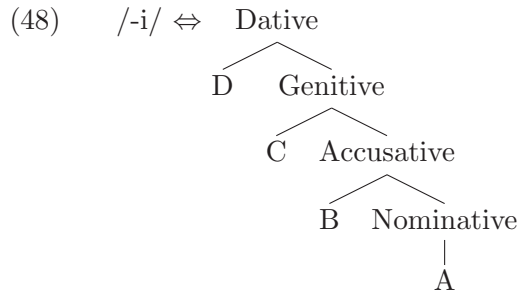
Finally, consider the issue of intermediate branches. To give a concrete example, recall the situation in Bulgarian discussed in the last chapter. In this language, there is a contrast in case marking between clitics on the one hand, and strong pronouns and full DPs on the other. Clitics have a dative suffix, as shown in (46a); strong pronouns and other DPs are marked by the combination of a preposition and an accusative suffix, as shown in (46b). (The combination of *na* and accusative taken together acts as a dative.)

- (46) a. m-i t-i  
I-DAT you-DAT  
b. na men-e na teb-e  
to me-ACC to you-ACC

Under the present analysis, clitics in Bulgarian move above D, as shown in (47a). Full DPs can only move above B only, see (47b).

- (47) a. Clitics:
- 
- b. Strong pronouns: Dative => *na*
- 

The entry for the dative *-i* is shown in (48):



With this background, consider now the fact that it is impossible to suffix the dative *-i* to strong pronouns (nor other DPs), as shown in (49a). Likewise, it is impossible to prefix this marker, as shown in (49b).

- (49) a. \*men-i \*teb-i  
           me-DAT you-DAT  
       b. \*i-men \*i-teb  
           DAT-me DAT-you

In other words, the entry (48) which spells out all the dative features A-D in (47a) is unable to do so when an XP intervenes between the features, as in (47b).<sup>27</sup>

This is not something specific to Bulgarian: the account of Blake’s hierarchy provided in the previous chapter crucially relies on this effect. Recall that the account derives the split between the features expressed by a case suffix and the features expressed by a functional preposition from the assumption that NP\* movement targets a position between two of these case features, and thus splits them into two sets, a suffix and a preposition. The proposal would not work if spell out could ignore the position of NP\* and package together features which are one higher, and one lower than the final landing site of NP\*.

To repeat the conclusion in theoretical terms: intermediate branches cannot be ignored. An XP which intervenes between the features which can be spelled out by an affix, blocks the insertion of that affix, as in (47b). The XP intervener forces each set of features to be spelled out separately, and it ends up flanked by them in the linear string.

A special case of this general setup is a situation where both parts of the tree with an intervener in between are spelled out in an identical way. These situations have been explored by Taraldsen (2009a) and Svenonius (2009).

<sup>27</sup>Note that I am simplifying here. Under the rigid matching approach, there are two additional steps of movement in (47b). The strong pronoun pied-pipes the accusative across the features C and D, and these features then remnant-move back to the left of the pronoun. This more complex derivation does not, however, change the fact that any constituent which contains all of A, B, C and D, contains also the pronoun, i.e., the pronoun is still an intervener.



As an example, consider the data below (slightly modified from Alexiadou and Gengel 2008), discussed from the perspective of non-terminal spell out by Taraldsen (2009a):

- (50) a. (Talking about new books,) I have one (\*one).  
 b. (Talking about books,) I have one new \*(one).

(50a) shows that in the context of noun phrase ellipsis (NPE), the numeral *one* forces the absence of the “pronominal” *one*. However, if the numeral is followed by an adjective as in (50b), the pronominal *one* has to be present. Taraldsen (2009a) suggests that *one* in (50a) spells out at least two projections, A and B, which are separated by the adjective in (50b). The sequence A>AP>B in (50b) is then spelled out as /one/-/adjective/-/one/. Taraldsen follows Alexiadou and Gengel (2008) in equating the lower position with the projection of a classifier, and the higher position with the numeral, drawing also on proposals in Borer (2005).

The crucial question is now what these effects follow from under the two approaches to matching. To make the discussion easier to follow, I will generalize and simplify the two empirical situations into the following abstract scenario, where (51a) is a lexical entry, and (51b) is a syntactic structure. I leave it open what is the label of the node immediately dominating the XP, and I thus use the variable  $\alpha$ . In the case of Bulgarian, the label would be BP under standard approaches, and XP would sit in its Spec. In the case of the adjective, opinions vary. Under some approaches, adjectives are in the Spec of a dedicated head (e.g., Cinque 2005), another option is that they are adjoined.

- (51) a. An entry: /ab/  $\Leftrightarrow$  AP
- ```

      graph TD
      AP --> A
      AP --> BP
      BP --> B
    
```
- b. The structure:
- ```

      graph TD
      AP --> A
      AP --> alphaP
      alphaP --> XP
      alphaP --> BP
      XP --> dots[...]
      BP --> B
      BP --> trace
    
```

The empirical data discussed here require that insertion of (51a) under AP is blocked in (51b). What does this follow from?

Under the rigid matching approach, this follows from the fact that (51a) does not match the AP node in (51b). This is because apart from the features A and B, the AP node in (51b) contains in addition the XP, not mentioned in the entry (51a).

Under the relaxed matching theory, the reasoning branches. If there is no spell out for XP, then the explanation for why (51a) cannot spell out (51b) is the same as under the rigid matching approach. However, the interesting examples are those where XP can undergo spell out, and it is thus ignored for further insertion. What this means is that the situation now looks as follows:

- (52) a. An Entry: /ab/  $\Leftrightarrow$  AP
- $$\begin{array}{c} \text{AP} \\ \diagdown \quad \diagup \\ \text{A} \quad \text{BP} \\ \quad \quad | \\ \quad \quad \text{B} \end{array}$$
- b. The structure: AP
- $$\begin{array}{c} \text{AP} \\ \diagdown \quad \diagup \\ \text{A} \quad \alpha\text{P} \\ \quad \quad | \\ \quad \quad \text{BP} \\ \quad \quad \diagdown \quad \diagup \\ \quad \quad \text{B} \quad \dots \end{array}$$

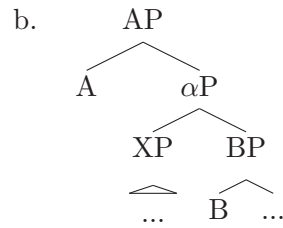
We know from the examples above that in this situation, (52a) will not get inserted under AP in (52b). To obtain that result, we must rely on the presence of the additional node  $\alpha\text{P}$  in the syntactic structure. Thus, it is because of the additional node in (52b), that (52a) cannot be inserted under AP.

The conclusion that the relaxed matching theory has to rely on the presence/absence of non-branching nodes in lexical entries has been reached above also in the case of the Korean suppletive negation. Such nodes are a tool which the relaxed-matching theory needs in order to incorporate the empirically required notion of structural intervention.

## 2.7 Embick & Marantz (2008)

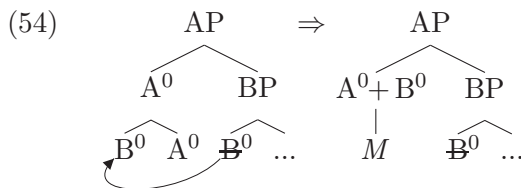
The outcome of the preceding section is this: in some cases, the features A and B can be spelled out together in the structure (53a), but they cannot be spelled out together in the structure (53b). I have shown that this follows from the adopted model of phrasal spell out.

- (53) a.
- $$\begin{array}{c} \text{AP} \\ \diagdown \quad \diagup \\ \text{A}^0 \quad \text{BP} \\ \quad \quad \diagdown \quad \diagup \\ \quad \quad \text{B}^0 \quad \dots \end{array}$$

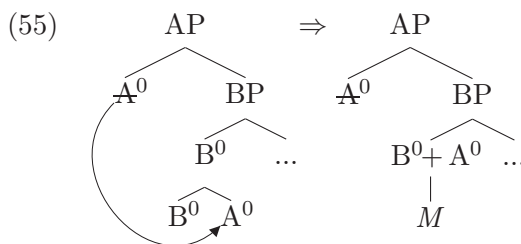


In a recent paper, Embick and Marantz (2008) point out that such a prediction is unique for theories with phrasal spell out, because such examples are hard to capture in a theory where spell out targets only terminals.<sup>28</sup> Consider the reasoning.

What does it take for the heads A and B to be spelled out by a single morpheme under the terminal-only requirement? For Embick and Marantz (2008), it means that either B must move up to A, or A must lower down to B. In either case, the displacement is followed by a fusion of these terminals within a single head. I show the head movement option in (54): B moves up to A, and they create a complex head. This head is subject to Fusion, and then a single morpheme applies to the terminal node thus created.

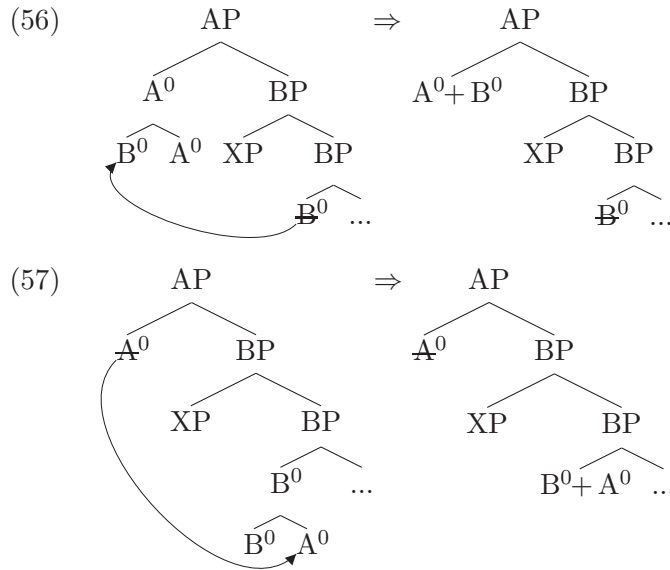


Lowering is shown in (55): A lowers to B, which is followed by Fusion and insertion.



As Embick and Marantz (2008) point out, the theory without phrasal spell out leads to the prediction that if A and B are separated by an XP, both derivations will continue to be possible. That is because phrasal material does not intervene for either head movement, or lowering. I show that in (56) and (57):

<sup>28</sup>It is necessary to mention that Embick and Marantz (2008) claim that situations where XP material blocks the spell out of two head-positions are very likely unattested. I disagree for reasons that were made clear in the preceding section.



In other words, the presence of an XP intervener is expected to have no effect on the relationship between A and B. This expectation, however, fails in the cases we have discussed. Hence, I conclude that for these examples, phrasal spell out is required.

Admittedly, phrasal spell out is a more powerful tool than the spell out of terminals. A theory with non-terminal spell out can incorporate every analysis available in theories with terminal-only insertion, plus it allows new analytical options where spell out targets larger constituents. However, we have seen that once phrasal spell out is adopted, it reduces the theoretical apparatus elsewhere: it immediately eliminates the operations of Fusion and Fission. Now, we see that in addition, non-terminal spell out is required to handle cases where an intervening XP blocks the spell out of two terminal positions. As Embick and Marantz (2008) point out, there is no readily available solution for these cases in theories where only terminals are spelled out.

## 2.8 An overview of the system

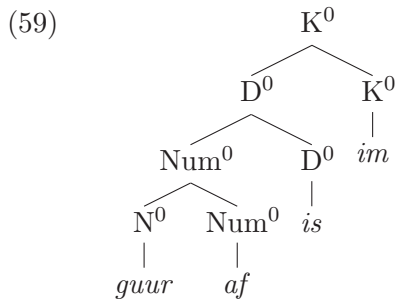
Let me now give a brief overview of the system, set up as a comparison of how the machinery developed here compares with more traditional ways of doing syntax. The goal is to show that the present system (a version of Starke's Nanosyntax) straightforwardly accommodates earlier analyses, and readily provides additional analytical options required to capture generalizations which are beyond the power of the traditional systems. In particular, it gives the theoretical space needed to make syntax more fine grained.

Consider first how traditional analyses are incorporated. As an example, take the following sentence from Dime, an Omotic language of Ethiopia described

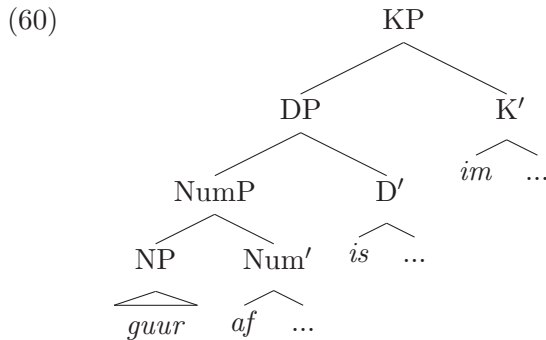
in Seyoum (2008).

- (58) ?até guur -af -is -im deis-i-t  
 1SG.SUBJ crocodile -PL -DEF -ACC kill-PF-1SG  
 ‘I have killed the crocodiles.’

The noun ‘crocodile’ in (58) is suffixed by three morphemes, coming in the order plural, definiteness and case. Traditionally, each suffix is taken to be the head of its own projection, generated higher than the Noun. The noun either moves to the left of these suffixes by head-movement, or the language is assumed to be head-final, in which case the ordering falls out automatically. I show here the final product of the head-movement analysis, see (59), and note that things would look similarly if different directionality of branching would be assumed:



There are two changes in this picture that the current dissertation adopts. First, I have followed the developments in the theory of movement and I have adopted the conclusion that head movement should be understood as a special instance of phrasal movement, the so called “roll up.” This is shown in the tree below. The rough constituency of the tree is the same as in the case of head movement, but there are additional empty branches which correspond to traces of the phrasal constituent, dislocated to the Spec of the relevant projection.

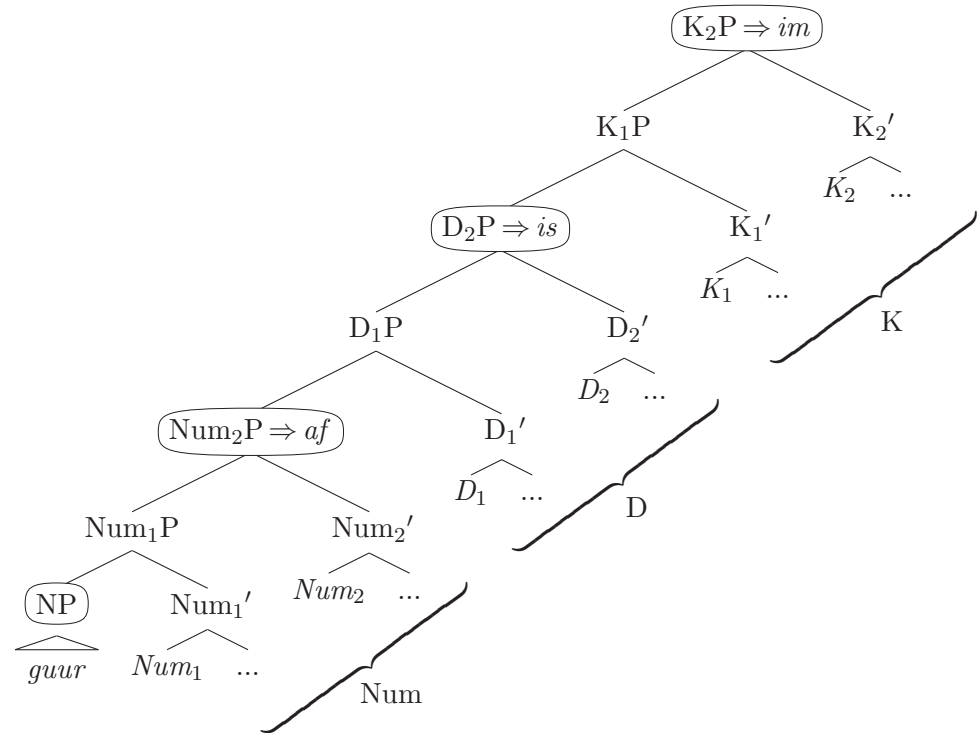


The shift from the head movement perspective to phrasal movements has

been motivated in the literature by the observation that the ordering of affixes is sometimes incompatible with head movement, and it requires phrasal movements instead (see, e.g., Muriungi 2008 for a recent overview and argumentation). I provide similar arguments in chapter §7 from the domain of the extended NP.

The second change is the shift to the nanosyntactic view, which says that each of these categories possibly decomposes into a number of features, each a head in the functional sequence. The resulting picture is shown in (61), where each of the categories has been decomposed into two features for illustration. There can be more or less features than that, depending, of course, on empirical arguments, similar to the ones I provide here to decompose case. The main point is that if such or a similar decomposition is empirically justified, the spell out procedure developed here allows for a straightforward translation of this structure on the desired output.

(61)



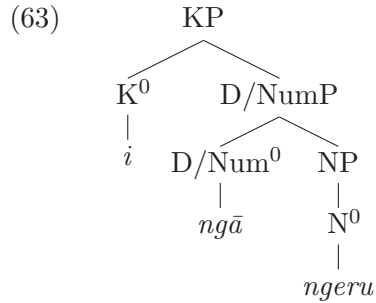
The circled NP is spelled out by the stem, and can be ignored for the purpose of further insertion. This creates a constituent for the insertion of the number marker, which spells out the circled constituent Num<sub>2</sub>P. All the features of this constituent follow all the features of the NP, and hence the NP is ordered to the left of the Num marker *-af*. This is depicted by the bracket notation which runs parallel to the tree on its right. The same reasoning applies to the spell out of definiteness and case: after the spell out of Num<sub>2</sub>P, this constituent can be ignored, which gives us the possibility to insert the definiteness marker *-is* at D<sub>2</sub>P. All the features of D follow Num, and consequently, *-is* is linearized after *-af*.

To see how the theory handles data without any NP\* movement, consider the following sentence from Māori, a Polynesian language of New Zealand, as described in Bauer (2004). Māori is a VSO language with both case markers and definite articles preceding the noun:

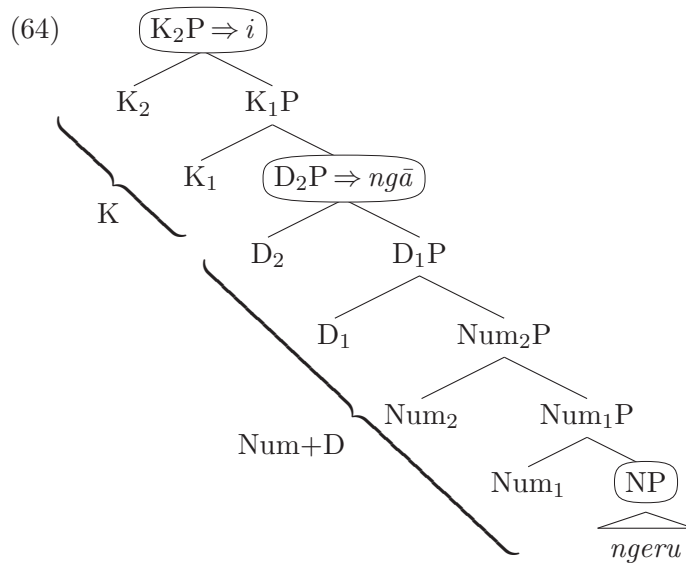
- (62) Kei te whāngai te tangata i ngā ngeru  
 PROG feed DEF.SG man ACC DEF.PL cat  
 ‘The man is feeding the cats.’ (Māori, Bauer 2004:ex.5b)

We see in (62) that Māori merges into one morpheme the expression of definiteness and number, with the markers *te* and *ngā* corresponding to the definite singular and plural respectively. In traditional approaches, this can be captured in various ways; one of them is to assume that D and Num correspond

to a single head in Māori (see for instance Bobaljik and Thráinsson 1998 for a proposal along similar lines). The structure of the accusative DP ‘the cats’ then looks as follows:



The traditional analysis can be captured by the present system as well. Like in the traditional analysis, no movement is required to take place, see (64). First, the NP undergoes Spell out, and it can be ignored for the purpose of further insertion. The marker *ngā* spells out the constituent containing number and definiteness. D<sub>2</sub>P can then be ignored, and the accusative marker spells out the remaining case heads:



The fact that the present version of Nanosyntax is able to incorporate traditional insights and analyses does not mean that it is a notational variant of these approaches. In particular, I have shown in chapter §1 that atomic features which can be packaged into one morpheme in a language A can be split by movement in a language B (the account of Blake’s hierarchy). Such an approach is possible only if each feature is a separate terminal.

To make the same point with a different type of data, consider the work

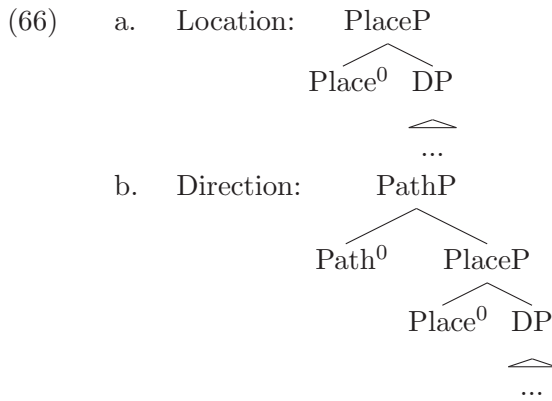


by Pantcheva (2008c). She starts from the traditional observation that the expression of motion in the languages of the world often embeds the expression of a static location. An illustration is provided in the following table, which is a simplified version of Pantcheva (2008c:table 2).

(65)

Language	Genus	Location	Goal	Source
Garó	Tibeto-Burman	-o	-o-na	-o-ni
Lezgian	Daghestanian	-q <sup>h</sup>	-q <sup>h</sup> -di	-q <sup>h</sup> -aj
Mwotlab	Oceanic	l(V)-	a l(V)	m <sup>w</sup> ε l(V)
Yanesha	Arawakan	-o	-o-net	-o-t <sup>y</sup>

This state of affairs is expected if the expression of motion is derived from the static location by the addition of the Path head (see, e.g., van Riemsdijk 1978, Jackendoff 1983, Koopman 2000, van Riemsdijk and Huybregts 2002). The proposal is depicted in (66), the Path head has been proposed to deliver a trajectory leading either to, from, or via a given location.



The structures in (66) are usually assumed to be universal, even though not all languages provide the same neat evidence as we have seen in (65). Insertion under non-terminals provides a way to understand this: Path and Place can be spelled out by a single morpheme, which blurs the underlying containment relation.<sup>29</sup>

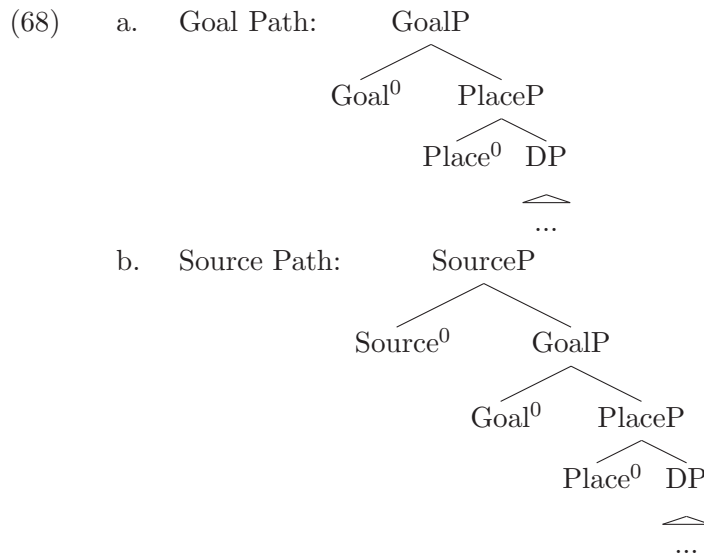
Going beyond the traditional account, Pantcheva observes that the same asymmetry that holds between the expression of motion and location obtains cross-linguistically between the expression of source and goal paths. In particular, if there is a containment relationship between the two types of paths, then the source path embeds the goal path. The following table is reproduced from Pantcheva (2008c:table 4).

<sup>29</sup>E.g., *off* = FROM ON, *through* = VIA IN, etc.

(67)

	<i>Jingulu</i>	<i>Ingush</i>	<i>Uchumataqu</i>	<i>Mansi</i>
	Australian	Nakh	Andic	Uralic
Locative	<i>-mpili</i>	<i>-ǵ</i>	<i>-tá</i>	<i>-t</i>
Goal	<i>-ɲka</i>	<i>-ga</i>	<i>-ki</i>	<i>-n</i>
Source	<i>-ɲka-mi</i>	<i>-ga-ra</i>	<i>-ki-stani</i>	<i>-n-əl</i>

Pantcheva applies to (67) the same reasoning which led to (66), and concludes that the source path is built on top of the goal path, see (68).<sup>30</sup>



Once again, not all languages show the containment relations on the surface, and this is encoded in the proposal as a reflex of the fact that insertion targets non-terminal nodes. This way of looking at things, however, leads immediately to a prediction. Recall from above that insertion under non-terminals driven by the Superset Principle and the Elsewhere Condition delivers as a theorem that only adjacent layers of structure show syncretism. This means that while the syncretism of a goal path and a stative locative is allowed, the syncretism of a source path and a stative locative is ruled out. As shown in Pantcheva (2008c), this prediction is borne out (and has been independently observed in typological studies).

The syncretism facts thus show that the decomposed structure must be also present in languages which do not show the containment patterns on the surface, giving a nice support for the nanosyntactic perspective.

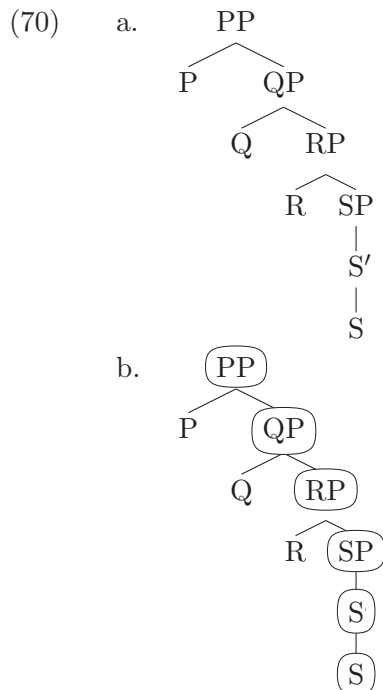
<sup>30</sup>See Pantcheva's work for the semantic side of the proposal.

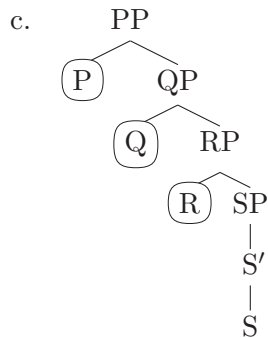
## 2.9 The Anchor condition

In this section, I adopt a restriction on the spell out of non-terminals, such that the lowest feature of the lexical entry (as defined by the functional sequence) must be matched against the syntactic structure. This condition is adopted from Abels and Muriungi (2008). I label it the Anchor Condition, since the lowest feature acts as a sort of an anchor of the lexical entry to a particular point in syntax.

(69) *The Anchor Condition:* In a lexical entry, the feature which is lowest in the functional sequence must be matched against the syntactic structure.

To see the effects of (69) in abstract terms, consider the lexical entry (70a). Assume that features in the functional sequence are ordered as letters in the alphabet,  $A > B > \dots > Z$ , with  $A$  highest and  $Z$  lowest. The anchor condition (69) then enforces that the lexical entry (70a) can spell out constituents which are circled in (70b), and cannot spell out constituents which are circled in (70c).

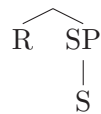




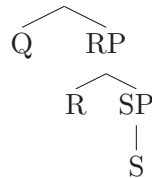
Introducing this condition has two consequences. First, in our example, the syntactic features P, Q and R can be lexicalized only together with S, but not separately. This yields the result that if in the course of the derivation, S extracts and no longer forms a constituent with these features, there will be no way to spell these features out. Hence, the condition makes certain derivations unpronounceable, and I will make use of this later when I get to case checking.

Second, the condition regulates Spell out in certain cases where lexical entries “cross.” Consider this again in abstract terms, starting from the lexical entries (71a-c).

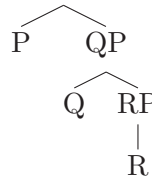
(71) a. /phon A/  $\Leftrightarrow$  RP



b. /phon B/  $\Leftrightarrow$  QP

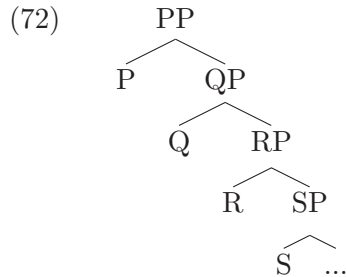


c. /phon C/  $\Leftrightarrow$  PP



I will be saying that the entries (71a,b) “overlap:” they have the same lowest element, S. However, neither of the pair (71a,b) has either the lowest or the highest feature identical to the highest or lowest feature of the lexical item (71c). In such cases, I will be saying that each of (71a,b) “crosses” with (71c).

When two crossing entries have to cooperate to spell out a structure, only one of them will get to spell out the features which are shared. The Anchor condition regulates this situation by requiring that the higher element will do that.<sup>31</sup> Consider the structure (72):



As a result of the condition, the structure (72) can be spelled out only as /phon C/+ /phon A/, and not as /phon C/ + /phon B/. The reasoning follows. First /phon C/+ /phon A/ is a possible spell out. /phon A/ spells out SP, as a result of which SP can be ignored for further insertion. /phon C/ then spells out the rest of the tree (72). Note that /phon A/ has to “down-squeeze,” it cannot spell out the whole RP. If it did, /phon C/ would be unable to spell out the rest of the features. First, this is prohibited by the Anchor Condition. Second, the features P and Q do not even form a subtree of the lexical entry (71c).

Second, the structure cannot be spelled out as /phon C/+ /phon B/. Consider why. The first option is to insert (71b) (i.e., /phon B/) under SP only, and spell out the rest as /phon C/. However, this goes against the results of competition at SP: for the spell out of SP, /phon A/ is a better candidate, and it wins over /phon B/.

Another option is that /phon B/ spells out QP, as a result of which QP is ignored for further insertion. This leaves us with the feature P to spell out. P is a (trivial) subtree in (71c), hence there is a match. However, the Anchor Condition prohibits insertion of (71c) under P only.

As an empirical illustration, consider the following paradigms of colloquial Czech. Of particular interest here is the relationship between the accusative and the instrumental.

(73) *Acc – Ins containment in coll. Czech*

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<sup>31</sup>An alternative hypothesis is explored in Ramchand (2008), where crossing is allowed (and sometimes required).

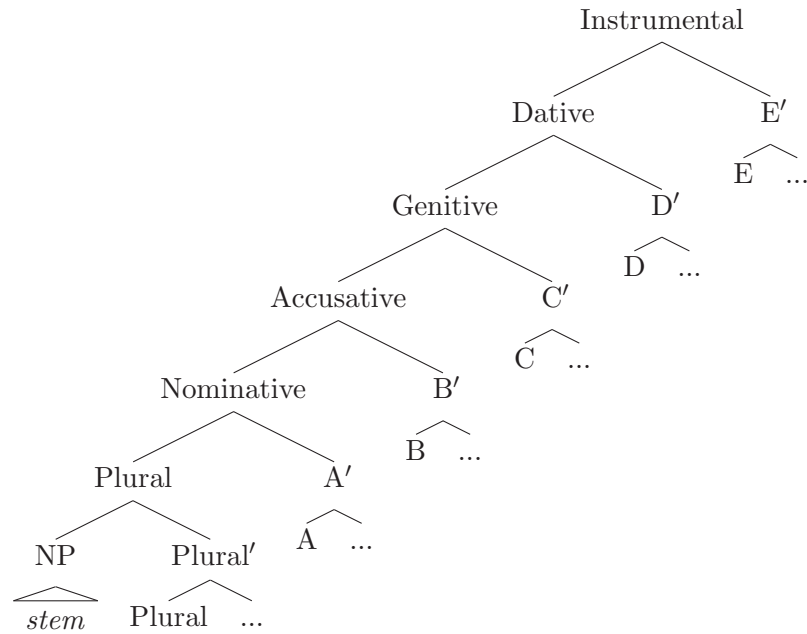
	‘man’	‘chicken’	‘eye’	‘building’	‘good’ (adj.)
Nom	muž-i	kuřat-a	oč-i	staven-í	dobr-ý
Acc	muž-E	kuřat-A	oč-I	staven-í	dobr-Ý
Gen	muž-ů	kuřat	oč-í	staven-í	dobr-ý-ch
Prep	muž-í-ch	kuřat-e-ch	oč-í-ch	staven-í-ch	dobr-ý-ch
Dat	muž-ů-m	kuřat-ů-m	oč-í-m	staven-í-m	dobr-ý-m
Ins	muž-E-ma	kuřat-A-ma	oč-I-ma	staven-í-ma	dobr-Ý-ma

As can be observed, the instrumental is composed of the accusative case plus *-ma*.<sup>32</sup> This is then another example of compound case marking: the marking for the instrumental contains the marking for the accusative. The direction of containment is predicted by the proposed decomposition, in which the instrumental structurally contains the accusative (but not the other way round). However, a question arises why it is the accusative – of all the cases contained inside the instrumental – which forms the basis of derivation. The answer is provided by the Anchor condition: if we specify *-ma* in a way that its lowest feature (which needs to be matched against the syntactic tree) comes on top of the accusative, then the only way to spell out the structure will be as [[accusative] -ma]. The implementation follows.

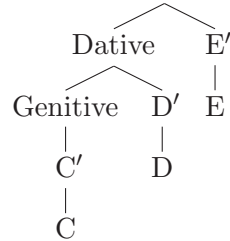
The syntactic structure of the Czech instrumental is given in (74a): it represents a roll-up derivation. The crucial step of the analysis is depicted in (74b): the lexical entry for *-ma* is specified for the features C, D and E.

<sup>32</sup>There one ACC - INS pair which does not fit the neat pattern: ACC is *-y*, and INS *-a-ma*. Note that *-a* is an accusative plural marker elsewhere (see the table above), but not in this particular declension. I suspect that this effect falls within a larger cross-linguistic pattern where marked cases (like the instrumental) show less formal differentiation in terms of gender/declension class. Thus, the ACC *-y* is “replaced” by the “default” ACC *-a*. I do not try to explain this here for reasons of space.

(74) a.

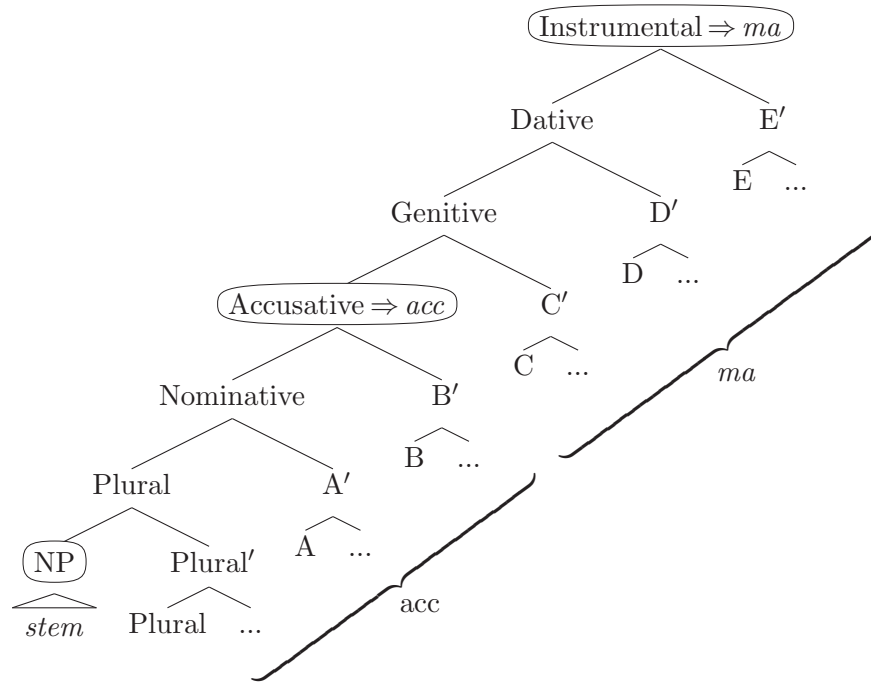


(75) /-ma/ ⇔ Instrumental



By the Anchor Condition, *-ma* must be inserted to replace the constituent containing all of the features C-E; it cannot attach (for instance) under E only. Given this reasoning, the residue to be spelled out by other markers is the accusative plural; a correct result. I show that below:

(76)



On the rigid matching approach, the derivation proceeds as follows. First, NP\* moves cyclically on top of the accusative constituent. Then it pied-pipes this constituent to the left of the instrumental, and sub-extracts. If the derivation had proceeded otherwise, there would be no way to spell out the structure in accordance with the Anchor Condition.

A similar approach can be used to encode the fact, mentioned in §1.8.1, that in some languages, functional prepositions do not combine with the biggest case a language has. Thus, recall that due to the non-relational approach to k-selection in the domain of functional prepositions, we predict that these prepositions combine with the largest case a language has. This has been illustrated on the example of languages which I repeat below:

(77) K-selection by functional prepositions

language	NP* moves above	k-selection
English	ACC	ACC ( <i>of, to, with</i> )
Arabic	GEN	GEN ( <i>li</i> 'to', <i>bi</i> 'with')
German	DAT	DAT ( <i>mit</i> 'with')
Russian	INS	INS ( <i>s</i> 'with')

It has been also mentioned that this prediction is not borne out in Modern Greek. The biggest case in the language is the genitive, yet the instrumental functional preposition *me* 'with' combines with the accusative:



- (78)    *me*   t-on    Petr-o  
          with the-ACC Peter-ACC  
          ‘with Peter’            (Modern Greek, Lechner and Anagnostopoulou  
          2005:ex.1)

Thus, the question is why the preposition *me* ‘with’ combines with the accusative rather than the genitive, a similar question to the one we have addressed for the Czech morpheme *-ma* (i.e., why it attaches to accusative rather than dative). Given the similarity of the problems, it is possible to use the Anchor Condition to explain this fact. Specifically, if the Greek preposition *me* has a similar specification as the Czech *-ma*, see (79), we in effect encode that it must attach on top of the accusative:

- (79)     $/me/ \Leftrightarrow$  Instrumental
- ```

      /      \
     E       Dative
           /   \
          D    Genitive
                |
                C
  
```

That is because in order to spell out the instrumental feature E, *me* has to spell out also C, due to the Anchor Condition. If it spells out C, what is left for other morphemes to spell out is the constituent from B down, corresponding to the accusative.

## 2.10 Conclusions

Let me sum up this chapter. Due to the initial proposal that case features are spread across several terminals, I have adopted a spell out procedure which allows non-terminals to be spelled out by a single morpheme. The consequences of the hypothesis bring benefits beyond the fact that such a theory is consistent with my proposal.

First, the spell out system delivers the Universal Contiguity. Second, since lexical insertion can package syntactic trees into morphemes, there is no need for pre-syntactic lexical items, or feature bundles. Together with the bundles disappears the need to re-adjust them for the purpose of insertion; Fusion and Fission have no place in the grammar. The elimination of these three tools of the theory of post-syntactic insertion is replaced by a single indispensable tool: insertion. Finally, I have shown that the arguments of Embick and Marantz (2008) do not lead to the conclusion that spell out of non-terminals leads to predictions which are not attested. On the contrary, to the extent that the abstract test cases are instantiated, the facts point in the direction that spell out of non-terminals is required.

The results support the nano-syntactic model of grammar proposed by Starke (2005); grammar starts from single features which are combined into tree structures by binary Merge.

Finally, I mention here that ch. §7 presents a case study which applies the phrasal spell out technology introduced in this chapter to a relatively complex and interesting set of data drawn from Classical Armenian.

## 2.11 Appendix

This appendix provides the enumeration of the principles governing insertion introduced in this section.

- (80) *The Superset Principle:* A phonological exponent is inserted into a node if its lexical entry has a (sub-)constituent which matches that node.
- (81) *Match:* A lexical constituent matches a node in the syntax if it is identical to that node, ignoring traces and spelled out constituents.
- (82) *The Elsewhere Condition:* In case two rules,  $R_1$  and  $R_2$ , can apply in an environment  $E$ ,  $R_1$  takes precedence over  $R_2$  if it applies in a proper subset of environments compared to  $R_2$ .
- (83) *The Anchor Condition:* In a lexical entry, the feature which is lowest in the functional sequence must be matched against the syntactic structure.

# Chapter 3

## Total syncretism

This chapter is dedicated to the discussion of total syncretism: a situation where two layers of case are syncretic for all paradigms in a given language. I first lay out the theoretical ground-work, and I show that total syncretism is an option predicted by the system. Then I turn to the discussion of languages which show it. As a follow up, I investigate ways in which total syncretism helps us make our case hierarchy more fine grained, adding new layers of case. Evidence for these layers is drawn from languages which show additional cases that have not been incorporated in the Case sequence yet. Finally, I offer a new conceptualization of the hierarchy we have been working with so far.

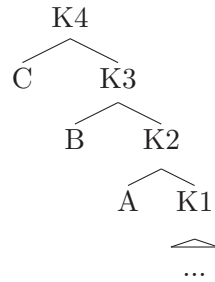
The discussion in this chapter does not introduce any new theoretical tools beyond what we have gotten so far. Thus, I show that to capture a relatively large amount of data, we do not need to propose anything beyond the universal functional sequence, Cinque-compatible NP\* movement within that sequence, and a non-terminal spell out which directly mediates between syntax and phonology. Based on this, I give an argument that various domain specific tools that have been proposed to deal with total syncretism should be abandoned, because they are superfluous.

### 3.1 Total syncretism in abstract terms

The term total syncretism refers here to syncretism which obtains across the board for all paradigms in a language. A language with total syncretism of two cases shows no morphological distinction between them.

In theoretical terms, total syncretism arises when a given language has no lexical entry whose topmost node corresponds to a particular layer of structure. To see how this works, consider a structure with 4 layers, K1 – K4, each layer corresponding to a particular case.

- (1) Syntactic structure:



Now assume that in this language, lexical entries are specified for subtrees as in (2). Note that there is no entry with K3P as the topmost node (though the entry for K4P contains K3P).

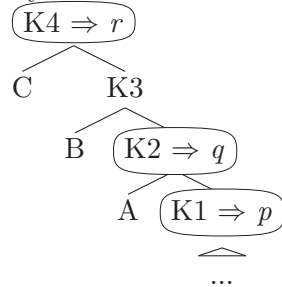
- (2) Lexical entries
- a.  $p \Leftrightarrow K1P$
  - b.  $q \Leftrightarrow K2P$
  - c.  $r \Leftrightarrow K4P$

These lexical entries spell out the phrases for which they are specified, or any subset thereof. Due to competition, the resulting paradigm breaks down as shown in (3), which is also highlighted in tree representation below in (4):

- (3) The paradigm generated by the rules (2)

|    |   |
|----|---|
| K1 | p |
| K2 | q |
| K3 | r |
| K4 | r |

- (4) Syntactic structure:



If there are no more entries than (2), two distinct structural layers, K3 and K4, will not be morphologically distinguished. This situation is due to the fact that there is no entry with K3 as the topmost node. (This holds generally: if there is no lexical entry with a given category as the topmost node, that category (apparently) disappears, because it is always spelled out the same as an immediately larger category.) What this leads to in common practice is that a description of such a language will make no reference to K3 and K4

as separate entities. In order to be brief, the grammarian will conflate K3 and K4 into a single cell, Kx, as in (5a). In order to represent the facts, the paradigm will be augmented with a statement that Kx is used in the functions corresponding to K3 and K4, as in (5b).

(5) A “compressed” description of the system

- a. 

|    |   |
|----|---|
| K1 | p |
| K2 | q |
| KX | r |
- b. Kx is used in the functions K3 and K4.

(5) is a situation which is very well known from descriptive grammars. Lists like (5b) are, however, not satisfactory for any theoretical approach to language; one would like to understand the structure of such lists and reasons why they look the way they look.<sup>1</sup> Since the present system provides a straightforward way to generate such a state of affairs, it also offers a way to translate the surface picture into a theory. The present chapter provides some initial steps in this direction.

## 3.2 Examples of total syncretism

On the general level, the present theory generates a set of expectations concerning total syncretisms. By treating total syncretism as a special case of a regular syncretism, total syncretism targets the same pairs as a regular syncretism. Thus, we expect the existence of languages which do not distinguish between the nominative and the accusative, between the latter and the genitive, and so on, following the Case sequence:

- (6) *Universal (Case) Contiguity:*
- a. Non-accidental case syncretism targets contiguous regions in a sequence invariant across languages.
- b. The Case sequence: NOM – ACC – GEN – DAT – INS – COM

I will now be moving along the hierarchy and give examples of languages which represent the predicted types. This section contains mainly a condensed wealth of empirical data from various languages. Going through the data not only illustrates the correctness of the prediction in (6); the data will be crucial in motivating certain conceptual refinements of the current theory, which I suggest in the following sections.

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<sup>1</sup>So called semantic maps represent a step in the direction of structuring such lists, and yield an interesting set of generalizations. See, e.g., Haspelmath (2003).

### 3.2.1 Total syncretism of nominative and accusative

A nominative–accusative language which would not distinguish between the nominative and the accusative will, by definition, make no distinction between the marking of the core arguments: the sole argument of the intransitive verb (S) in NOM, the agent (A) in NOM and the patient (P) in ACC will all come out the same. English full NPs can be used as an example:

- (7) a. **Mary** (NOM) came.  
 b. **Mary** (NOM) kissed John.  
 c. John kissed **Mary** (ACC).

Such a situation corresponds to what is usually called the “neutral” case marking system. Consider, for instance, the definition from Comrie (2008): “In the neutral case marking system, all of S, A, and P are marked in the same way.” In Comrie’s sample, this is the most common type for both full noun phrases and pronouns. As an example, Comrie mentions Mandarin (where pronouns also show no NOM/ACC contrast according to Comrie):

- (8) a. rén lái le  
 person come CRS  
 ‘The person has come.’  
 b. zhāngsān mà lìsì le ma  
 Zhangsan scold Lisi CRS Q  
 ‘Did Zhangsan scold Lisi?’ (Mandarin, Comrie 2008:ex.1)

Thus, based on Comrie’s sample, we can conclude that the total syncretism of nominative and accusative is well attested. This is not surprising given the fact that even in languages where the syncretism is not total, NOM/ACC syncretism is the most common type of syncretism (according to Baerman et al. 2005).

### 3.2.2 An almost total syncretism: The Northern Saami genitive/accusative

Northern Saami (Nickel 1990, Svenonius 2008) represents a case where for almost all case marked items, the genitive and the accusative fall together. This is illustrated below:

- (9) a. Oainnátgo **máná**  
 see.2sg. child.ACC  
 ‘Can you see the child?’  
 b. Mii lea **máná** namma  
 what is child.GEN name  
 ‘What is the child’s name?’ (Northern Saami, Nickel 1990:p.69)

The syncretism shown above is extremely widespread. As Nickel (1990:p.69) points out, the genitive is different from the accusative only for certain numerals, and the pronoun ‘what.’ Such a situation thus represents an “almost total” syncretism of the accusative and the genitive.<sup>2</sup>

### 3.2.3 A remark on non-autonomous case

So far, we have seen a total syncretism of NOM/ACC and an almost total syncretism of ACC/GEN. As both of these syncretisms involve the accusative, the following possibility arises. Suppose that DPs in a language fall into two subsets. Suppose that for one subset, ACC = GEN, and for the other, ACC = NOM. This is depicted below:

(10) Non-autonomous case

|     | SET A | SET B |
|-----|-------|-------|
| NOM | P     | R     |
| ACC | Q     | R     |
| GEN | Q     | S     |

The situation we get is different from total syncretism, yet similar. It is similar in that the ACC case has no exponent of its own (it is always syncretic with another case). Yet, there is a difference in that ACC is syncretic with two distinct cases (rather than just one). Such a marking is called “non-autonomous” by Blake (1994:§2.2.2) (who attributes the term to Mel’čuk): “In some languages a particular function or meaning is recognized in the case system not by any distinctive forms at all but rather by different syncretisms in different paradigms.”

Such a situation obtains, for instance, in Estonian (Tamm 2003), when we focus on the marking of “bounded” objects.<sup>3</sup> This class of objects is (under traditional descriptions) marked by the genitive in the singular, and by the nominative in the plural.

(11) Marking of bounded objects in Estonian (based on Tamm 2003)

|                | SG  | PL  |
|----------------|-----|-----|
| BOUNDED OBJECT | gen | nom |

A possible analysis of this pattern connects this situation to the facts we have seen above, and proposes that Estonian objects are in fact accusative. However, the accusative is “non-autonomous:” it is syncretic with the genitive

<sup>2</sup>Another example is Maasai, Nilo-Saharan (Koopman 2003, Storto 2003). In this language, possessors are marked the same as direct objects (agreement aside).

<sup>3</sup>Unbounded objects are marked partitive, which is similar to what has been described for Finnish in Kiparsky 1998. See Kratzer 2004 for an interesting approach directly in line with the case assignment theory I will propose in ch. §4.

in the singular, and with the nominative in the plural. Such an analysis has been defended also in Hiietam (2003), and I depict it in (12). Syncretism is marked by shading, and small caps mark the newly formed category of the accusative. Note that this corresponds precisely to the predicted pattern (10).<sup>4</sup>

- (12) Case marking in Estonian (inflected forms of the noun ‘book’ extracted from Blevins 2005)

|     | SG     | PL       |
|-----|--------|----------|
| NOM | ramat  | ramatud  |
| ACC | RAMATU | RAMATUD  |
| GEN | ramatu | ramatute |

This analysis, if correct, shows that the same patterns of syncretism obtain at various levels of generality. First, in languages like Russian (see ch. §1), the ACC/GEN syncretism holds for a relatively small (though notable) number of paradigms (masculine animates in singular and plural). In Estonian, it occurs in the whole of the singular. In Northern Saami, it occurs almost everywhere. Similarly for the NOM/ACC syncretism: it obtains for all neuter nouns in Russian, it targets the whole plural in Estonian, and it is omnipresent in Mandarin. The present approach proposes a unified treatment for all of these phenomena: the universal functional sequence and a spell out mechanism based on the Superset Principle.

### 3.2.4 The Modern Greek genitive

As an example of a total GEN/DAT syncretism, consider the case of Modern Greek. Modern Greek is usually described as having three cases, the nomina-

<sup>4</sup>The analysis (12) represents the standard approach to a virtually identical pattern in Finnish (see, for instance, Kiparsky 2001, which contains a number of references). The claim which is usually made is that in Finnish, the singular of full nouns shows total syncretism of ACC/GEN, and the plural shows the total syncretism of NOM/ACC. (So far, this is just like Estonian in (12).) The additional twist is that Finnish pronouns (unlike the Estonian ones) have a specific accusative form, distinct from the nominative and the accusative. The facts are summarized in the table (i):

(i) Case marking in Finnish

|     | SG | PL   | PRON |
|-----|----|------|------|
| NOM | -∅ | -t   | -∅   |
| ACC | -N | -T   | -t   |
| GEN | -n | j-en | -n   |

The import of Finnish is that its pronominal paradigm shows the necessity to recognize a separate category for the accusative case in Finnish, and thus makes the alternative analysis which dispenses with the notion of accusative less straightforward.



tive, the accusative and the genitive (see §1.1 for discussion and references).<sup>5</sup> It should be noted, however, that the genitive works both as the possessor inside the DP, and the indirect object; see Pancheva (2004) for a recent discussion and similar examples from other languages.<sup>6</sup> The pair of examples (13) illustrates this fact for a 3rd person clitic ‘he,’ and (14) shows the same thing for a full DP.

- (13) a. to vivlio **tu**  
 the book he.GEN.CL.  
 ‘his book’  
 b. **Tu** eftiaksa ena keik.  
 he.GEN.CL made.1.SG a cake  
 ‘I have made him a cake.’ (Greek, Pancheva 2004:4a-b)
- (14) a. I mitera **tu Petru**  
 the mother the.GEN Peter.GEN  
 ‘Peter’s mother’  
 b. I Maria efere **tu Petru** to grama  
 the Maria brought the.GEN Petros.GEN the letter  
 ‘Mary brought Peter the letter.’ (Greek, Anagnostopoulou  
 2003:p.24,p.210)

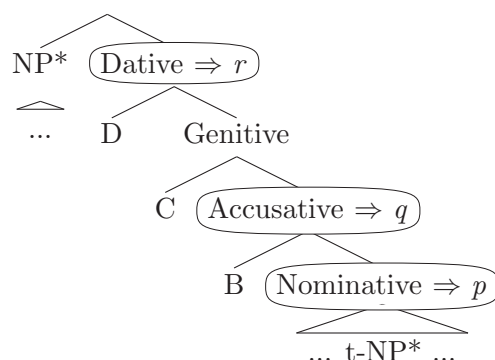
The facts in (13) and (14) are easily captured by the mechanism of total syncretism. The functional sequence of Modern Greek (just like in other languages) has two syntactically distinct cases, the genitive and the dative. The NP\* raises above the dative, as a consequence of which the indirect object appears without any functional preposition. The fact that the genitive and the dative are always non-distinct in Modern Greek is captured by the nature of lexical entries, none of which has the genitive layer as its topmost node. This analysis is schematically depicted below, which is essentially an annotated version of the abstract schema (4) that we have started from:<sup>7</sup>

- (15) The structure of case in Modern Greek:

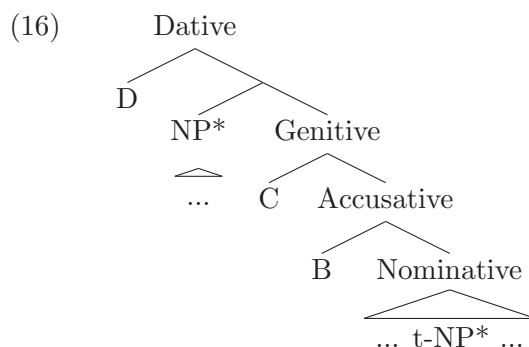
<sup>5</sup>There is also the vocative case, but recall that I ignore vocatives here.

<sup>6</sup>Apart from the languages discussed by Pancheva (2004) (Romanian, Bulgarian, Macedonian), total syncretism of genitive and dative is also attested in Albanian, see Camaj (1984:p.32).

<sup>7</sup>Assuming the tree in (15), there is a puzzling fact in Modern Greek. It is the fact that the preposition *me* ‘with’ takes its complement in the accusative, rather than the expected genitive. Modern Greek is the only language I know of where a functional preposition does not combine with the “biggest” case a language has. An implementation of this interesting fact can be achieved by a recourse to the Anchor Condition, as discussed in §2.9.



The Greek system given in (15) must be distinguished from a language which is superficially the same (and has a three case system of NOM, ACC, GEN), but different in that NP\* movement targets a position below the dative:



Such a language will differ from Modern Greek in that the genitive case will not be used as an indirect object. Instead, the indirect object will be realized as a combination of a functional preposition (spelling out the feature D in the tree above) and the genitive case. An example of such a language is Standard Arabic. In this language, possessors are marked by the genitive like in Greek (compare (17a) with (14a)). However, unlike in Greek, indirect objects cannot bear the same marking as possessors, and they require a preposition (compare (17b) with (14b)).

- (17)
- a. umm-u            **muhammad-in**  
 mother-NOM Muhammad-GEN  
 ‘Muhammad’s mother’
- b. aḥDara-t    maryam-u    al-xiTaab-a    \*(li)- **muhammad-in**.  
 brought-AGR Maryam-NOM DEF-letter-ACC TO- Muhammad-GEN  
 ‘Maryam brought the letter to Muhammad.’ (Standard Arabic,  
 Islam Youssef, p.c.)

Here, a descriptive grammar has to state the facts in terms of distinct lists of functions for the Greek and Arabic “genitive.” The present model translates

this statement into an independently needed parameter, namely the height of NP\* movement: Greek moves NP\* above the dative, and Arabic only above the genitive. From this, it follows that Greek indirect objects have no functional preposition, while in Arabic, the preposition *li-* has to show up. This analysis requires that genitive and dative show total syncretism in Modern Greek, which is a possibility predicted by the system.

### 3.2.5 The total syncretism of dative and instrumental

This syncretism is attested for Classical Greek (Buttman 1822). Classical Greek is described as a four case system (NOM, ACC, GEN, DAT, leaving vocative aside). In addition, the dative is mentioned as having the instrumental function:

- (18)    *pattássein rábdō*  
           strike        stick.DAT  
           ‘to strike with a stick’        (Classical Greek, Buttman 1822:p.230)

Thus, we need to acknowledge that nouns in Classical Greek move as high as the instrumental (since there is no preposition in (18)), and at the same time, we are required to posit an absolute syncretism of this instrumental and the dative. The proposal that NP\* movement lands just above the instrumental (and not higher) reflects the additional fact that the comitative in Classical Greek is expressed as the combination of the preposition *syn* ‘with’ and the dative.<sup>8</sup>

Thus, the four way case system of Classical Greek is different from a superficially similar four way case system of languages like German. Similarly to Classical Greek, dative in German expresses indirect objects and complements to various prepositions like IN (Ger *in* / Gr *en*), or BETWEEN (Ger *zwischen* / Gr *metá*), but it cannot (by itself) express the instrument of an action, see (19). In this context, the functional preposition *mit* has to show up.

- (19)    Peter hat die Suppe \*(mit) einem    Löffel gegessen.  
           Peter has the soup    with a.DAT.SG spoon eaten  
           ‘Peter has eaten the soup with a spoon’        (German)

The distinction between the Greek (18) and the German (19) is captured by the proposal that the NP\* moves to different positions in the two languages, above

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<sup>8</sup>Old English, which I discuss in §8.4.1, is similar to Classical Greek in showing a total syncretism of dative and instrumental in the nominal domain. Some of the Old English demonstrative pronouns, however, do distinguish the dative from the instrumental. In Serbian (§8.3.1), the plural shows the dative/instrumental syncretism, as well as all duals in Upper Sorbian and Slovene (§8.3.2).

the instrumental layer in Classical Greek, but below this layer in German. What causes the apparent similarity of the systems is that in Classical Greek, the instrumental is always the same as the dative.

### 3.2.6 Comitatives and instrumentals

The title of this section recapitulates the title of Stolz et al. (2008). The article reports that the total syncretism of these two roles is relatively frequent, and it is not restricted to a particular geographical area. Out of the 322 languages investigated by Stolz et al. (2008), 76 (cca 23%) show a total syncretism of the comitative and the instrumental. This syncretism is present also in English (*with*) and a further illustration comes from Inga, a Quechuan language of Colombia:<sup>9</sup>

- (20) a. *alcalde-huan-ta-si*    *pueblo-ma samuncuna*  
           mayor-WITH-even-QUO town-all    come.3.PL  
           ‘They came to town together with the mayor.’  
       b. *caspi-hua-si*    *tanteancuna ñayapa junda*  
           stick-WITH-QUO measure.3.PL how    full  
           ‘It was so full, they were measuring it with a tree-trunk.’ (Inga, Stolz et al. 2008:ex.1)

### 3.2.7 A non-implication of total syncretism

The theory of total syncretism I adopt here treats total syncretism as an instance of ordinary syncretism, and it does not introduce any special mechanism to encode it. The difference between total and ordinary syncretism is a difference in the degree of syncretism, not in its quality. This view is supported by the data presented here, which show that total syncretism operates along the same hierarchy as ordinary syncretism. A differential treatment of these phenomena is thus not justified by the data considered in this dissertation.

This is, however, not the only way to go, and alternatives have been suggested (see, e.g., Williams 1994, Bobaljik 2002, Calabrese 2008, Harley 2008). I will briefly review the motivation for these alternatives, and provide two arguments for not adopting them.

The usual line of argument for treating total syncretism differently from an ordinary syncretism is the following: if total syncretism is treated like an ordinary syncretism, we (apparently) lose a generalization that should be captured. To see what generalization we are (apparently) missing, recall, for instance, the facts of Modern Greek. In this language, the genitive and dative show total syncretism. Now Modern Greek has a number of declension classes

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<sup>9</sup>The variation between the form *hua* and *huan* is not addressed in the quoted paper.

with various different exponents. However, the total syncretism of genitive and dative holds (by definition) across these declension classes: no matter what (set of) exponents we choose, dative and genitive will never be distinguished.

Thus, Williams (1994:p.25) suggests that total syncretism represents “a pattern which is independent of the forms in the pattern,” and hence, “it is a part of the formal structure of the paradigm, [...] standing above particular words, particular rules, particular suppletive relationships.” For Williams, this means that total syncretism is to be captured differently from an ordinary syncretism, which, unlike total syncretism, concerns particular markers.

Williams’ view on the matter has been adopted (not without qualifications) by a growing number of works within the framework of Distributed Morphology, of particular relevance are the works by Bobaljik (2002), Calabrese (2008) and Harley (2008). While the authors do not adopt the particularities of Williams’ proposal, they agree that total syncretism should receive a special treatment.<sup>10</sup>

There are two reasons why I do not follow these proposals and treat total syncretism like an ordinary syncretism. The first reason is Occam’s Razor: for the data I have discussed, there is no need to introduce anything beyond structure and spell out. And if we can handle total syncretism by the means we already possess, than we should not introduce any other.<sup>11</sup>

Another reason for treating total syncretism like an ordinary syncretism is more subtle, and ultimately reduces to the first point. Nevertheless, I mention it separately, because it involves a reasoning based on assumptions about what speakers know when they know their language. Specifically, I assume that speakers have access to abstract (and universal) syntactic structures, and a (language specific) lexicon which provides instructions how to pronounce these structures. The devices proposed by Williams or Distributed Morphology belong neither to syntax, or the lexicon as understood here. Rather than part of the grammar, total syncretism is a generalization over the output of that grammar. Generalizations are important for linguists, because they provide a reflection of the underlying organization of the system. However, they are not something a learner should acquire in addition to the lexical entries of the individual morphemes.

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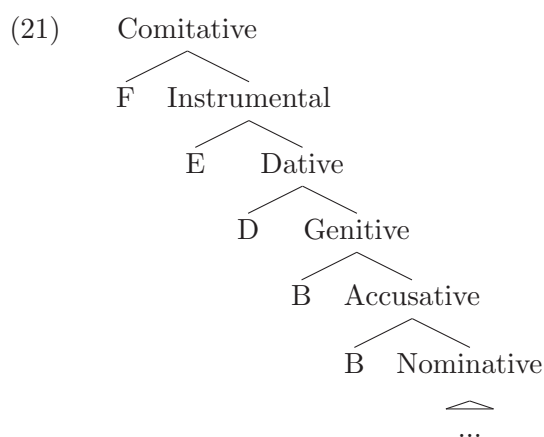
<sup>10</sup>See Bobaljik (2002) for an overview of proposals beyond Williams (1994).

<sup>11</sup>This holds even more once the particularities of the proposals are taken into consideration. Williams, for instance, proposes that there exists a dedicated and syntax-independent paradigm structure over which total syncretism is stated. The proposals within Distributed Morphology use a Morphology specific operation (Impoverishment), which presupposes the existence of a whole module of grammar.

### 3.3 A conceptual refinement

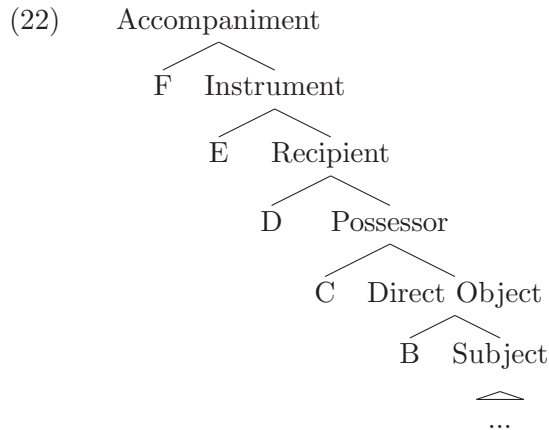
As the discussion in the preceding section has shown, categories such as dative or genitive correspond to different things across languages. The genitive in Modern Greek is different from the genitive in Arabic, the dative in Classical Greek is different from the dative in German, and so on. On the one hand, the present theory offers a way to pin down what exactly the differences are, and a way to model them in a formal and constrained fashion, using standard parameters such as the difference in the height of NP\* movement. On the other hand, doing this makes it clear that phrasing the syntactic hierarchy of case in terms of surface categories (like genitive and instrumental) becomes confusing because of the ambiguity of such terms.

Thus, on the one hand, I have been using the terms such as genitive and instrumental to refer to constituents of a particular size, which correspond to the non-terminal nodes in (21).

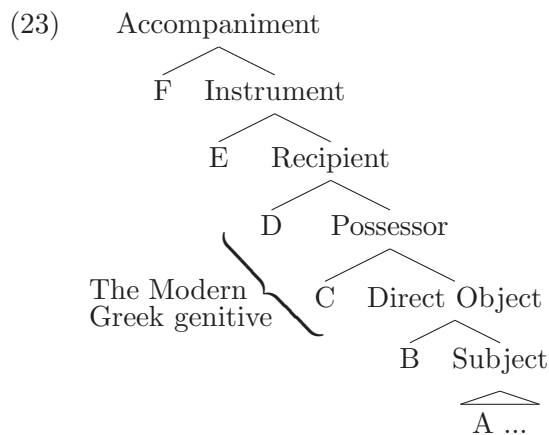


On the other hand, the same terms also refer to a stretch of functions covered by a single morphological category. The ambiguity can be highlighted by the proposition which says that spelling out “the genitive” is only one of the functions of “the Modern Greek genitive.” (The other function is to spell out “the dative.”)

The obvious alternative which avoids this problem is to phrase the syntactic hierarchy in terms of the functions individual constituents express, such as “subject,” “direct object,” “possessor,” “recipient,” “instrument,” or “accompaniment.” Thus, (21) should be replaced by something like (22).



The terms like genitive or instrumental can then be reserved to refer to language particular ways of cutting up the underlying sequence into portions within which no distinctions are made. Thus, the genitive in Modern Greek corresponds to a stretch of functions covering the possessor and the recipient, which is indicated by the bracket running parallel to the tree (23).



Note that the bracket here does not indicate a constituent spelled out by the genitive morpheme, since each genitive morpheme in Modern Greek must be lexically specified for all of the features A, B, C and D. What the bracket indicates is total syncretism, a stretch of the functional sequence which (on a language wide basis) shows no morphological distinctions.<sup>12</sup>

(23) represents an important conceptual update on the simple picture that we have started from, and it provides the needed distinction between “syntac-

<sup>12</sup>Recall that whether a language does or does not make a particular distinction can be deduced from the lexicon of the language. Thus, the Modern Greek lexicon has no entry with the “possessor” constituent as its top node, and hence, there is no distinction between the marking for “possessors” and the immediately dominating category, the recipient.

tic” and “morphological” case.<sup>13</sup> Further, (23) provides a neater way to compare particular phrases across languages: an “instrument” is easy to identify and compare on a cross-linguistic basis, whereas objects like “instrumental” cause more complications, some of which we encounter in §3.4.4.

Apart from the advantages, there are two potentially problematic issues which relate to the restatement of the hierarchy in terms of functions. The first point is definitional, and it in fact arises independently of the restatement. The second issue is more substantial, and it will lead me to conclude that the hierarchy must be made more fine-grained.

### 3.3.1 What counts as a possessor?

The first point is that terms like possessor are too wide. To see that, consider the observation that there are usually multiple ways in a language to express a possessor, see (24).

- (24) a. John’s house  
b. a house of John(’s)

The challenge is thus to find out which one of the phrases in (24) corresponds to the projection of the features C in (23).<sup>14</sup> The question can be decided by cross-linguistic comparison. Since the projection of C is meant to correspond to possessors expressed by the genitive case, we just need to see which of the expressions in (24) compares better with genitives in other languages. In other words, the identification of cross-linguistically comparable cases is in praxis a mixture of both semantic and formal criteria.

Based on this reasoning, I conclude that the projection of C (the possessor case) is the phrase *of John*, and not the phrase *John’s*. This conclusion is based on the fact that in contexts where alternations of the type *of John* vs. *John’s* are excluded, it is the *of*-phrase that shares the distribution with unambiguous genitives of other languages:

- (25) a. plný peněz  
full money.GEN  
‘full of money’ (Czech)  
b. full of money

<sup>13</sup>The use of the phrase *syntactic case* has nothing to do with formal licensing of extended NPs. I will be using the term without these connotations throughout.

<sup>14</sup>This question arises independently of whether the hierarchy is stated in terms such as “genitive” or “possessor.” In the former case, we would still need to know which of the phrases counts as the genitive.



- (26) a. sklenice vod-y  
           glass water-GEN  
           ‘a glass of water’ (Czech)  
       b. a glass of water

Thus, the restatement of the hierarchy in terms such as “possessor” should not be taken too literary: only certain types of possessors are considered.

### 3.3.2 Cases as Zones

The second – more substantial – point is that the last two pieces of data also show that notions like “possessor” are too narrow for our purposes. For example, the genitive in (27a) and the *of*-phrase in (27b) (both of which are repeated from above) are partitives, rather than possessors.

- (27) a. sklenice vod-y  
           glass water-GEN  
           ‘a glass of water’ (Czech)  
       b. a glass of water

This view is supported by the fact that there are languages which distinguish the two contexts overtly:

- (28) a. touli-n janka  
           leg-GEN chair  
           ‘the leg of the chair’  
       b. kimppu kukki-a  
           bouquet flowers-PART  
           ‘a bouquet of flowers’ (Finnish, Vainikka 1993:ex.7,43)

Similar issues then arise for all the other cases. Accusatives often show up as various types of measures, datives tend to show up as recipients, bene-/malefactors, (DP-external) possessors, as so called ethical datives, experiencers, and so on. Instrumentals are not only instruments, but often express such functions as means, manner, causer, medium, etc.

The analytical options branch here, and two main approaches come to mind. These options are not mutually exclusive, and different solutions can apply on a case by case basis, depending on the evidence.

The first option is to claim that possessors and partitives are identical structurally, and the difference between them comes from the encyclopedic content. The fact that Czech/English does not distinguish these two distinct cases is a matter of conceptual underspecification. (For a recent discussion of this option in a different context, see Ramchand and Svenonius 2008.)

The second option is that the two functions of the Czech/English genitive correspond to two distinct structural layers, ordered in a universal sequence.

The fact that English or Czech does not distinguish these two distinct syntactic constituents is due to total syncretism.

It is the second option which will be explored here in more detail, and evidence for adding structural layers will be provided as we go. The picture which will emerge from the discussion is such that a language like Modern Greek – which has only three surface cases – will make use of many more structures, and the three surface cases will give rise to confluences of these underlying structures by the mechanism of (total) syncretism.

From the perspective of this future development, however, we realize that the use of notions like “genitive” or “dative” to refer to syntactic constituents turns out to be a convenient terminological shortcut. These terms can now be used to denote a set of projections of (as yet) unknown cardinality and structure, which tend to be realized as a morphological genitive or dative across languages. This usage is similar to the usage of the term “the IP-zone of the functional sequence.” Similarly to “the syntactic dative,” “the IP-zone” provides an abstraction over a stretch of head positions of some cardinality and internal make-up, located above the VP zone, and below the CP zone. It is in this sense that I will continue to use the names of surface cases to refer to syntactic structure. I will make these usages clear by using expanded terms like “dative zone” should any confusion arise.<sup>15</sup>

### 3.4 Going fine-grained

In this section, I discuss empirical evidence for the claim of the last section, namely that the “basic” cases we have been looking at so far are better thought of as zones corresponding to a number of separate projections. The main source of evidence will be drawn from cases which we have witnessed as “intervening” in the paradigms of individual languages between the “main” cases; recall, for instance, that Russian has a prepositional case which (in terms of syncretism) comes in between the genitive and the dative. In order to incorporate such cases into the theory of contiguity, these cases must receive a projection of their own. In concrete terms, the Russian prepositional must structurally intervene for syncretism between the genitive and the dative, providing evidence for the decomposition of individual zones, apparently monolithic in languages which do not make such morphological distinctions.

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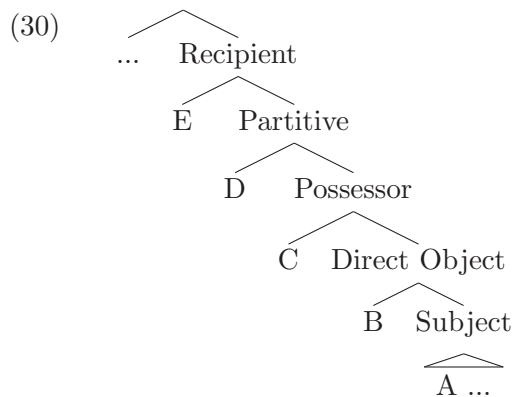
<sup>15</sup>Note that distinguishing various zones is a terminological convenience as well. For instance, no sharp boundaries between the dative zone and the genitive zone are expected to obtain: we have already seen examples of morphological categories which span such boundaries (e.g., the genitive in Modern Greek).

### 3.4.1 ... [ partitive [ possessor ...

I start off by the issue which has been left open in the last section, namely what is the proper representation of partitives and what is their relation to genitives. To decide the matter, we have to look at languages like Finnish (see (28)) which distinguish the two cases morphologically. Within the languages I know of, there are three kinds of evidence which point to the conclusion that the two layers of case are distinct, and that the partitive is bigger than the possessor. I highlight the evidence in (29):

- (29) a. In some Estonian paradigms, the partitive contains the case for possessors  
 b. In Estonian and Finnish, there is a syncretism of the direct object case and the possessor to the exclusion of the partitive  
 c. In Russian, the partitive is syncretic with the recipient case to the exclusion of the possessor case

(29a) is straightforward: since the morphology of the partitive contains the morphology of the possessor, this can be captured if the two cases correspond to distinct projections, and the syntactic structure of the partitive contains the syntactic structure of the possessor. I show this in (30).



The view encoded in (30) is supported by (29b,c). Taking for granted that only adjacent layers of case show syncretism, as has been argued in ch. §1 and §2, the facts are captured if the two cases correspond to distinct projections, such that the possessor is adjacent to the object case, and the partitive to the recipient case.

On the general level, the argument builds on the fact that in languages which distinguish partitive morphologically, the partitive occupies a designated position in the Case sequence of syncretism. The reasoning is then this: in order to derive the contiguity constraint on syncretism, we have to adopt a cumulative sub-classification, equivalent to a functional sequence. And since the partitive is ordered (syncretism-wise) with respect to other items of the

functional sequence, the partitive must occupy a designated position as well.

I proceed to illustrate the points on empirical material.

### The Estonian partitive

Estonian is a Ugro-Finnic language with a relatively large number of cases. For our purposes, I consider only a subset of them, which corresponds to the so-called structural cases.<sup>16</sup> The discussion draws on the paradigms and the discussion in Blevins (2005) and Blevins (2008b).

The situation in the plural is uninteresting from our perspective, since the partitive shows no syncretisms or any (obvious) containment relations. I show that below:

(31) Estonian structural cases, plural

|      | flag,pl. | church,pl. | person,pl. |
|------|----------|------------|------------|
| NOM  | lipud    | kirikud    | inimesed   |
| ACC  | lipud    | kirikud    | inimesed   |
| GEN  | lippude  | kirikute   | inimeste   |
| PART | lippusid | kirikusid  | inimesi    |

The situation in the singular is more complex. The partitive enters both into syncretism and containment relationships, some of them fairly abstract. A large part of the complexity is due to stem alternations. To make the discussion more straightforward, I deal here only with roots which show no stem alternations, and I tackle the paradigms with stem alternations separately in the appendix. The message of the appendix is that the paradigms with stem alternations point to the same conclusion which are reached here on the basis of the non-alternating paradigms.

What I believe to be an exhaustive selection of syncretism patterns in the (analytically) simpler class of non-alternating roots is shown below:

(32) Estonian structural cases, non-alternating singulars

|      | corridor, sg. | house, sg. | year, sg. | church, sg. | person, sg. |
|------|---------------|------------|-----------|-------------|-------------|
| NOM  | koridor       | maja       | aasta     | kirik       | inimene     |
| ACC  | koridor-i     | maja       | aasta     | kirik-u     | inimes-e    |
| GEN  | koridor-i     | maja       | aasta     | kirik-u     | inimes-e    |
| PART | koridor-i     | maja       | aasta-t   | kirik-u-t   | inimes-t    |

The first two paradigms show the syncretism of the genitive and partitive, a situation we know well from most Indo-European languages which simply

<sup>16</sup>All other cases are based on the form of the genitive, see Blevins (2005). Additionally, there is a containment between the directional and the locative cases, see Pantcheva (2008c). Both of these facts are in line with the general approach adopted here.

do not distinguish these cases (like English or Czech discussed above). The third and the fourth paradigm show the relevant pattern of partitive/genitive containment: the partitive is based on the genitive by the addition of *-t* (bold-faced). This last fact shows on the surface what I argue for: the partitive contains the genitive.

Finally, the last paradigm shows that the genitive singular can also be formed by a distinct affix, compared to the partitive singular. This is apparently the same situation as in the plural, but there is an important difference. Unlike in the plural, the genitive singular is always syncretic with the accusative singular. This means that the genitive must be structurally adjacent to the accusative, and it cannot be separated from it by the (distinct) partitive.

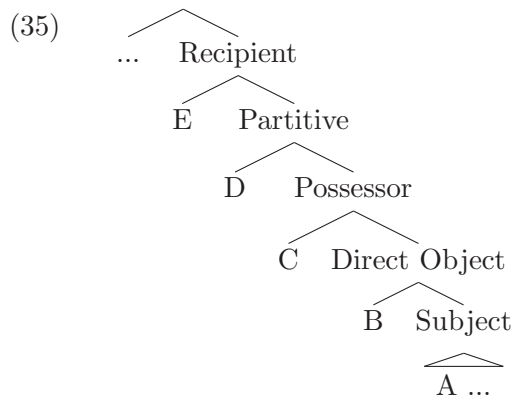
The same situation obtains in the singular of the Finnish declension:

(33) A subset of Finnish singular cases

|      |           |
|------|-----------|
|      | bear, sg. |
| NOM  | karhu     |
| ACC  | karhu-n   |
| GEN  | karhu-n   |
| PART | karhu-a   |

As in Estonian, since the genitive and accusative are syncretic to the exclusion of the partitive, the partitive must not intervene between these cases structurally. Thus, we have found two pieces of evidence (34) in favor of the structure (35).

- (34) a. In some Estonian paradigms, the partitive contains the case for possessors  
 b. In Estonian and Finnish, there is a syncretism of the direct object case and the possessor to the exclusion of the partitive



### The Russian partitive

In Russian, there is a small class of masculine nouns, like *čaj* ‘tea,’ which distinguish between the partitive use and an overall “genitive zone” use.<sup>17</sup> This is shown in (36).

- (36) a. *stakan čaj-u*  
           glass tea-PART  
           ‘a glass of tea’  
       b. *vkus čaj-a*  
           taste tea-GEN  
           ‘the taste of tea’
- (Russian, Corbett 2008)

In most descriptions of Russian, the partitive case is not distinguished as a separate case. There are several reasons for that; one of them is that apart from the small class of nouns like ‘tea,’ the partitive is always the same as the genitive. Thus, (37) contrasts with (36), noting that apart from the distinction in the partitive context, the nouns *čaj* and *kisel’* inflect alike.

- (37) a. *stakan kiselj-a*  
           glass kisel-PART=GEN  
           ‘a glass of kisel’  
       b. *vkus kiselj-a*  
           taste kisel-GEN  
           ‘the taste of kisel’
- (Russian, Corbett 2008)

Moreover, the partitive ending *-u* of *čaj-u* ‘tea, PART’ is identical to the dative ending, shown in (38), making partitive a non-autonomous case.<sup>18</sup>

- (38) *stakan krepk-omu čaj-u*  
           strong-DAT tea-DAT  
           ‘strong tea’
- (Russian, Corbett 2008)

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<sup>17</sup>The discussion here draws on Corbett (2008), see the paper for additional references.

<sup>18</sup>There are additional facts which I do not try to account for here. For instance, Corbett (2008) mentions that when modified by an adjective, the genitive ending *-a* (as opposed to the partitive *-u*) is preferred even for nouns which otherwise have a distinct partitive form.

- (i) *stakan krepk-ogo čaj-a*  
       glass strong-GEN tea-GEN  
       ‘a glass of strong tea’
- (Russian, Corbett 2008)

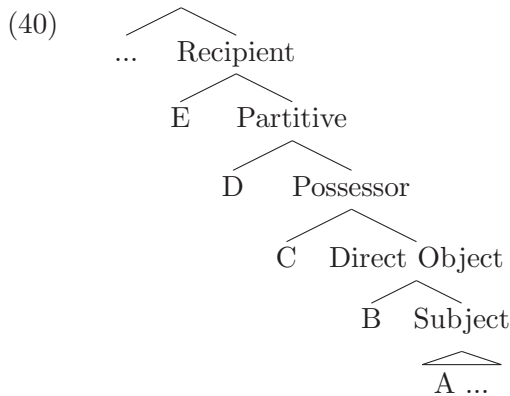
Further, Corbett mentions the fact that when the head noun ‘glass’ is in an oblique case, there is speaker variation concerning the acceptability of the partitive. The latter fact, however, finds a partial parallel in the behavior of the Finnish partitive, see the discussion in Vainikka (1993) surrounding her example 40.

Putting these facts together, the following paradigm emerges:

(39) Russian partial singular paradigms (based on Corbett 2008:ex.8)<sup>19</sup>

|      | kissel, SG. | tea, SG |
|------|-------------|---------|
| GEN  | kiselja     | čaja    |
| PART | kiselja     | čaju    |
| DAT  | kiselju     | čaju    |

Granted the approach to syncretism presented in ch. §1 and §2, the paradigms provide evidence that there is a separate layer of partitive case, and that this layer is higher in the structure than the other genitive uses, among them the possessor function.



That is because of the contiguity requirement on syncretism: in (40), the partitive is adjacent to the dative zone, and can thus show syncretism with it to the exclusion of the other uses of the genitive.

Summing up: the restatement of the case hierarchy in the preceding section invites us to make the hierarchy more fine-grained, and thus, capable of capturing an increasing range of facts. In this section, I have discussed three languages (Estonian, Finnish and Russian) which morphologically distinguish two distinct functions of the genitive zone, the partitive function and the possessor function. Syncretism and containment facts from all the three languages

<sup>19</sup>There is a tension between the partitive – dative syncretism and some additional facts of Russian. In particular, there are two more cases (apart from the partitive) which emerge on the border of the genitive/dative zone: the prepositional I and II.

As we will see later on, the prepositional must be higher than the partitive, since there are paradigms where PREP = DAT, and PART = POSS, leading to the order DAT > PREP > PART > POSS. Based on this, we would expect that when PART = DAT, then PREP = DAT as well.

The prediction is borne out only partially. The prepositional II does show the expected *-u* identical to the PART/DAT form, but differs in the stress placement. However, the form of the prepositional I, which is *-e*, leads to a clear contiguity violation. I have to leave this open for future research.

point to the conclusion that the partitive is bigger than the genitive, thus, (41) becomes (42), where Z stands for zone:

$$(41) \quad \dots > \text{DAT Z} > \underbrace{\text{GEN Z}} > \text{ACC Z} > \dots$$

$$(42) \quad \dots > \text{DAT Z} > \dots > \text{PART} > \dots > \text{POSS} > \dots > \text{ACC Z} > \dots$$

I now proceed to look at another case which emerges (low) in the genitive zone, the locative of Sanskrit and Classical Armenian.

### 3.4.2 The Sanskrit locative

In §1.1, I have briefly discussed syncretism in Sanskrit as a support for the hypothesis of Universal Contiguity. Example paradigms are given below (from Baerman 2008).

(43) Sanskrit

|     | ‘god,’ SG. | ‘god,’ DU. | ‘god,’ PL. | ‘fire,’ SG. |
|-----|------------|------------|------------|-------------|
| NOM | devas      | devāu      | devās      | agnis       |
| ACC | devam      | devāu      | devān      | agnim       |
| LOC | deve       | devayos    | deveṣu     | agnu        |
| GEN | devasya    | devayos    | devānām    | agnes       |
| ABL | devāt      | devābhyām  | devebhyas  | agnes       |
| DAT | devāya     | devābhyām  | devebhyas  | agnaye      |
| INS | devena     | devābhyām  | devāis     | agninā      |

Apart from the cases which have been dealt with in the original statement of the case hierarchy (NOM, ACC, GEN, DAT, INS), the linear arrangement incorporates the locative case and the ablative case. Our focus here is on the locative case.<sup>20</sup>

The relevant observation is that the locative case occupies a designated position in the proposed ordering (it shows syncretism with the genitive), and consequently, it should be taken as an integral part of the system. This can be achieved if we adopt the existence of an additional layer of case between the accusative zone and the genitive zone.

A similar situation arises in Classical Armenian, Schmitt (1981). Here, the locative case shows syncretism either with the genitive, or the accusative, see (44). Thus, it must be ordered between these two cases. Like the Sanskrit

<sup>20</sup>The ablative will not be dealt with here. Note though that in the structural encoding of the ordering, the ablative will contain the locative. This has been proposed independently in a general format, the claim being that directional expressions contain locative expressions, see, e.g., Jackendoff (1983), van Riemsdijk and Huybregts (2002).

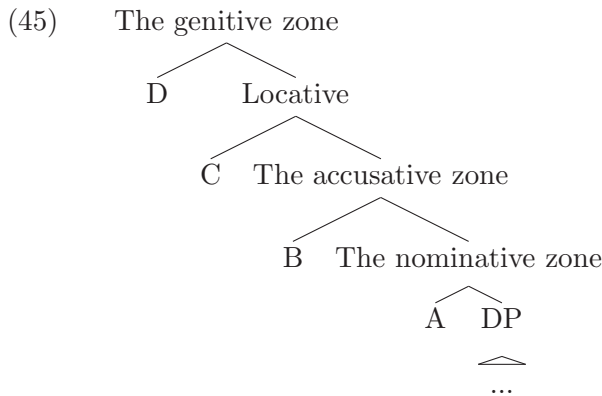


locative, the Armenian one is not a non-autonomous case. This is shown in the third paradigm, where the locative has a unique ending:<sup>21</sup>

(44) Classical Armenian, a-stem declension Schmitt (1981:p.94ff.)

|     | nation, SG. | nation PL. | year, SG.       |
|-----|-------------|------------|-----------------|
| NOM | azg-∅       | azg-kʻ     | tari            |
| ACC | azg-∅       | azg-s      | tari            |
| LOC | azg-i       | azg-s      | tarw-oj̄        |
| GEN | azg-i       | azg-acʻ    | tarw-oy         |
| DAT | azg-i       | azg-acʻ    | tarw-oy         |
| ABL | azg-ê       | azg-acʻ    | tarw-oy / -oj̄ê |
| INS | azg-aw      | azg-awkʻ   | tare-aw         |

Within the approach to syncretism adopted here, the linear sequence of syncretism translates directly onto syntactic structure of increasing complexity. Since in the paradigms above, the locative is ordered in between the accusative and the genitive, this leads inevitably to a separate layer of case for the locative, which emerges on the border of the two zones:



The newly established locative layer can be used to understand some uses of the genitive in languages which do not distinguish locative case parallel to the one in Sanskrit or Classical Armenian. Thus, consider the Czech (46a), where the preposition *u* ‘at/by’ requires the genitive, which (apparently) contrasts

<sup>21</sup>There is a difference between the locative case of Classical Armenian and Sanskrit. While the Sanskrit locative expresses a location on its own, the Locative in Classical Armenian must come with a preposition. I leave it open here how to account for this important difference.

In general, I understand the combinations of a preposition and a particular case in the following way. The case marking on the noun provides spatial information concerning the object denoted by this noun, in particular its position, dimension or orientation in a system of coordinates. The adposition takes this information as an input, and constructs a “derived space” within which the Figure is located.

with the locative of Classical Armenian, (46b):

- (46) a. Seděl u dveř-í  
 he.sat at/by door-GEN  
 ‘He sat by the door.’ (Czech)
- b. nstēr ar dur-s  
 he.sat by door-LOC  
 ‘He sat by the door.’  
 (Classical Armenian, Krause and Slocum no dateb-b:§23.5)

A possible approach to (46) is to say that *u* in Czech (like *ar* in Classical Armenian) selects for the low locative layer, which in Czech (unlike in Armenian) shows total syncretism with the genitive.<sup>22</sup>

Thus, we arrive at the following picture:

- (47) ... DAT Z >  $\overbrace{\text{GEN Z}}^{\text{GEN Z}}$  > ACC Z ...
- (48) ... DAT Z > ... > PART > ... > POSS > ... > LOC > ... > ACC Z ...

A possible interpretation of the formally distilled (48) is that possession is a special type of location.

### 3.4.3 The Slavic prepositional

The introduction of the low locative function requires several remarks. In particular, while the evidence points to the conclusion that there is a low “spatial” layer inside the genitive zone, there is also evidence that this is not the only layer with the ability to serve the expression of a location. In fact, there seem to be a number of such projections, and in this section, I provide evidence from Czech and Latin for a locative layer which occurs between the genitive and the dative zone.

#### The Czech prepositional

To see the issue on a minimal pair, consider the data in (49), which show that apart from the genitive, Czech uses a different case in locative prepositional phrases headed by prepositions like *v* ‘in’ or *na* ‘on’:

<sup>22</sup>Leaving nominal and adjectival adpositions aside, *u* is the only Czech locative preposition which assigns genitive. I come back to this later, and suggest that this is because of the nature of the AT location. In Classical Armenian, however, also IN and ON locations take the locative. I leave the source of this difference between Czech and Armenian unresolved here.

- (49) a. u aut-a  
 at car-GEN  
 ‘at/close to the car’  
 b. v / na aut-ě  
 in / on car-PREP  
 ‘in / on the car’ (Czech)

Due to the fact that the function of the case in (49b) is restricted to locative (and some abstract) prepositional phrases, it is traditionally called either locative, or prepositional. To avoid terminological confusion with the lower locative function, I call the case prepositional. Analytically, we have the two familiar options to choose from. The first one is that the genitive and the prepositional are of the same complexity, and they differ in their conceptual content. Alternatively, they each correspond to a distinct structure.

Evidence from syncretism, illustrated in the table below, points to the conclusion that the prepositional case corresponds to a separate layer which is higher than the possessor, but lower than the dative zone. (Syncretism in Czech is discussed in detail in §8.3.3.)

(50) *Syncretism in Czech*

|      | sea, sg.   | teacher, sg. | good, m.pl. | book, sg. | both   |
|------|------------|--------------|-------------|-----------|--------|
| NOM  | KUŘ-AT-A   | učitel-∅     | dobr-é      | knih-a    | ob-a   |
| ACC  | KUŘ-AT-A   | UČITEL-E     | dobr-é      | knih-u    | ob-a   |
| GEN  | kuř-at-∅   | UČITEL-E     | DOBR-ÝCH    | knih-y    | ob-ou  |
| PREP | kuř-at-ech | učitel-i     | DOBR-ÝCH    | KNIZ-E    | ob-ou  |
| DAT  | kuř-at-ům  | učitel-i     | dobr-ým     | KNIZ-E    | OB-ĚMA |
| INS  | kuř-at-y   | učitel-em    | dobr-ými    | knih-ou   | OB-ĚMA |

The table above illustrates that syncretism in Czech is restricted by contiguity in the order given in (51). What is important here is that the prepositional case appears in between the genitive and the dative:

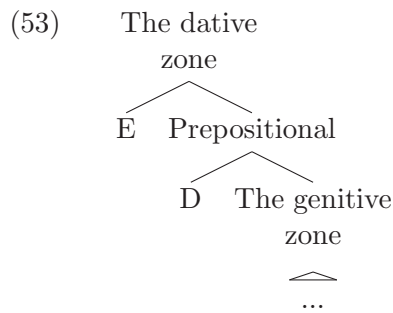
- (51) Czech: NOM – ACC – GEN – PREP – DAT – INS

This encodes the restriction on syncretism in Czech such that when the dative and the genitive are syncretic, this can happen only if the prepositional has the same form. This is because no “skipping” is allowed by the statement (51). An example of this is shown in (52):

- (52) *Syncretism in Czech II*

| bone, sg. |        |
|-----------|--------|
| NOM       | kost-∅ |
| ACC       | kost-∅ |
| GEN       | KOST-I |
| PREP      | KOST-I |
| DAT       | KOST-I |
| INS       | kost-í |

Within the confines of the present system, these facts require that the prepositional corresponds to a dedicated structural layer, which intervenes (for syncretism) between the genitive and the dative. This is shown in (53):



### The Latin locative

Evidence for a layer of locative case on the boarder of the genitive zone and the dative zone is also available in Latin (Hale and Buck 1903, Allen and Greenough 1975, Johnston 1996, Calabrese 2008). Under standard descriptions, Latin has the following inventory of cases: nominative, accusative, genitive, dative and ablative (leaving vocative aside). I diverge from the tradition and label the last one of the cases instrumental (instead of ablative), because expressing an instrument (rather than source) is the most prominent meaning of this case when used in isolation.<sup>23</sup>

The general pattern of syncretism in the language is such that the core cases (i.e., the nominative and accusative) show a frequent syncretism (all neuters), see the paradigms ‘war SG./PL.’ in the table below. Among the oblique cases, the dative and instrumental are frequently syncretic. This obtains in all plural paradigms (see the plural of ‘war’ in the table below), and also in the second declension singular (as seen in the singular paradigm ‘war’). In the first and fifth declension, the genitive and dative are not distinguished in the singular (see the paradigm of ‘star’ and ‘thing’). These syncretisms are

<sup>23</sup>The label ablative comes from the fact that source prepositions such as *ex* ‘from’ take their complement in this case. Only for few nouns, the instrumental alone can express separation.

in line with the Case sequence, which is represented by the overall ordering of the cases.<sup>24</sup>

## (54) Syncretism in Latin

|     | war, SG. | star, SG. | thing, SG. | war, PL.  |
|-----|----------|-----------|------------|-----------|
| NOM | bell-um  | stell-a   | r-ēs       | bell-a    |
| ACC | bell-um  | stell-am  | r-em       | bell-a    |
| GEN | bell-ī   | stell-ae  | r-eī       | bell-ōrum |
| DAT | bell-ō   | stell-ae  | r-eī       | bell-īs   |
| INS | bell-ō   | stell-ā   | r-ē        | bell-īs   |

Against this background, consider what happens in Latin when expressing a location. Most nouns have to be couched into a prepositional phrase, such as the sentence initial PP in (55).

- (55) **In silv-is** abditī late-ba-nt.  
 in woods-INS.PL hidden lie.hidden-PAST.IMPERF-3.PL  
 ‘They were lying hidden in the woods’

(Latin, Hale and Buck 1903:§433, originally from Caesar)

The instrumental in such prepositional phrases is not of an immediate concern, and I assume that it corresponds to a locative layer higher than the one which is under investigation now. I will turn to an independent evidence for such a high locative layer in the next section.

However, a different behavior can be observed for names of towns and small islands. These nouns can be used as locatives without an accompanying preposition, and when this happens, they bear a special case ending, sometimes called the locative case.<sup>25</sup> The marking of the locative is non-autonomous, and it coincides either with the dative, or the genitive. This indicates that the Latin locative corresponds to a structural layer on the boarder of the genitive and the dative, the same position where the Slavic prepositional occurs. The evidence for the ordering of the locative shows most clearly in the first three Latin declensions, which I give below.

## (56) The Latin locative, declensions I, II, III

<sup>24</sup>There are two potential counterexamples to this order which I deal with in §8.5.

<sup>25</sup>Thus, I analyze Latin as having two distinct locative layers, one for the names of towns and small islands (this layer is called the Latin locative here), and another one for the remaining nouns, shown in (55). The distinction between the two locative layers is theoretically relevant. If there was a single locative case covering the examples in (55) and the facts to be discussed, then almost any account in terms of underspecification meets with difficulties, as argued in Calabrese (2008). However, once the (independently needed) existence of two distinct locative layers is acknowledged, the difficulties disappear.

|     | star, SG | slave, SG | chief, SG             | star, PL   | slave, PL  | leader, PL   |
|-----|----------|-----------|-----------------------|------------|------------|--------------|
| NOM | stell-a  | serv-us   | prīncep-s             | stell-ae   | serv-ī     | prīncip-ēs   |
| ACC | stell-am | serv-um   | prīncip-em            | stell=as   | serv-ōs    | prīncip-ēs   |
| GEN | stell-ae | serv-ī    | prīncip-is            | stell-ārum | serv-ōrum  | prīncip-um   |
| LOC | Rōm-ae   | Corinth-ī | Tībur-ī <sup>26</sup> | Athēn-īs   | Philipp-īs | Trall-ibus   |
| DAT | stell-ae | serv-ō    | prīncip-ī             | stell-īs   | serv-īs    | prīncip-ibus |
| INS | stell-ā  | serv-ō    | prīncip-e             | stell-īs   | serv-īs    | prīncip-ibus |

The fourth and fifth declension do not provide such a clear evidence, since most locative expressions take on the form of the instrumental (which is irrelevant here, see fn. 25). However, the noun ‘house’ provides some evidence for a 4th declension locative. The relevant forms are shown below, based on Hale and Buck (1903:§97) and Allen and Greenough (1975:§427).<sup>27</sup>

(57) The Latin locative, declensions IV

|     | house, SG |
|-----|-----------|
| NOM | domus     |
| ACC | domum     |
| GEN | domūs     |
| LOC | domuī     |
| DAT | domuī     |
| INS | domū      |

### Ordering the partitive and the prepositional

In this section, we have seen evidence from Czech and Latin for the existence of a layer of spatial case located at the boarder of the genitive and the dative zone. What is the order of this layer of spatial case and the upper regions of the genitive zone, such as the partitive? Here, we need to know that both in Czech and Latin, the partitive is consistently expressed as the genitive, see (58).

- (58) a. část voják-ů  
part soldiers-GEN (Czech)
- b. pars milit-um  
part soldiers-GEN  
both: ‘part of the soldiers’

<sup>26</sup>In the third declension, forms such as *Tibur-e* coinciding with the instrumental are also found. As clarified in the previous footnote, I analyze these forms as corresponding to a distinct locative layer. A nice piece of evidence for such a layer comes from Slovene, and I discuss it in the next section.

<sup>27</sup>The noun *domus* ‘house’ shows forms which vary between the 4th and the 2nd declension, with preferences in particular cases. I abstract away from this here, and focus on the 4th declension forms.

(Latin from Allen and Greenough 1975:§346)

Based on this, I conclude that the locative layer (which shows syncretism with the higher dative) must be above the partitive:

(59) DAT Z > PREP=LOC<sub>2</sub> > PART > POSS > LOC<sub>1</sub> > ACC Z

The close relation between the dative zone and the prepositional layer is also confirmed by the situation in Serbian (§8.3.1). Serbian is a South Slavic language, related to Czech. In this language (unlike in Czech), the prepositional is always segmentally identical to the dative, with only a couple of nouns showing a distinction in stress placement. Thus, Serbian shows a development towards a language in which the prepositional layer is absorbed inside the dative due to total syncretism.

### The two locatives

What is interesting from a more general perspective is the fact that there are now two locative layers, a higher one and a lower one. This is a new situation which requires some theoretical reflection. In particular, the “doubling” opens a way to incorporate apparent non-linear phenomena in syncretism.<sup>28</sup> To see how doubling of projections avoids non-linear representations, assume for a moment that there would be only a single layer of locative case. This single layer of case would have to show three syncretisms: with the accusative (as in Classical Armenian), with the genitive (in Classical Armenian, Sanskrit, Czech and Latin), and finally with the dative (Czech and Latin). This is shown below:

(60)    NOM – ACC    GEN    DAT – INS  
                           \    |    /  
                           LOC

However, under the assumption that there are two locative layers, we maintain a linear representation, as shown below:

(61)    NOM – ACC – LOC<sub>1</sub> – GEN – LOC<sub>2</sub> – DAT – INS

Evidence for (61) (and against (60)) is provided by languages which exhibit both of these layers, as exemplified by Czech below. (62a) shows the low locative layer (syncretic with the genitive in Czech), and (62b) shows the

---

<sup>28</sup>I will argue shortly that while the two locative layers are similar, they are in fact semantically distinct. Thus, the word doubling is not to be interpreted literally. The situation is similar to Cinque (1999), where certain adverbial projections apparently multiply, but with slight differences in meaning.

higher layer. Since the two locatives are formally distinct for a single noun, there must be two distinct locative cases available.

- (62) a. u aut-a  
           at car-GEN  
           ‘at/close to the car’  
       b. v / na aut-ě  
           in / on car-PREP  
           ‘in / on the car’

In Czech, there is also a meaning difference between the two layers. While in (62a), nothing is presupposed about the dimensionality of the car, in (62b), the car must be a dimensional object with either an interior (for IN), or a surface for (ON). Thus, both morphological and semantic considerations point to the conclusion that there are at least two distinct locative projections.

In the next section, I turn to a third locative layer, which occurs at the lower reaches of the instrumental zone. The evidence is provided by the curious behavior of the Slovene instrumental, the properties of which open the discussion.

### 3.4.4 Slovenian and its “degraded” instrumental

Let me set the stage by repeating that in Classical Greek, an instrument is expressed as a dative, see (63).

- (63) pattássein rábdō  
       strike       stick.DAT  
       ‘to strike with a stick’       (Classical Greek, Buttman 1822:p.230)

This has led to the proposal that NP\* moves above the instrumental projection, and that this projection shows a total syncretism with the dative.

Slovenian represents a curious converse case. The language does have a morphological form which is called instrumental, yet the expression of the instrument role calls for a functional preposition to accompany this case, see (64). As the example shows, the instrumental case is ungrammatical without the preposition:

- (64) Pišem       \*(z) flomaster -jem  
       write.1.SG with marker   -INS  
       ‘Im writing with a marker.’       (Slovenian, Greenberg 2008:p.120)

Within the present model, this fact indicates that the NP\* in Slovenian moves lower than NP\* in Classical Greek, i.e., lower than the instrument layer. In other words, the instrumental case in Slovene must be “smaller” than the instrumental in closely related languages such as Czech or Russian, where the



instrumental is enough to express the instrument role.

- (65) Píšu (??s) per-em.  
 write.1.SG with pen-INS  
 ‘Im writing with a pen.’ (Czech)

Now despite the fact that the Slovenian instrumental must be smaller than the instrument case, it can be shown that the Slovenian instrumental must also be higher than the (Slovenian) dative zone. This is based on the system of syncretism in Slovene. In order to obtain an ordering such that only adjacent cases show syncretism, the instrumental has to follow the dative. I discuss Slovenian declension in more detail in §8.3.2, and here I only offer a bird’s eye view of the facts:

- (66) *Syncretisms in Slovene*

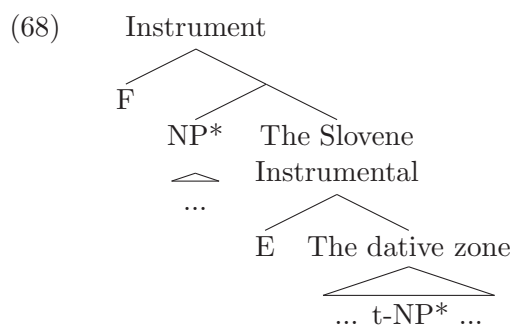
|      | table, du. | farmer du. | peach, sg. | apple, sg. | farmer sg. | I      | we   | my, pl.m. |
|------|------------|------------|------------|------------|------------|--------|------|-----------|
| NOM  | míz-i      | kmèt-a     | brêskv-ø   | jábolk-o   | kmèt-ø     | jàz    | mî   | mɔj-i     |
| ACC  | míz-i      | kmèt-a     | brêskv-ø   | jábolk-o   | kmèt-a     | mɛn-e  | nà-s | mɔj-i     |
| GEN  | míz        | kmèt-ov    | brêskv-e   | jábolk-a   | kmèt-a     | mɛn-e  | nà-s | mɔj-ih    |
| PREP | míz-ah     | kmèt-ih    | brêskv-i   | jábolk-u   | kmèt-u     | mɛn-i  | nà-s | mɔj-ih    |
| DAT  | míz-ama    | kmèt-oma   | brêskv-i   | jábolk-u   | kmèt-u     | mɛn-i  | nàm  | mɔj-im    |
| INS  | míz-ama    | kmèt-oma   | brêskv-ijo | jábolk-om  | kmèt-om    | men-ój | nami | mɔj-imi   |

Thus, the Slovenian instrumental must be lower than instrument, yet higher than the dative zone. This provides evidence in favor of the proposal that there is an additional layer of case between the instrument case and the dative zone, which for now I call the Slovene instrumental. The proposal is shown below:

- (67)
- 
- ```

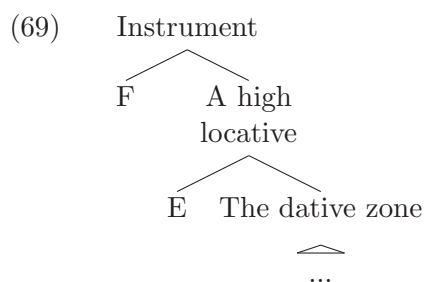
Instrument
├── F
└── The Slovene Instrumental
    ├── E
    └── The dative zone
        └── ▲
            └── ...
  
```

With the new layer of case in place, we can capture the facts by saying that in Slovene, the NP\* lands above the projection of the Slovene Instrumental, but lower than the projection of the instrument:



(68) delivers the result that (i) the instrument is accompanied by a functional preposition, see (64), and that (ii) the Slovene instrumental case follows the dative when it comes to the patterns of syncretism, see (66).

What kind of projection does the Slovene Instrumental correspond to? The distribution of the instrumental in Slovene is restricted to positions following prepositions. Apart from the preposition ‘with,’ it occurs after prepositions such as *nad* ‘above,’ *pod* ‘under,’ *za* ‘behind,’ *nad* ‘above’ and *med* ‘among.’ Thus, it is best characterized as a high locative layer on the boarder of the dative and the instrumental. I show this below:



The existence of such a layer of case on the boarder of the dative and the instrumental zone is confirmed by the fact that in other languages, comparable prepositions take either dative (German, Icelandic, Ancient Greek) or instrumental (Latin, Czech, Russian). In these languages, the high locative layer thus shows a total syncretism either with the higher instrumental zone, or with the lower dative zone.

### The three locatives

As highlighted above, Czech shows both a formal and a semantic difference between the two lower locative layers, shown in (70a,b). While the low genitive-zone layer does not provide any information concerning the dimensionality of the object, the higher layer presupposes that the object is a container or a surface. Is there a similar distinguishing criterion for the high locative layer of the instrumental zone, shown in (70c)?

- (70) a. u aut-a  
 at car-GEN  
 ‘at/close to the car’
- b. v / na aut-ě  
 in / on car-PREP  
 ‘in / on the car’
- c. před / pod aut-em  
 in front of under car-INS  
 ‘in front of / under the car’

In Czech (and other Slavic languages) the answer is yes. In particular, the high instrumental layer occurs with so-called projective prepositions (see, e.g., Zwarts and Winter 2000), which require that the object of the preposition (‘the car’ in (70c)) is oriented with respect to a spatial axis, either an UP/DOWN axis, or a FRONT/BACK axis.

### 3.5 Conclusions

This section started with the discussion of total syncretism within the confines of the initial statement of the Case sequence. Among other things, the investigation revealed that surface cases like “dative” or “genitive” do not correspond to identical grammatical objects across languages (the dative in Ancient Greek is also the instrumental, the genitive of Modern Greek is also the dative). This led to a refinement of the underlying hierarchy of case in terms of functions, which particular morphemes are distributed over in a linear fashion. Surface cases like “genitive” are then understood as language particular ways of cutting up the hierarchy into chunks within which no morphological distinctions are made.

As a follow up, I showed on a couple of empirical examples that this view is justified, and that the surface case categories give way to further decomposition. The couple of examples notwithstanding, the description of the underlying sequence awaits future research.

This chapter concludes the discussion of case representation, and I now turn to a discussion of case computation.

### 3.6 Appendix I: The proposed fseq of case

This section provides a table which sums up the facts discussed up to now.

- (71) A graphical summary of the facts

The proposed sequence	NOM	ACC	LOC <sub>1</sub>	GEN	PART	LOC <sub>2</sub>	DAT	LOC <sub>3</sub>	INS
Anc. Greek	NOM	ACC		GEN		⇒	DAT	⇐	⇐
Mod. Greek	NOM	ACC		GEN			⇐		P
Arabic	NOM	ACC		GEN			P		P
Russian	NOM	ACC	⇒	GEN	⇐/⇒?	PREP	DAT	⇒	INS
Czech	NOM	ACC	⇒	GEN	⇐	PREP	DAT	⇒	INS
Slovene	NOM	ACC	⇒	GEN	⇐	PREP	DAT	INS	P
Sanskrit	NOM	ACC	LOC	GEN			DAT		INS
Latin	NOM	ACC		GEN	⇐	LOC	DAT	⇒	INS
C. Armenian	NOM	ACC	LOC	GEN			DAT		INS
Estonian*	NOM	⇐/⇒		GEN	PART				
Finnish*	NOM	ACC		GEN	PART				

The first line shows the most elaborated version of the functional sequence which I have provided some evidence for. Below this line are individual languages. For each language, the shortcut for a case indicates that the language has this case, using (mostly) a traditional name for the case in that language. For each language, the order of these cases in the table is also an order in which only adjacent cases show non-accidental syncretism.

In addition, the table contains the following symbols:

- (72)
- a. ⇒ : a total syncretism with the case to the right
  - b. ⇐ : a total syncretism with the case to the left
  - c. ⇐/⇒ : non-autonomous case (shows syncretism either to the left, or to the right)
  - d. P : the language uses a combination of a preposition and a case marker to spell out the case

Blank cells indicate that I have not presented any evidence as to what is the status of the given case in a particular language.

The question mark in the cell of the Russian prepositional reflects the problematic nature of the PART/PREP syncretism, discussed in ftn. 19.

### 3.7 Appendix II: Estonian grade alternations

In this appendix, I discuss a subset of Estonian paradigms with stem alternations, and I argue that they exhibit the same abstract structure as non-alternating paradigms, for the discussion of which see §3.4.1. The line of analysis and the presentation of the patterns draws mainly on Prince (1980) and Pöchtrager (2006), and I also build on the proposal in Svenonius (2008) for a related phenomenon in Northern Saami. I refer the interested reader to

the first two works for a detailed discussion of the phonological side of the patterns I will go through.

The general picture of stem alternations in Estonian is the following. In a paradigm with stem alternations, forms are based on either the so called “strong grade” or “weak grade” of the stem. In most of the cases, the two stems are related by a phonologically transparent process of lengthening/shortening, such that, for instance, the strong grade is CVV:C and the weak grade is CV:C. I note here from the start, however, that according to the analysis I present, the notion of the strong/weak stem is not relevant for the morpho-syntax; rather, the two distinct stems arise from the interaction of both phonological and morpho-syntactic factors.

My focus here will be on vocalic alternations, but many stems also show alternations in consonant length. The distribution of the consonantal length mirrors the distribution of the vocalic length, and the two processes are thus clearly related. The morpho-syntactic analysis I provide here for the vocalic alternations can be extended to most of the consonantal alternations, the “quantitative” once in particular. For worked out proposals of how vocalic and consonantal alternations are related, see Prince (1980) and Pöchtrager (2006).

The last thing we need to know in order to understand the paradigms with grade alternations is that Estonian shows a three-way contrast in both consonant and vowel length, traditionally denoted as Q1 (short), Q2 (long), and Q3 (overlong). In the following paradigm, the nominative and the partitive have an overlong (Q3) vowel, and the accusative/genitive has a plain long (Q2) vowel. The overlong/long difference is not reflected in the orthography, but it is clearly distinctive, because it differentiates the partitive from the genitive. To make this clearer, I have included an extra column which states the length of the vowel in phonological terms, and makes the distinction stand out.

(73) Estonian structural cases, vocalic alternations (from Pöchtrager 2006:p.199)<sup>29</sup>

	story, sg.	stick, sg.	abstractly
NOM	<b>siid</b>	<b>liiv</b>	<b>Q3</b>
ACC	SIID-i	LIIV-a	<b>Q2+V</b>
GEN	SIID-i	LIIV-a	<b>Q2+V</b>
PART	<b>siid-i</b>	<b>liiv-a</b>	<b>Q3+V</b>

What I propose is that in the paradigm above, the partitive is derived from the genitive by the addition of a floating mora, see (74). The accommodation of the floating mora by the segmental material leads to the emergence of the strong grade. The same approach has been pursued in Svenonius (2008) for a

<sup>29</sup>To illustrate the point that the alternations in consonant length obey the same morpho-syntactic pattern as vocalic alternations, consider the examples below:

- (i) Estonian structural cases, consonant gradation (from Pöchtrager 2006:p.199)

related phenomenon in Northern Saami.

(74) The Morpho-syntax of the genitive/partitive

	story, sg.	stick, sg.	abstractly	church, sg.
GEN	siid-i	liiv-a	<b>Q2+V</b>	kirik-u
PART	siid-i- $\mu$	liiv-a- $\mu$	<b>Q3+V</b>	kirik-u-t

The proposed decomposition strengthens the point made on the basis of the non-alternating stems, namely that the partitive is based on the genitive. I repeat one of the non-alternating paradigms in the last column, and we can observe that under this approach, the floating mora is an allomorph of *-t*.<sup>30</sup>

Let me point out, however, that there are several reasons why the process of alternation between Q3 and Q2 is to be regarded as shortening, rather than lengthening, see Prince (1980:p.539). Perhaps the strongest one is that the weak grade can be predicted from the strong grade, but the strong grade cannot be predicted from the weak grade. Thus, the strong grade is the underlying form, and it shortens in the genitive/accusative due to a regular phonological process. The accommodation of the floating mora in the partitive makes it impossible for the process to apply.

The question now is what is responsible for the overlength of the nominative. One option would be to extend the “floating mora” approach, as shown in (75).

(75) The morpho-syntax of the grade alternation, to be modified

	story, sg.	stick, sg.	abstractly
NOM	<b>jutt</b>	<b>kepp</b>	[V=Q1C= <b>Q3</b> ]
ACC	JUT-u	KEP-i	[V=Q1C= <b>Q2</b> ]-V
GEN	JUT-u	KEP-i	[V=Q1C= <b>Q2</b> ]-V
PART	<b>jutt-u</b>	<b>kepp-i</b>	[V=Q1C= <b>Q3</b> ]-V

(ii) Estonian structural cases, consonant gradation (from Pöchtrager 2006:p.199)

	story, sg.	stick, sg.	abstractly
NOM	<b>kiit</b>	<b>taak</b>	[V=Q2C= <b>Q2</b> ]
ACC	KIID-u	TAAG-a	[V=Q2C= <b>Q1</b> ]-V
GEN	KIID-u	TAAG-a	[V=Q2C= <b>Q1</b> ]-V
PART	<b>kiit-u</b>	<b>taak-a</b>	[V=Q2C= <b>Q2</b> ]-V

<sup>30</sup>As is often pointed out in this context, the grade alternation is a productive process with the ability to target relatively recent loans. Thus, consider the two following pairs from Prince (1980:ex.30). (The forms are not in the orthographic form, and I reproduce them as given in the source material.)

(i) Gradation in recent loans

	argument, sg.	beefsteak, sg.
GEN	arkument-i	bii:fstee:k-i
PART	arkument:t-i	bii:fstee:k:k-i

	story, sg.	stick, sg.	abstractly	church, sg.
NOM	siid- $\mu$	liiv- $\mu$	<b>Q3</b>	kirik (*-t)
ACC	siid-i	liiv-a	<b>Q2+V</b>	kirik-u
GEN	siid-i	liiv-a	<b>Q2+V</b>	kirik-u
PART	siid-i- $\mu$	liiv-a- $\mu$	<b>Q3+V</b>	kirik-u-t

This approach is unproblematic regarding the fact that the partitive still contains the genitive; however, it raises some issues concerning the morpho-syntactic distribution of the floating mora. The problematic nature of such a distribution can be nicely illustrated on the comparison with the paradigm *kirik* ‘church.’ In the partitive, the moraic suffix in the paradigm of *siid* is essentially an allomorph of the segmental suffix *-t* of *kirik*. However, the *-t* does not surface in the nominative. This is straightforward if *-t* spells out the additional feature which is characteristic of the partitive in comparison to the genitive. But then, if the morpho-syntax of the moraic suffix is parallel to the morpho-syntax of the *-t* (in that it spells out the feature which derives the partitive from the genitive), how come that the moraic suffix does show up in nominative?

Thus, an alternative approach is to be preferred. One possibility which I propose here is the following. Taking the strong grade to be the underlying form, the idea is that the shortening into the weak grade does not take place in the nominative because the relevant conditions for shortening do not obtain there. Under this approach, thus, the relevant condition for shortening is “be followed by a vowel (and not be required to accommodate a mora).” If this is correct, the paradigms we have been looking at then exhibit the abstract structure shown in (76). Note that now the distribution of the floating mora mirrors perfectly the distribution of *-t*, and we get the strong grade in the nominative “for free,” because the condition for shortening is not met:

(76) The morpho-syntax of the grade alternation

	story, sg.	stick, sg.	abstractly	church
NOM	siid	liiv	<b>Q3</b>	kirik
ACC	siid-i	liiv-a	<b>Q2+V</b>	kirik-u
GEN	siid-i	liiv-a	<b>Q2+V</b>	kirik-u
PART	siid-i- $\mu$	liiv-a- $\mu$	<b>Q3+V</b>	kirik-u-t

Now in order to phrase the conditions on shortening in less *ad hoc* terms, I will suggest a possible implementation in terms of foot structure, building on insights in Prince (1980). Basing his claim on various phonological effects that Q3 leads to, Prince (1980) proposes that there is a bi-unique relationship between ‘being a syllable which forms a foot’ and ‘being Q3,’ see below:

(77) *The nature of Q3*, Prince (1980): Q3 = [<sub>foot</sub> 1 syllable ]

Taking (77) to be correct, we have to posit a complete foot for each syllable with overlength. Thus, we arrive at the following representations, where brackets represent feet. Q3 surfaces when the overlong syllable forms a foot of its own, and it has to shorten to Q2 otherwise:

(78) Estonian structural cases, vocalic alternations

	story, sg.	stick, sg.	abstractly
NOM	[ <i>foot</i> siid ]	[ <i>foot</i> liiv ]	[ <b>Q3Q1</b> ]-∅
ACC	[ <i>foot</i> siid -i ]	[ <i>foot</i> liiv -a ]	[ <b>Q2Q1</b> ]-V
GEN	[ <i>foot</i> siid -i ]	[ <i>foot</i> liiv -a ]	[ <b>Q2Q1</b> ]-V
PART	[ <i>foot</i> [ <i>foot</i> siid ] -i ]	[ <i>foot</i> [ <i>foot</i> liiv ] -a ]	[ <b>Q3Q1</b> ]-V

How does the foot-structure arise? First, due to some version of prosodic hierarchy, every word corresponds automatically to a foot, see, for instance, Selkirk (1996). Thus, the fact that the nominative, accusative and genitive each correspond to a foot does not require extra attention. Crucially, we do not need to posit the moraic suffix for the nominative in order for the strong grade to arise.

The only unusual thing is the extra foot in the partitive; this foot needs a special morpho-syntactic trigger. The trigger, as suggested above, is the extra floating mora of the partitive.<sup>31</sup>

The general conclusion I draw here is that we have seen additional evidence that the partitive in Estonian is morphologically derived from the genitive (just like all the semantic cases). This evidence derives from the fact that while the genitive is based on the weak grade, the partitive requires the strong grade. Under the interpretation of stem alternations proposed in Svenonius (2008), the strong grade of the partitive is triggered by the insertion of an extra floating mora.

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<sup>31</sup>While the particularities of the solution can be disputed, the bracketing in (78) seems agreed on. For instance, Pöchtrager (2006:p.202) arrives at an identical bracketing, but proposes a different interpretation of it. According to his proposal, the brackets correspond to separate phonological domains, roughly comparable to separate cycles or phases of phonological computation.



**Part II**

**Case computation**

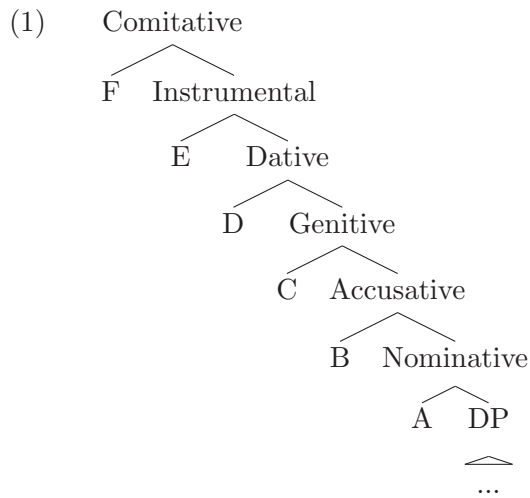


# Chapter 4

## Peeling

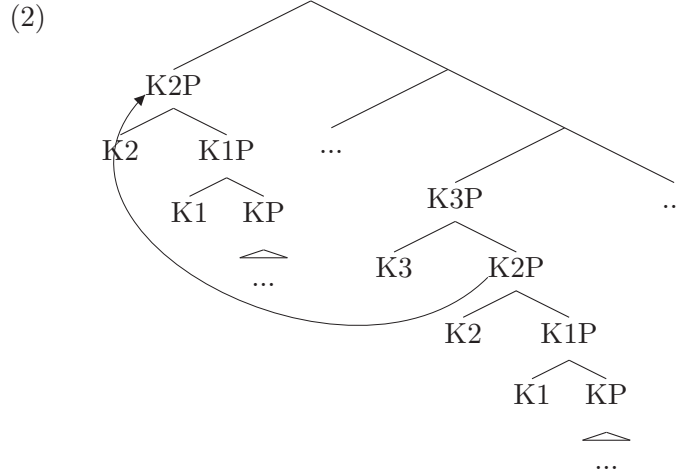
### 4.1 Introduction

The first three chapters of this dissertation have been dedicated to the development of an adequate representation of case, such that syncretism patterns and various other phenomena are accounted for. According to this proposal, individual cases are composed of a number of features, and these features arranged in the functional sequence. I repeat the essence of the proposal in (1).



In this chapter, I start looking at k-selection, i.e., how a particular case is determined in a larger syntactic context. I present data which show that the structure of a given case is relevant for its syntactic distribution; or in other words, the representation of case is relevant for its computation. To account for this, I will adopt a particular version of a base-generation approach to k-selection proposed by Starke (2005), called the Peeling theory. The gist of the

proposal is that nouns are base-generated with a number of case projections on top of them, and they strand these projections when they move up in the tree:



## 4.2 Checking

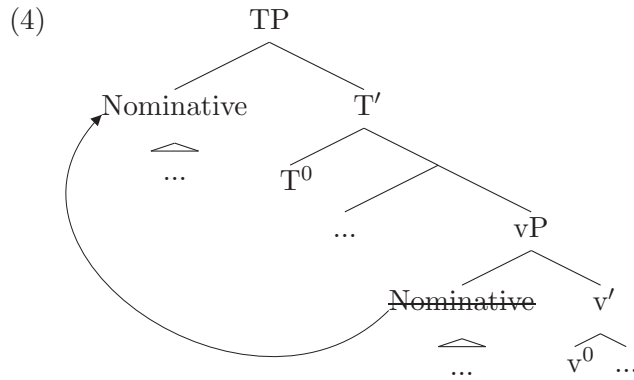
I will start by highlighting the basic mechanics of a base-generation approach to k-selection proposed in Chomsky (1995b), namely the checking theory. While I will not adopt the checking theory here, it is useful to go quickly through the essentials, because the advantages and shortcomings of the theory are instructive as a starting point for the Peeling alternative.

The basis of the checking theory is the proposal that DPs are base-generated with all their features, and they must check some of them in the course of the derivation by moving to a Spec of a dedicated head. For instance, the subject is base-generated in the nominative and the case is checked by raising to Spec,TP (or AgrSP).

In the current approach, each case is a constituent uniquely identified by its topmost feature. Thus, we can adapt the Checking theory and say that for a particular case to be k-selected, we simply require that the top-most feature of the case is checked locally (Spec-Head) against a dedicated assigner.

- (3) *The Case Filter (for a split K system)*: the highest case feature of a DP must be checked locally against an appropriate assigner.

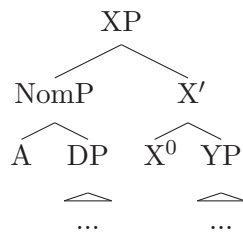
To give an example: the subject is generated as a nominative in Spec,vP, i.e., as a phrase headed by the case feature A. In the course of the derivation, the feature A has to be checked due to (3), which triggers raising to Spec,TP. This raising makes sure that we have not generated the subject in another case.



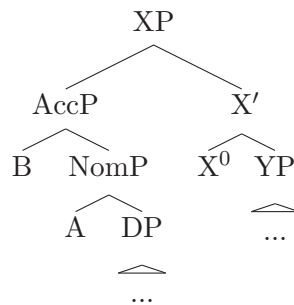
The insight of the checking approach which will be kept is that a particular case emerges as a consequence of attraction. Thus, whenever a head requires a Spec that corresponds to a projection of a case feature, the head will act as a k-selector. The case k-selected by the head is directly read off from the size of the constituent attracted. I illustrate this below.

(5) Case assignment

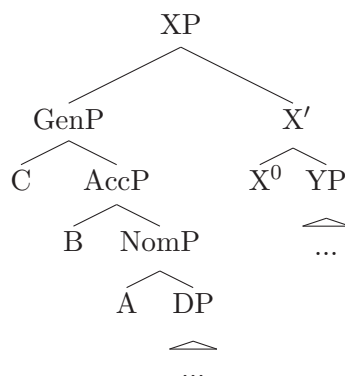
a. X k-selects NOM:



b. X k-selects ACC:



c. X k-selects GEN:



There are, however, reasons to believe that the Case Filter (3) is incorrect, and that the proposed hierarchy is implicated in k-selection more deeply than such a view would predict. I turn to the evidence in the next section.

### 4.3 The interaction between representation and computation

Consider the fact that in the proposed decomposition, nominative and accusative are structurally the “smallest” cases, and that they are adjacent in the hierarchy. The correlation between being a small case and being a structural case does not seem to be an accident, and we would like to understand why such a connection holds. Yet this correlation is immaterial for the version of the checking theory introduced in the previous section. In the derivation (4), checking of the top-most feature works the same regardless of whether nominative is the smallest, the largest, or an intermediate case in the proposed representation.<sup>1</sup>

There are additional facts which show that the Case sequence is involved in the determination of case in an important way. Consider, for instance, nominalizations in Czech. When a verb is nominalized, arguments marked by the nominative or the accusative can be expressed as adnominal genitives, see (6) and (7).<sup>2</sup>

(6) NOM  $\Rightarrow$  GEN

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<sup>1</sup>Chomsky’s checking theory was, of course, not intended to capture the correlation between being a structural case and being a small case, minimally for the reason that it antedates the present proposal.

<sup>2</sup>Such arguments can also be expressed differently, namely by an adjective-like possessive form. Thus, the modality is crucial: they *can* be expressed as genitives, but do not have to. In English, for instance, either of the arguments can be also expressed as an accusative.

- a. Můj manžel- $\emptyset$  chrápe  
my husband-NOM snores  
'My husband snores'
- b. chrápání mého manžel-a  
snoring my husband-GEN  
'the snoring of my husband'

(7) ACC  $\Rightarrow$  GEN

- a. Okradli předsed-u  
robbed.3PL chairman-ACC  
'They have robbed the chairman'
- b. okradení předsed-y  
robbing chairman-GEN  
'the robbing of the chairman'

Datives, instrumentals or comitatives do not have this option. I illustrate this on the dative in (8a-c). The same has been reported for other languages, see, e.g., Bayer et al. (2001).<sup>3</sup>

(8) DAT  $\Rightarrow$  DAT

- a. Pomáhá postiženým dětem.  
helps.3SG handicapped children-DAT  
'He helps handicapped children.'
- b. \*pomáhání postižených dětí  
helping handicapped children-GEN
- c. pomáhání postiženým dětem  
helping handicapped children-DAT  
'helping to handicapped children'

Descriptively, this is clearly related to the structure of case in (1): only DPs which are structurally smaller than the genitive (i.e. NOM and ACC) can be marked by a genitive in nominalizations. DPs which are bigger than the genitive (DAT, etc.) cannot do that. But theoretically, it is yet unclear why a connection between the process which determines case and the Case sequence obtains.

In general terms, the functional sequence of atomic features needed for syncretism has observable effects in the domain of k-selection. What we need is a theory of how case on arguments is determined, such that the empirical effects follow from the interaction of this theory and the decomposition.

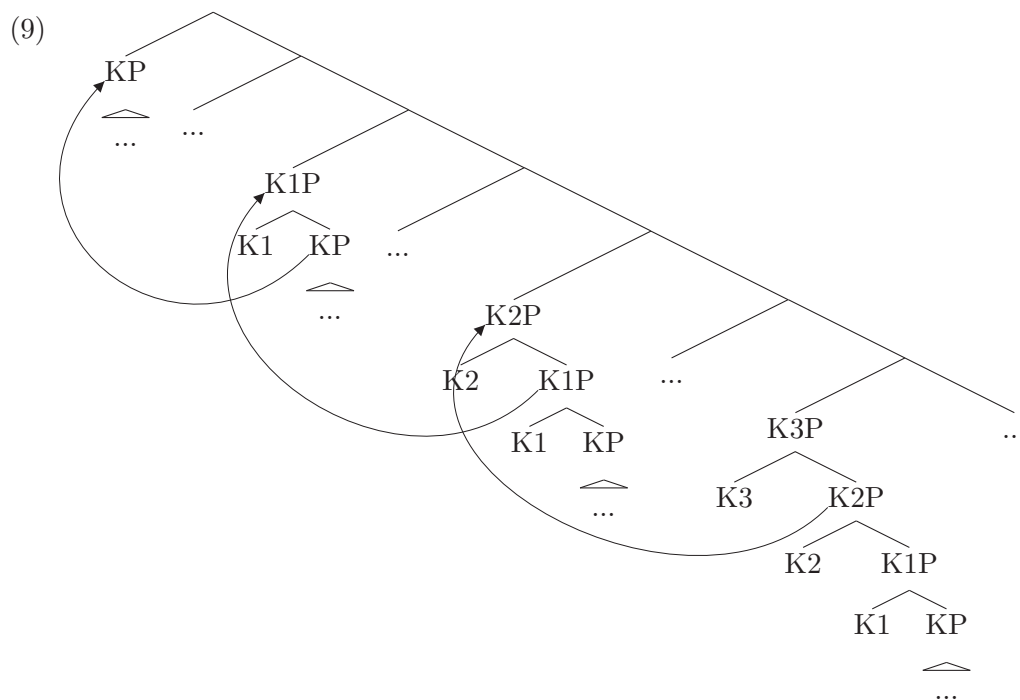
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<sup>3</sup>The phrase (8b) has a grammatical reading which is irrelevant. On this reading, 'the kids' are interpreted as the agent, which would surface in the nominative in an active finite sentence.

## 4.4 The Peeling theory

The theory which I adopt and defend here is the so called Peeling theory of case, proposed by Starke (2005), and developed further in works such as Medová (2008), Taraldsen (2008c), Medová (2007), Medová and Taraldsen (2007), Jabłońska (2008). I introduce it briefly in this section, and then show how it derives the two observations noted above.

According to the Peeling theory, KP\*s are base generated in a  $\theta$ -position with a number of case layers on top of them.<sup>4</sup> Individual KP\*s are base-generated with the amount of case shells which is appropriate for the expression of a given  $\theta$ -role: recipients in the dative, instruments in the instrumental, accompaniments in the comitative and so on. In each movement step the KP\* is subject to, (at least) one of the case shells gets stranded. The KP\* thus appears to be “peeled” under movement: hence the Peeling theory. The proposal is schematically depicted below. K1, K2 etc. refer to case features, the phrasal projections K1P, K2P etc. represent individual cases.<sup>5</sup>



<sup>4</sup>The term KP\* refers to a NP equipped with projections of case. It is apparently a near equivalent of the term NP\* used in the preceding chapters, but there is an important difference. When I talk of KP\* movement, I understand a movement of an extended NP within the projection of an embedding category, like the verb. NP\* movement refers to a movement of a constituent containing the head noun inside its own projection.

<sup>5</sup>Peeling bears certain resemblance to a much earlier proposal by Fillmore (1968).



The tree above reads as follows: K3 changes into K2 under movement, then into K1 under yet another movement etc.

Let me now illustrate the abstract idea on a couple of examples from Czech, noting that the same analysis applies to the English translations.<sup>6</sup> I start by the derivation of an active/passive pair, such as (10), highlighted already in §1.8. Of interest is the marking on the NP\* ‘the grass’ (boldfaced).

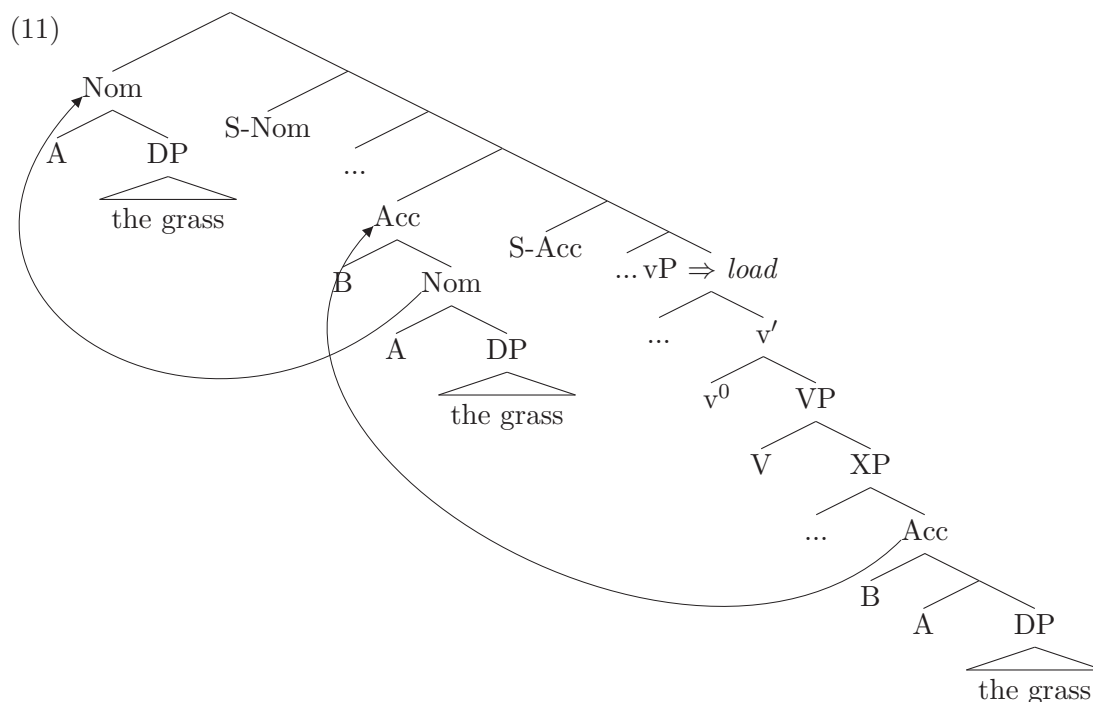
- (10) ACC ⇒ NOM
- a. Karel naložil **tráv-u** na vůz ACC  
 Karel loaded grass-ACC on truck  
 ‘Karel has loaded **the grass** on the truck.’
- b. **Tráv-a** byla naložena na vůz NOM  
 Grass-NOM was loaded on truck  
 ‘**The grass** has been loaded on the truck.’

The analysis of the differential marking of this argument in (10a,b) is the following. The argument is base-generated inside the VP with an (as yet) undetermined number of case projections, but surfaces in the accusative due to a Peeling movement. This movement targets a position which needs an AccP in its Spec, a position which I call S-Acc, S for k-selector. The movement from the base generated  $\theta$ -position to the structural object position is represented in the tree below, see (11). In the tree, I also indicate the fact that I take the verb ‘load’ is the spell out of the vP, but this is not crucial here.<sup>7</sup>

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<sup>6</sup>The only difference between English and Czech for the examples to be discussed is that in Czech, NP\* moves higher than in English.

<sup>7</sup>To highlight the basic mechanics of the Peeling theory, I temporarily abstract away from the fate of shells stranded by Peeling. The general idea is that they are spelled out as part of other items (like the verb, the auxiliaries, the passive morpheme, etc.) by the mechanism of phrasal spell out. I tackle the issue in more detail in §4.6 once the basics are established. In this particular case, I assume that the shells are spelled out as part of the verb, which spells out the vP.



The accusative “stage” or “position” of the internal argument is visible on the surface in (10a). The sentence thus corresponds to a derivation in which the KP\* ‘the grass’ stops in the Spec of S-Acc, and moves no further. In (10b), however, the Spec,S-Nom is free (due to the “demotion” of the external argument), and thus, the nominative case sub-extracts from within the accusative and moves to the higher position.

As highlighted in §1.8, this two-case analysis of passives derives a generalization originating in Burzio’s work, specifically that the accusative emerges on the internal argument only in case the peeling movement to Spec,S-Nom is blocked. This happens either in the total absence of S-Nom (when the functional structure of the VP is impoverished due to embedding or other reasons), or in case its Spec comes to be occupied by a more prominent argument in the course of the derivation.

Consider now an additional example (12a), which shows that the KP\* ‘the grass’ can also surface in the instrumental:<sup>8</sup>

<sup>8</sup>Despite the similarity of marking, the instrumental KP\* is not an instrument. This can be shown by the fact that unlike instruments, it can appear in stative passives such as (i):

- (i) The truck is still loaded { with grass / \*with the pitchfork }.

The purely stative (i) shows that the instrumental KP\* *with the grass* is embedded low down in the VP, since its presence (unlike that of an instrument) does not depend on any dynamic head merged higher than the stative VP itself. This is one of the facts



Thus, in (13), there are in total three distinct positions the NP\* can surface in: the low base-generated position (INS), the direct object position (ACC), and the subject position (NOM). These positions correspond, respectively, to the three examples in (12a-c).

To make the tree richer on details, I have filled in the information that I understand the NP\* ‘the grass’ to start out as the Figure of a spatial relation with ‘the truck’ as the Ground (i.e. [ grass [ P truck ] ]). The PP is in turn a small clause complement to the V (‘load’), although such details are not of immediate concern here.<sup>9</sup>

The derivation (13) is traditional in the sense that the KP\* is first merged in the  $\theta$ -position, and then moves higher up to case positions, the structural object position in particular. What is different is that the KP\* is merged with case features on top, and thus, bears case from the very beginning of the derivation. From this, it also follows that unlike in most current theories (see, e.g., Chomsky 1998), the KP\* can pass through multiple case positions in a single derivation.

Another difference is that the KP\* is not “licensed” by the movements it undergoes beyond its base-position. This puts the Peeling theory of Case in one camp with proposals which argue against the existence of a syntactic Case Filter, e.g., Marantz (1991) or McFadden (2004). Like in the theories mentioned, the Peeling theory has no special case-licensing requirement on DPs analogous to the case filter (3). (The movements are triggered by the attracting positions.) However, unlike in the theories mentioned, case marking is determined strictly within the syntactic computation, and by reference to principles which are not specific to case.

To see this last point in more detail, let me point out the similarity of the Peeling theory of case to Rizzi’s theory of Criterial Freezing (see Rizzi 2004, Rizzi 2007 and references therein). According to Rizzi, when a KP\* is attracted to a position where it undergoes checking (the Criterial position), it is frozen for further movements. Rizzi calls this the Criterial Freezing. However, a sub-extraction out of a frozen KP\* is allowed. This is essentially the same proposal as Peeling, minor differences aside.<sup>10</sup>

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<sup>9</sup>What is of a potential concern is the derivation of (12a), where ‘the truck’ moves from the complement of P to an accusative position, but I do not go into this here. See Romanova (2007) and Caha (2007b) for a more detailed analyses of the PP internal structure in the ‘spray-load’ alternation. The gist of the proposal is that in (12a), the PP first undergoes a process similar to passivization, as a result of which the Ground escapes from the c-command domain of the Figure. After the PP passivization, the Ground raises to the accusative position instead of the Figure.

<sup>10</sup>The differences between Peeling and Criterial Freezing show up only in cases which involve pied-piping. In these cases, as far as I understand, Criterial Freezing allows the pied-piped phrase to move as a chunk through several Criterial positions without any stranding, because Freezing applies only to the actual attracted projection inside

Consider an empirical example discussed by Rizzi.

In (14a), the phrase *quale libro di Gianni* undergoes wh-movement in the embedded clause. The wh-phrase contains a focussed phrase *DI GIANNI*, which can sub-extract from the wh-phrase and move to a focus position in the matrix clause, see (14b). However, it cannot pied-pipe the wh-phrase, as shown in (14c). Importantly, such a type of pied-piping is normally allowed, as shown in (14d).

- (14) Rizzi's Criterial Freezing (Italian, from Rizzi 2007:p.148)
- a. Non sapevo [[ quale libro DI GIANNI] Q avessi scelto t], (non di Piero)  
'I didn't know which book BY GIANNI you had selected, not by Piero'
  - b. DI GIANNI Foc non sapevo [[quale libro t] Q avessi scelto t]], (non di Piero)  
'BY GIANNI I didn't know which book you had selected, not by Piero'
  - c. \*[Quale libro DI GIANNI] Foc non sapevo [ t Q [avessi scelto t]], (non di Piero)  
'Which book BY GIANNI I didn't know you had selected, not by Piero'
  - d. [Tre libri DI GIANNI] Foc pensavo [che avessi scelto t], non di Piero  
'Three books BY GIANNI I thought you had selected, not by Piero'

The ill-formedness of (14c) must then be explained by Criterial Freezing, according to Rizzi. The wh-phrase *quale libro di Gianni* has been attracted to the Criterial position in (14b), and it is thus frozen for further movements. However, sub-extraction from within the wh-phrase is allowed, as in the case of Peeling. Given the similarity, and also the fact that Rizzi motivates his theory mainly for A-bar movement processes, it follows that Peeling-like movements are not specific to case theory. Rather, Peeling is a general theory of movement, subsuming both traditional A and A-bar movement processes (as pointed out also in Rizzi's work).<sup>11</sup>

Importantly for our purpose, this general theory of KP\* movement interacts with the case decomposition proposed here to yield various interesting predictions; among them those that motivated our desire to improve on the

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the pied-piped phrase. Starke's Peeling would only allow a sub-extraction of a lower constituent here, which is similar to the theory put forth in Abels (2007), where even more projections freeze than in the case of Peeling.

<sup>11</sup>See also Barbiers et al. 2008 for interesting examples of Peeling movements in constructions with wh-doubling.



small cases, and that cases larger than genitive do not turn into one in the nominalization of a verbal structure.

### 4.5.1 Why do obliques not become genitives

Consider first the case of nominalizations. The reasoning branches into two separate issues. The first issue is connected to the fact that nominatives and accusatives can turn into a genitive. The second line of reasoning deals with the fact that datives and other oblique cases cannot turn into genitives. I tackle these points in turn.

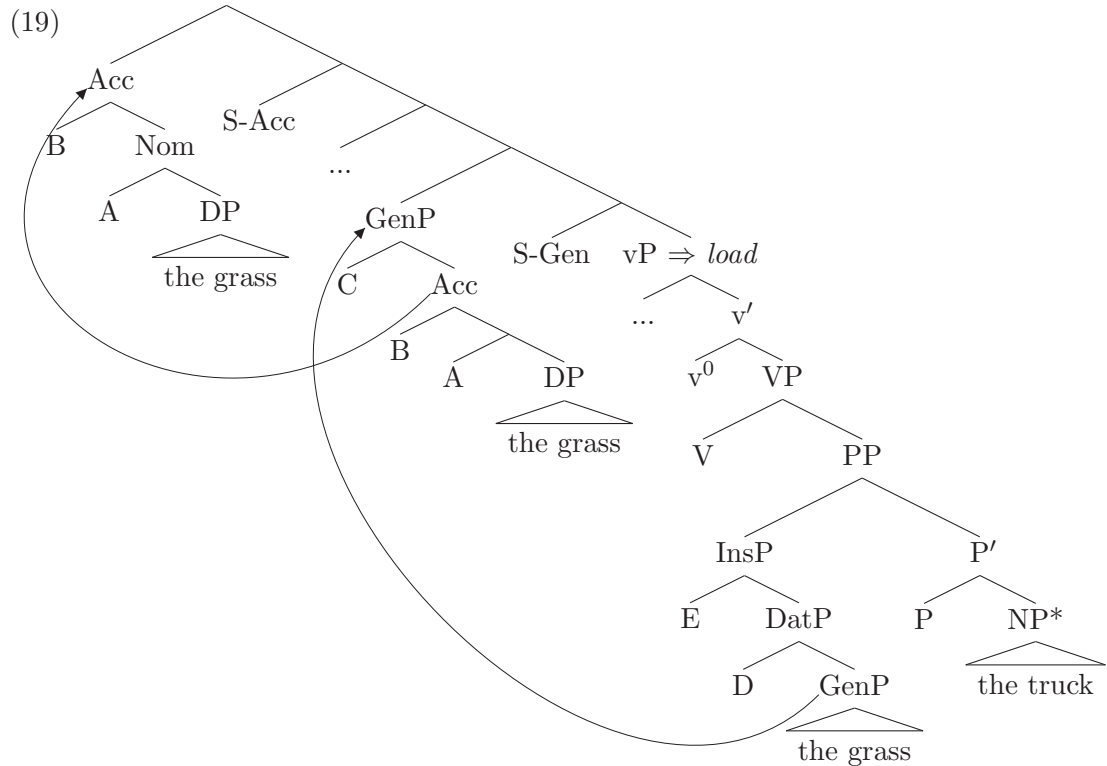
Consider the sentence (17a). In the previous section, I have proposed that the KP\* ‘the grass’ is in a derived (structural object) position, and it has been first merged bearing the instrumental case (as the Figure of the PP ‘on the truck’). The instrumental can be seen on the surface in (17b), where the KP\* ‘the grass’ has stayed in situ, and the object position was filled by the original Ground. The shift from the base-generated instrumental to the structural accusative is an instance of Peeling.

- (17) a. Karel naložil **tráv-u** na vůz ACC  
 Karel loaded grass-ACC on truck  
 ‘Karel has loaded **the grass** on the truck.’
- b. Petr naložil vůz **tráv-ou** INS  
 Peter loaded truck hay-INS  
 Peter loaded the truck **with the grass**.

Above, I have assumed that the shift from the instrumental to the accusative is due to a single movement step without any intermediate touch-down; the accusative was proposed to sub-extract directly from within the original instrumental. Consider, however, what happens in nominalizations, see (18). Here, the KP\* ‘the grass’ surfaces in the genitive:

- (18) naložení **tráv-y** na vůz GEN  
 loading grass-GEN on truck  
 ‘the loading **of the grass** on the truck’

In order to get a handle on such data, I am led to propose that what we took originally to be a single step of movement, breaks down into two independent steps. In step one, the genitive sub-extracts from within the instrumental, and in step two, the accusative sub-extracts from within the genitive. The derivation is shown in (19):

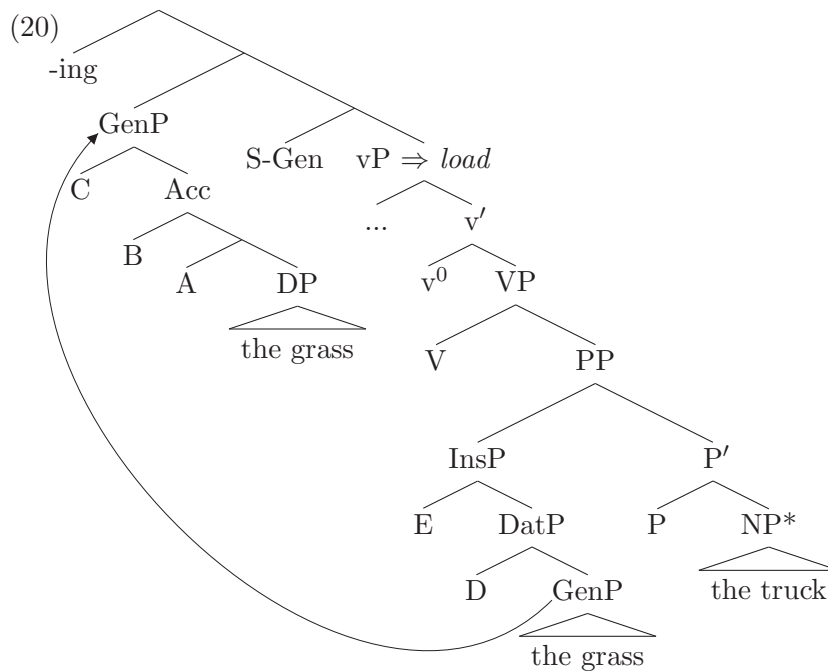


I have placed the genitive position S-Gen above the little vP. However, I do not assume that vP is necessarily present in nominalizations, and it is in all likelihood absent in simple nouns (which assign genitive as well). The ordering is thus not taken to mean that the projection of the genitive position S-Gen presupposes the presence of all lower projections (these can simply be missing).<sup>12</sup>

With the derivation (19) in place, the simplest approach to nominalizations like (18) is to say that the nominalization arises as a result of the attachment of the nominalizer *-ing* between the genitive and the accusative position, as shown in (20):

<sup>12</sup>This presupposes that gaps in the functional sequence are allowed. A question then arises whether also gaps in the functional sequence of case are allowed. I tackle the question in §9.3 in more detail, arguing that gaps in the case sequence are empirically unattested. In sum, then, there are regions of the *fseq* where projections can be missing, and regions where they cannot.





This proposal derives from a prominent approach to nominalizations going back to Abney (1987), and further developed in a number of works; see Lundquist (2008) for a recent summary from the nanosyntactic perspective. In Abney's theory, nominalizations are derived from an underlying verbal structure by attaching the nominalizing morpheme *-ing* on top. The morpheme can attach either to V, VP or IP, producing various degrees of verbal behavior of a given nominalization. Thus, I essentially follow Abney in proposing that the nominalizations which have genitive objects are derived by the attachment of *-ing* in a position above S-gen, but below S-Acc, which makes higher verbal positions (among them S-Acc) go missing.<sup>13</sup>

To recapitulate, the idea in a nutshell is that arguments which end up nominative or accusative in a finite sentence pass prior to this through a genitive position, a possibility opened by the Peeling proposal. Under this view, we can understand the emergence of the genitive marking in a nominalization along the lines of an Abneyan proposal: since in nominalizations, higher verbal projections (among them S-Nom and S-Acc) can be missing, this forces the arguments to actually surface in the lower genitive position. This delivers the result that arguments marked by nominative or accusative can turn into a genitive in nominalizations.

This line of analysis, which combines the Peeling approach to case and

<sup>13</sup>Taraldsen (2008b) follows a similar line of reasoning, but draws a slightly different picture. He proposes instead that an accusative position is present in nominalizations, but it is occupied by a silent pronominal (which the VP is a predicate of). This has the same effect on case assignment as making that position disappear.

a “structure-trimming” approach to nominalizations, delivers also the second part of the generalization, namely that cases which are bigger than genitive (e.g., the dative) cannot turn into a genitive in nominalizations.

The reasoning starts from the analysis of obliques bigger than genitives in finite sentences. In the current framework, such oblique marking is analyzed as a sign of the fact that the KP\* is unable to move to the position which k-selects an accusative (the direct object position). Because of this, it surfaces either in the base position, or in some intermediate position. Crucially, such a KP\* has not moved through a genitive position in the finite sentence; this is a consequence of the Peeling approach, as highlighted in (16). (If it had moved through a genitive position, it would have to end up smaller than genitive, contrary to the initial assumption that we are looking at an oblique.)

As a result, a KP\* bigger than genitive will not turn into a genitive in nominalizations. The reason is that no such option has been available to them in the finite sentence to begin with. And trimming the verbal structure by attaching *-ing* will not lead to new derivational options.

Summing up: a theorem of Peeling concerning permissible case shifting, see (16), combined with an Abneyan view on nominalizations, derives the observed interaction between k-selection and the representation of case in the domain of nominalizations. In particular, KP\*s smaller than the genitive can turn into one under trimming of the finite sentence, but KP\*s bigger than the genitive are not allowed to do that.

### 4.5.2 Why is nominative the smallest of cases

The Peeling theory also explains why nominative has to be the smallest case, rather than the biggest case, or any other case. (Recall that this fact was immaterial for the checking theory we have started from.) Consider the reasoning.

Empirically, nominative is a formal case which any KP\* can bear, provided it raises into the right structural configuration. Such a situation is compatible with Peeling only if nominative is the smallest case. If it was not the smallest case, then some KP\*s would not be able to raise to nominative, contrary to fact.

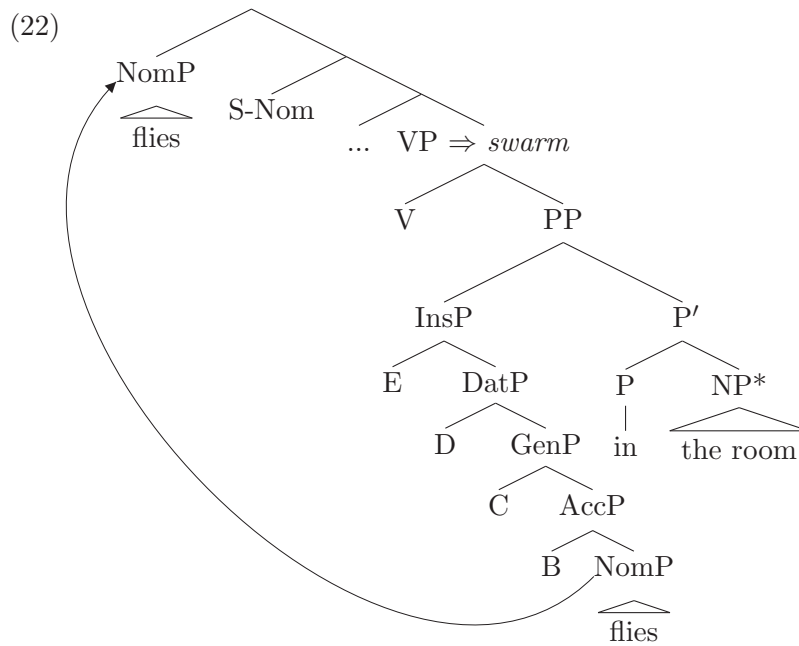
In the remainder of this section, I illustrate the raising possibilities on a couple of constructions from my native Czech. These constructions also serve the purpose of enlarging the pool of Peeling derivations, highlighting a number of constructions where oblique cases alternate with structural cases, as predicted by Peeling. Some of the derivations are simplified to the bare bones for expository purposes.

In (21), I show a pair of related constructions where the same KP\* is marked by different cases. In (21a), it shows up in the instrumental, while it bears the nominative in (21b). I analyze this pair as an example of the

promotion of a base-generated instrumental to nominative.

- (21) INS  $\Rightarrow$  NOM
- a. V místnosti se to hemžilo **mouch-ami**.  
 In room REFL it swarmed flies-INS  
 ‘lit. \*It was swarming with flies in the room.’
- b. **Mouch-y** se hemžily v místnosti.  
 flies-NOM CL swarmed in room  
 ‘(The) flies were swarming in the room.’

The construction is similar to the spray-load alternation in the sense that it involves a located argument ‘the flies’ and a PP ‘in the room.’ The similarity extends to the marking of the KP\* in (21a): as in the spray/load alternation, the Figure is base-generated in the instrumental. I show this in the tree below: the KP\* ‘the flies’ is the Figure argument of the locative PP, i.e., we get a base-generated structure [ flies-ins [ in the room ] ].



As also highlighted in (22), the Figure can raise to the subject position and surface as nominative. This is accompanied by the disappearance of the ex-

pletive *to* ‘it,’ present in (21a) and absent in (21b).<sup>14, 15</sup>

Another example of *INS*  $\Rightarrow$  *NOM* promotion is provided by the marking of the external argument in active/passive pairs in Czech. In the passive, the external argument is marked by the instrumental; in the active, it is marked nominative:

- (23) *INS*  $\Rightarrow$  *NOM*
- a. Petr byl napaden **smečk-ou** psů  
 Peter was attacked pack-*INS* dogs.*GEN*  
 ‘Peter was attacked by a pack of dogs.’
- b. **Smečk-a** psů napadla Petra  
 pack-*NOM* dogs.*GEN* attacked Petr  
 ‘A pack of dogs has attacked Peter.’

The Peeling theory leads to an analysis of the pair in (23) according to which the external argument is base-generated as an oblique in *Spec,vP*, and stays in a low position in (23a). In (23b), the external argument has raised from this position to *Spec,TP*, stranding all layers of case but the nominative one. Analyses along similar lines have been proposed several times on independent grounds, see, e.g., Collins (2005), Hoekstra (2004:ch.3) and Mahajan (1993).<sup>16</sup>

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<sup>14</sup>As in the spray/load alternation, also the Ground can be promoted:

- (i) Místnost se hemžila mouchami.  
 room.*NOM* REFL swarmed flies.*INS*  
 ‘The room swarmed with flies.’

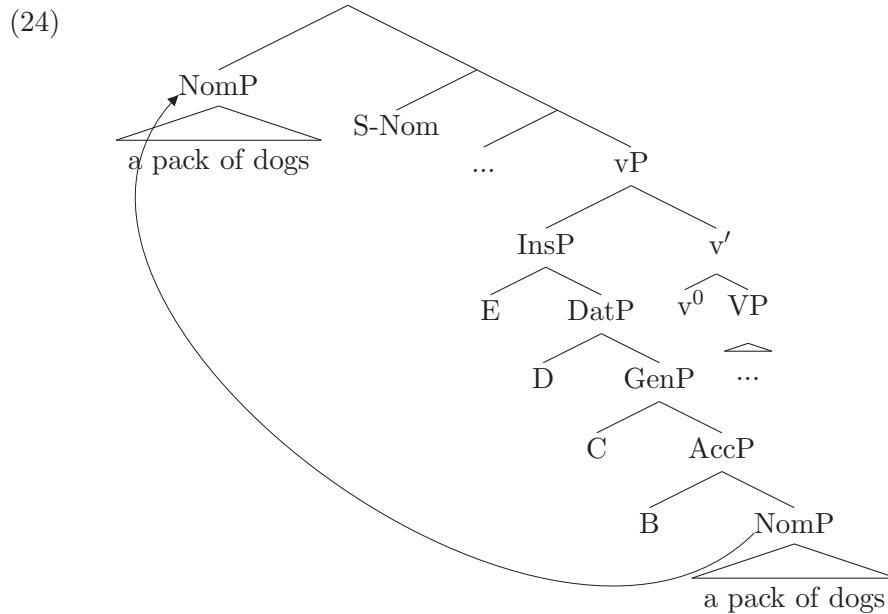
<sup>15</sup>A possibility open by the Peeling approach is that with dative selecting verbs, the Figure raises from instrumental to dative (*INS*  $\Rightarrow$  *DAT*). An example which invites an analysis along these lines was brought to my attention by Tarald Taraldsen (p.c.):

- (i) Pomohl mi na koně  
 helped.3.SG me.*DAT* on horse.*PREP*  
 ‘He helped me on the horse.’

<sup>16</sup>The analysis according to which the external argument is base-generated at least as big as the instrumental, allows us to see the following French example as a (predicted) case of *INS*  $\Rightarrow$  *DAT*, see Kayne (1975):

- (i) Jean a fait manger la tarte à Paul.  
 Jean has made eat a tart *DAT* Paul  
 ‘Jean made Paul eat a tart.’ (French, Kayne 2004:ex.5)

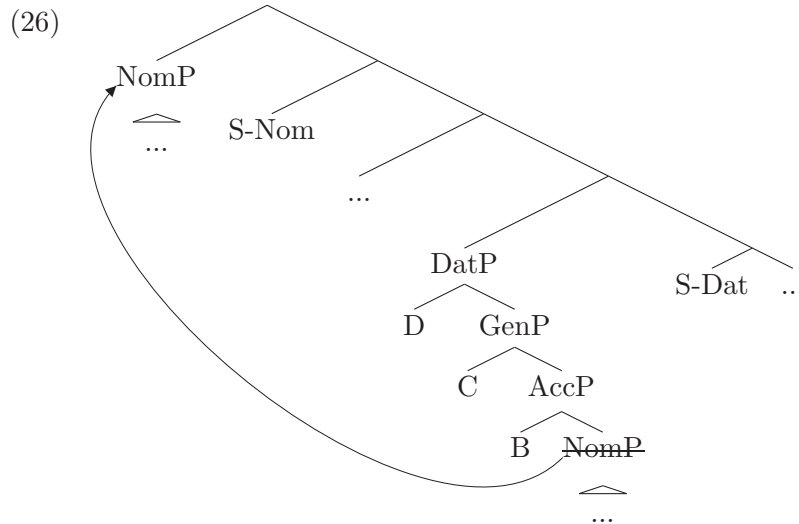
Recently, Kayne (2004) has proposed an analysis of (i) according to which the KP\* ‘Paul’ is base-generated in the embedded clause, and raises to a dative position in the matrix. See Medová (2008) for a discussion of the Czech counterpart of the French (i).



In (25), I show the promotion of a dative argument to the nominative position.

- (25) DAT  $\Rightarrow$  NOM
- a. Petr            vynadal **Karl-ovi**.  
 Peter.NOM scolded Charles-DAT  
 ‘Peter has scolded Charles.’
- b. **Karel- $\emptyset$**     dostal vynadáno (od Petra).  
 Charles-NOM got    scolded from Peter  
 ‘Charles was scolded (by Peter).’

As shown in (25a), the Czech verb ‘scold’ takes its object in dative. In (25b) the object is marked nominative in a construction which is sometimes called the dative passive, or the ‘get’-passive (because of the auxiliary). I follow certain previous analyses of related constructions in other languages and claim that in such constructions, the dative object is promoted to nominative under passivization. (See, e.g., Reis 1985, Fanselow 2000 and Anagnostopoulou 2003:ch.3 for German, van Noord and Kordoni 2005 for Dutch, and Taraldsen 2008c for Norwegian.) Under Peeling, this means that the nominative sub-extracts from within the dative, as shown in (26):



The next allowed possibility, namely a genitive turning to nominative, is evidenced by the Czech nominalizations. As discussed above, KP\*s which show up as the genitive in nominalizations can raise higher in the tree and become nominative, given the chance in the form of additional functional projections.

Finally, ordinary passives provide evidence for the shift from the accusative to nominative:

- (27) ACC  $\Rightarrow$  NOM
- a. Učitel pokáral **Karl-a**  
 teacher reprehended Karel-ACC  
 ‘The teacher has reprehended Charles.’
  - b. **Karel-ø** byl pokárán (učitelem)  
 Charles-nom was reprehended teacher.INS  
 ‘Charles has been reprehended (by the teacher).’

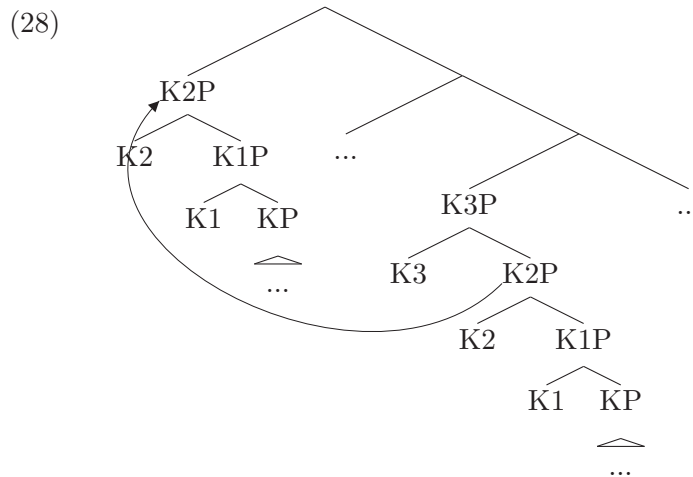
Thus, as the discussion suggests, any case can be (in principle) promoted to nominative. If Peeling is right, such a situation can only arise if nominative is the smallest case. If it was the biggest case, no argument could raise to nominative, because raising entails shrinking. Similarly, if nominative was bigger than accusative, there could be no promotion of accusative to a nominative in passive. Similar reasoning applies for the other cases. Thus, it follows from Peeling that there can be no case with the syntax of the nominative, and morphology of the dative (i.e. syncretic with the instrumental, expressed by a preposition in a language which otherwise has a non-prepositional genitive and accusative, and so on).

To sum up. I have observed that there are at least two generalizations to be captured which relate the proposed case representation and the determination of case on arguments. These correlations can be understood if the Peeling

(/Critical Freezing) theory of KP\* movement is adopted.

## 4.6 The spell out of peels

Recall the basic shape of a Peeling derivation; in the example below K2P sub-extracts from K3P, as a consequence of which the KP\* changes its case from K3 to K2. What is the fate of the feature K3 after sub-extraction?



The theory of spell out introduced in ch. §2 offers several abstract possibilities, and I go through them one by one in this section. What all of these possibilities share is that K3 is spelled out, rather than simply left without any content. There are two theoretical reasons for going down this path. The first one is that Peeling is an instance of regular sub-extraction, the only difference being that the stranded material is very “small” in the examples of case stranding. In regular sub-extractions, see (29) repeated from above, both parts of the split constituent are spelled out. Since Peeling is sub-extraction, we also expect both parts of the split constituent to be spelled out – including, crucially, the feature(s) corresponding to K3 in the tree above.

- (29) Rizzi’s Critical Freezing (Italian, from Rizzi 2007:p.148)
- a. Non sapevo [[ quale libro DI GIANNI] Q avessi scelto t], (non di Piero)  
 ‘I didn’t know which book BY GIANNI you had selected, not by Piero’
  - b. DI GIANNI Foc non sapevo [[quale libro t] Q avessi scelto t]], (non di Piero)  
 ‘BY GIANNI I didn’t know which book you had selected, not by Piero’

The second theoretical reason for assuming that K3 must be spelled out is the general observation by Ramchand (2007) and Fábregas (2007) to the effect that un-lexicalized features cause a crash at the interface.

Taking then for granted that K3 must be spelled out, the question is what analytical options there are for spelling it out, and whether they are attested.

### 4.6.1 Identity

Perhaps the simplest possibility is that K3 is lexicalized by the same marker which would spell this feature out on the KP\*. Thus, we would get the same marker, but in a position outside of the KP\* (because the KP\* has sub-extracted). An example is provided from Mokilese, an Oceanic language discussed in Peterson (2007a). In (30a), the marker *ki* introduces the instrument ‘stick.’ In (30b), the KP\* *nah pehno* ‘his pen’ occurs without any prepositional marker, but it is still interpreted as an instrument.

- (30) Mokilese, Oceanic
- a. jirimweim koalikko pokihdi jirimweim siksikko **ki** suhkoahpas  
    boy       big       hit       boy       little       with stick  
    ‘The big boy hit the little boy with a stick.’
  - b. ngoah insengeh-**ki** kijinlikkoano nah pehno  
    I       write-WITH letter       his pen  
    ‘I wrote the letter with his pen.’ (Mokilese, Peterson  
    2007a:p.129)

The present theory takes the interpretation of *nah pehno* to be a sign of the fact that the KP\* has been base-generated as an oblique in the instrumental case, and its formal appearance in (31b) arises as a consequence of a Peeling movement.<sup>17</sup> Importantly, the bareness of the KP\* in (30b) is accompanied by the appearance of the marker *ki* outside of the KP\*, namely in a verb adjacent position. This *ki* is understood here to spell out the shells stranded by Peeling. Importantly for the illustration, the two instrumental markers are identical, regardless of the position: KP\* internal vs external.<sup>18</sup>

<sup>17</sup>Such and similar examples are usually treated as P-incorporation, see Baker (1988). I come back to this briefly later.

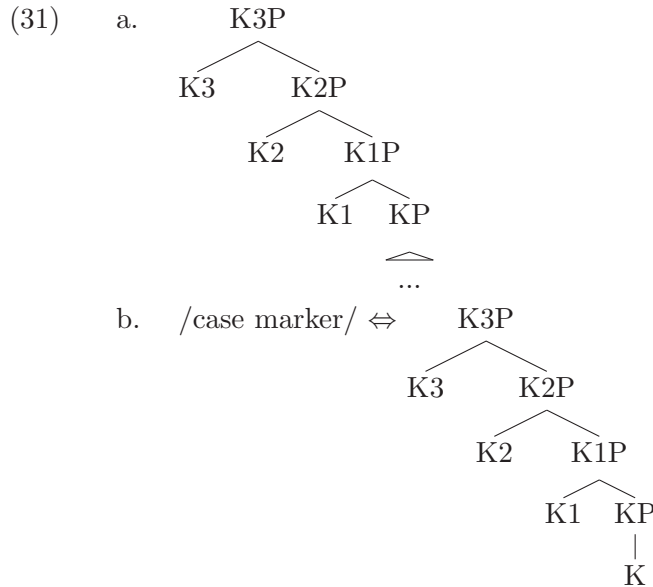
<sup>18</sup>An account of the linear order (where *ki* precedes the KP\*) must make recourse to remnant VP-fronting. Thus, after KP\* sub-extraction, the VP which contains the stranded marker, moves to the left of the KP\* which has sub-extracted. A similar account is offered in Taraldsen (2000) for the placement of particles in Germanic, see also Kayne (1998).



### 4.6.2 Non-identity

However, identity is not the only option; in fact, the system presented here predicts that identity arises only under very special circumstances. Consider the reasoning.

Recall first that in ch. §2, I have argued that to spell out the case K3, the structure of which is in (31a), a case marker must spell out a whole constituent containing the features K, K1, K2 and K3. I give such a case-marker in (31b):



However, in this common scenario, (31b) cannot spell out the stranded K3 in (28). There are two reasons for that. One obstacle is the Anchor Condition, introduced in §2.9, and repeated below:

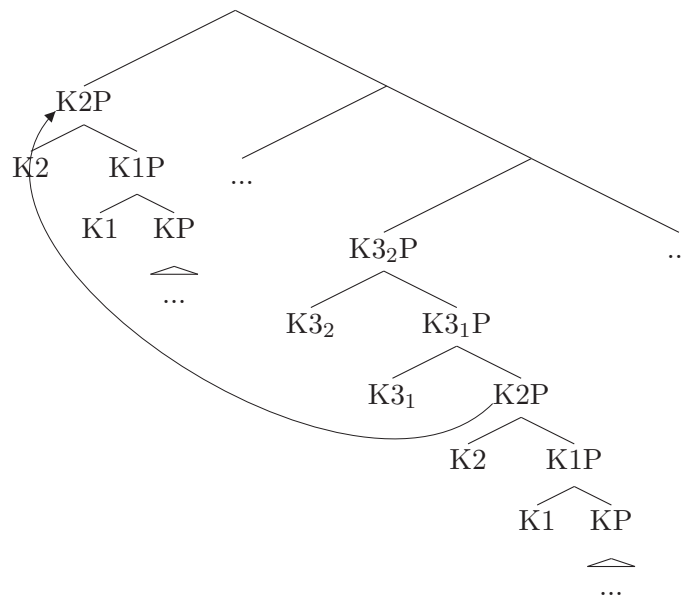
- (32) *The Anchor Condition:* In a lexical entry, the feature which is lowest in the functional sequence must be matched against the syntactic structure.

According to the Anchor Condition, each marker must make use of its lowest feature. As a consequence, a case marker such as (31b) cannot spell out only the stranded “upper” shell; this would violate the Anchor Condition.

Secondly, in ch. §3, I have argued that individual cases are best thought of as ‘zones,’ comprising several distinct projections. In such case, the stranded K3 is in most cases a non-trivial constituent:<sup>19</sup>

<sup>19</sup>See Medová (2008) for an alternative view on Peeling, where it is proposed that Peeling can only strand one feature at a time.

(33)



If that is so, the stranded features do not form a constituent in the lexical entry (31b), and hence, the case marker does not match the syntactic constituent. For these two reasons, situations where a case morpheme spells out stranded shells are limited to cases where the stranded shells form the bottom part of the lexical constituent associated with that case marker.<sup>20</sup> Thus, the question is now this: if most case markers are unusable as a lexicalization of stranded peels, how are the peels lexicalized?

### 4.6.3 Applicatives

One possibility is that there is a dedicated morpheme which spells out the shells. Thus, consider two examples from Chichewa, a Bantu language discussed in Baker (1988). Just like in Mokilese cited above, the instrument in Chichewa can be preceded by an instrumental preposition, *ndi* in (34a). In (34b), a phrase which is interpreted as an instrument occurs without this preposition, an instance of Peeling in the approach pursued here.

- (34) a. asilikali a-na-bay-a            njovu    **ndi** mikondo  
          soldiers PL-PAST-stab-ASP elephants with spears  
          ‘The soldiers stabbed the elephants with spears.’  
       b. asilikali a-na-bay-**ir**-a            mikondo njovu  
          soldiers PL-PAST-stab-‘WITH’-ASP spears    elephants  
          ‘The soldiers stabbed the elephants with spears.’ (Chichewa,  
          Baker 1988)

<sup>20</sup>The class of morphemes thus delimited as potential candidates are functional prepositions and postpositions, see §1.8.1 and §2.6.2 for examples.

The disappearance of the instrumental preposition is accompanied by the appearance of the so-called applicative marker *ir* on the verb, glossed as ‘with’ by Baker. Similarly to Baker’s incorporation theory, the Peeling theory analyzes the marker on the verb as the spell out of features of the oblique preposition. Unlike in Baker’s theory, however, the features do not move from the KP\* to the verb themselves (head-movement), but they are rather stranded by the sub-extraction of the KP\* *mikondo* in (35b). The reason why they appear glued on the verb is that verb movement is phrasal, and carries the stranded features along. (Such a theory has been worked out in detail by Muriungi (2008:ch.6) for a different Bantu language, Kiitharaka. Muriungi proposes that the stranded shells in fact undergo a phrasal remnant movement in Kiitharaka.)

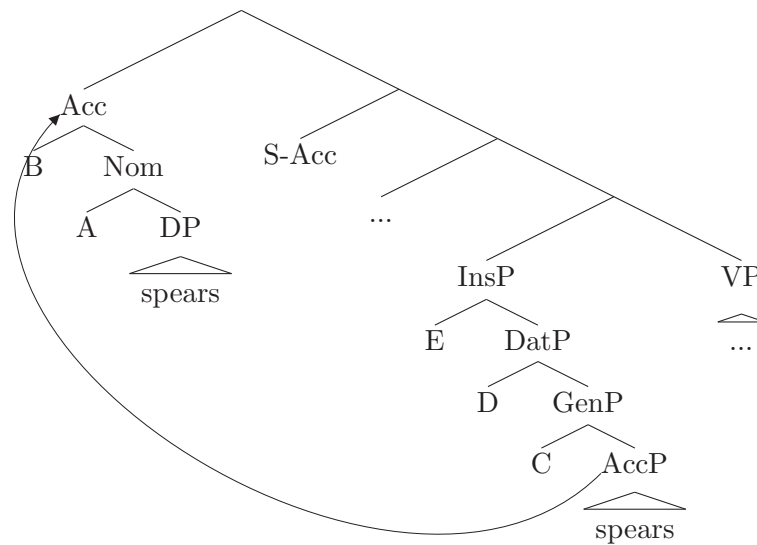
What is now in the focus is the distinction between the form of the applicative in (34b) and the functional preposition in (34a). To get a more tangible picture of the situation, let me schematically depict what the derivation of (34b) looks like. As highlighted above, instruments are base-generated in the instrumental, and when they appear bare, this is the result of Peeling. I show this in (35):<sup>21</sup>

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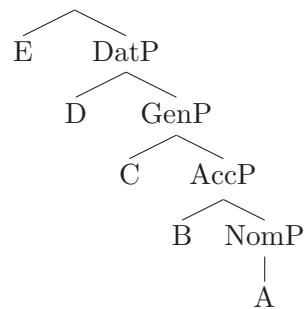
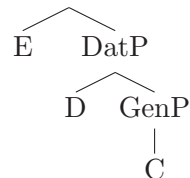
<sup>21</sup>The analysis presupposes that the applied object ends up in the accusative, which leads to the question what spells out the features A and B on the KP\* ‘spears.’ As in English, nominative and accusative are unmarked in Bantu, and the following options thus come into play. (i) A and B are spelled out as a part of the class prefix; (ii) A and B are spelled out as a zero marker; (iii) A and B are spelled out as a part of the final vowel.

I leave this open here, noting that (i) appears to be a promising option in view of certain facts discussed in Taraldsen (2009c:ex.25-34). For instance, some noun classes (in at least some Bantu languages) change the shape of the class prefix depending on the morphosyntactic environment; the shape of the prefix is distinct in the vocative, and in the scope of negation. The latter fact recalls the genitive of negation in some Slavic languages.

(35)



Now assuming that the Chichewa preposition *ndi* ‘with’ spells out all of the instrumental features, as shown in (36a), it cannot spell out the stranded features in (35): first, the stranded features do not form a sub-constituent of the entry, and second, the Anchor condition requires that the feature A is matched, which is impossible to achieve. Instead, Chichewa must make use of the applicative morpheme *ir*, the entry of which is given in (36b). As is apparent, the applicative morpheme is a perfect match for the stranded features.

(36) a. Case preposition: /*ndi*/  $\Leftrightarrow$  InsPb. Applicative marker /*ir*/  $\Leftrightarrow$  InsP

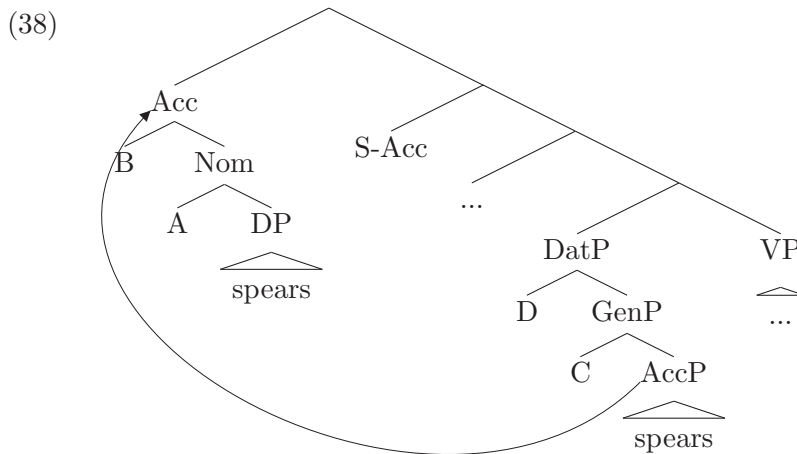
Thus, in the present theory, the difference between case morphemes and applicatives is that applicatives have a distinct ‘bottom.’<sup>22</sup>

This account leads to a prediction. If it is true that applicatives spell out the same features as case markers or functional prepositions, then we predict that applicative syncretism is governed by the same laws as the syncretism of case markers; in other words, applicative syncretism targets contiguous regions in the Case sequence. Chichewa instantiates one such syncretism, namely the syncretism between instrumental and dative. I show the data below:

- (37) a. Ndi-na-tumiz-a chipanda cha mowa **kwa** mfumu  
 1SG-PAST-send-ASP calabash of beer to chief  
 ‘I sent a calabash of beer to the chief.’  
 b. Ndi-na-tumiz-**ir**-a mfumu chipanda cha mowa  
 1SG-PAST-send-‘TO’-ASP chief calabash of beer  
 ‘I sent the chief a calabash of beer.’ (Chichewa, Baker 1988)

In (37a), the recipient KP\* *mfumu* is introduced by the dative preposition *kwa* (distinct from the instrumental *ndi*). In (37b), the KP\* strands the oblique case shells, and surfaces as a bare KP\*. This is accompanied by the emergence of the applicative *ir* on the verb, i.e., the same morpheme which introduces the instrumental applicative.

The relevant Peeling step is shown below:



With the derivation in place, we see that the applicative morpheme *ir*, whose entry I repeat in (39b), can spell out the DatP left behind by sub-extraction of the KP\*. However, the functional preposition *kwa* cannot do that, since it does not match the DatP in (38).

<sup>22</sup>This is different from Baker’s theory, where both the applicative and the preposition spell out the same head. The reasons for the distinct shapes of the applicative and the preposition are thus clearer under the present account.

- (39) a. Case preposition: /kwa/  $\Leftrightarrow$
- ```

      DatP
     /  \
    D   GenP
       /  \
      C   AccP
         /  \
        B   NomP
           |
          A
  
```
- b. Applicative marker /ir/  $\Leftrightarrow$
- ```

      InsP
     /  \
    E   DatP
       /  \
      D   GenP
         |
        C
  
```

Generalizing beyond Chichewa, the present system predicts that syncretisms of various applicative constructions respect the Universal Contiguity in the same way as case. That is because applicatives spell out the same ingredients as case markers, a possibility available under Peeling. I spell out the prediction in (40):

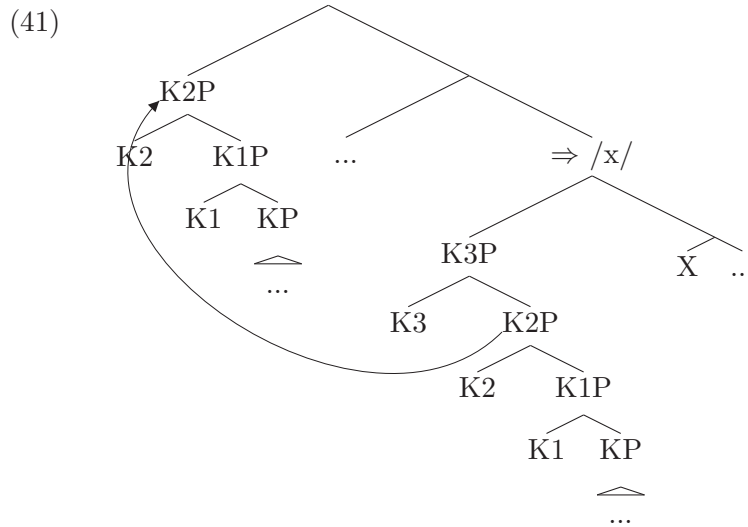
- (40) *Universal Contiguity (Applicatives):*
- Only adjacent applicative markers show systematic syncretism in the Case sequence.
  - The Case sequence: NOM – ACC – GEN – DAT – INS – COM

While I am not aware of any counterexamples, my knowledge of the applicative data at this point is too limited to make general conclusions.<sup>23</sup> If the prediction is borne out, we get an interesting confirmation of the approach to syncretism developed here, as well as for the Peeling approach.

#### 4.6.4 Shells spelled out as a verb

Another abstract option is that the stranded shells are spelled out as a part of the embedding category. Thus, in the abstract structure (41), when spell out targets a constituent which contains the stranded feature K3 and the category X, K3 is spelled out as a part of X.

<sup>23</sup>I have found an example of INS/COM applicative syncretism in (Peterson 2007b:p.13), quoting Dixon's work on an Australian language Yidiny.

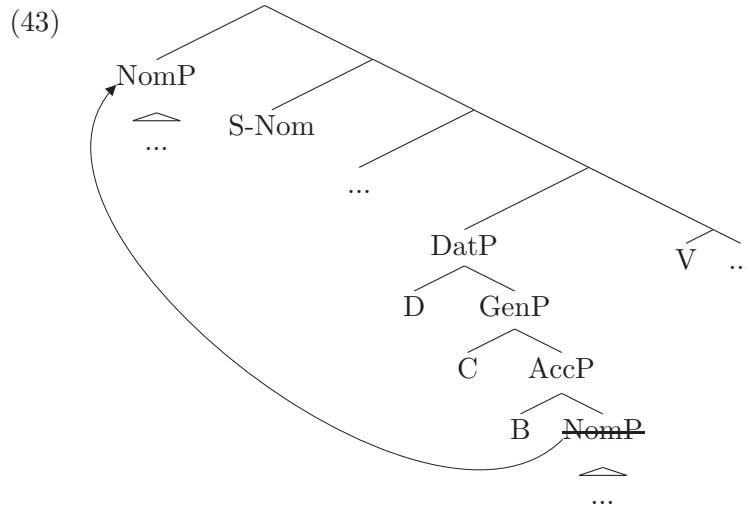


An example where  $X = V$  is provided from Czech. Thus recall from §4.5.2 that dative objects in Czech can be promoted to nominative in a construction referred to either as the dative passive, or ‘get’ passive:<sup>24</sup>

- (42)    DAT  $\Rightarrow$  NOM
- a.    Petr            vynadal Karl-ovi.  
       Peter.NOM scolded Charles-DAT  
       ‘Peter has scolded Charles.’
- b.    Karel- $\emptyset$         **dostal** vynadáno.  
       Charles-NOM got    scolded  
       ‘Charles has been scolded.’

I have suggested above an analysis according to which the dative KP\* in (42a) turns into nominative in (42b) by sub-extraction. Such an analysis is depicted in the tree below. It is possible that the process takes place in more steps than one, but that is not important here.

<sup>24</sup>I discuss ‘get’ passives in more detail in ch. §5.



What is currently interesting on the example (42b) is the fact that the passive auxiliary is ‘get’ and not ‘be,’ which regularly occurs in accusative passives, see (44b):

- (44)
- a. Učitel pokáral Karl-a  
teacher reprehended Karel-ACC  
‘The teacher has reprehended Charles.’
  - b. Karel- $\emptyset$  byl pokárán  
Charles-nom was reprehended  
‘Charles has been reprehended.’

The situation is summed up in (45):

- (45)
- a. DAT  $\Rightarrow$  NOM: GET
  - b. ACC  $\Rightarrow$  NOM: BE

In words, the distinction in the auxiliaries ‘get’ and ‘be’ tracks the distinction in case of the internal argument before its promotion (raising). This situation is captured if at least one of the auxiliaries has to spell out the case shells of the promoted argument. In that way, the shape of the auxiliary depends on the shape of the KP\* before its promotion.

One particular implementation of this idea is that ‘get’ is just like the passive auxiliary ‘be’ plus the peels of the dative argument. Such a proposal has been put forth by Taraldsen (2008c) (and it takes inspiration from proposals by Freeze 1992 or Kayne 1993 concerning ‘have’).

- (46) GET = [ shells of the dative [ BE ] ]

The proposal (46) then illustrates the scenario where stranded shells are spelled out as a part of the embedding category, verb in this particular case.



Such an approach not only captures the distribution of the two auxiliaries ‘be’ and ‘get’ (the latter limited to dative passives), it also leads to predictions. In particular, the Superset Principle allows that ‘get’ can also in principle function as an auxiliary in the accusative passive, i.e., as ‘be.’ This does not happen in Czech, because the auxiliary ‘be’ wins in competition for BE. However, there are languages which use a single morpheme ‘be/get’ in both dative and accusative passive. I show that below for Japanese:

- (47) a. Naomi-ga Ken-ni labuletaa-o watasi-ta.  
Naomi-NOM Ken-DAT love letter-ACC hand-PAST  
‘Naomi gave a love letter to Ken.’
- b. Ken-ga Naomi-ni labuletaa-o watas-are-ta.  
Ken-NOM Naomi-DAT love letter-ACC hand-PASS-PAST  
‘Ken was given a love letter by Naomi.’  
(Japanese, Kazenin 2001:p.902)
- c. Labuletaa-ga Ken-ni watas-are-ta.  
love letter-NOM Ken-DAT hand-PASS-PAST  
‘The love letter was given to Ken.’  
(Japanese, Kaori Takamine, p.c.)

(47a) is an active sentence. In (47b), the dative argument (*Ken*) is promoted to nominative, and the passive morpheme *rare* (*are* after consonants) appears on the verb. The same morpheme is used when the direct object (‘love letter’) is promoted to nominative, as shown in (47c).

This can be understood under the proposal in (46). Japanese *rare* is lexically like the Czech ‘get,’ and the difference between the two languages comes from the fact that Japanese (unlike Czech) has no competing morpheme to spell out BE alone.

#### 4.6.5 Shells spelled out as a preposition

As another illustration of the idea that categories which take KP\* arguments spell out their case shells, I will highlight here a contrast between Czech and Russian concerning certain prepositional phrases. The order of presentation is such that I first describe a particular pattern of case alternation in Czech, and then I compare it to Russian. The contrast between the languages which will emerge is neatly captured if some prepositions (but not others) can spell out shells stranded by a peeling movement of a KP\*.

(48a) shows five Czech locative prepositions which take their complement in the instrumental case. (48b) shows that all of these prepositions can also occur with the accusative, leading to a directional interpretation.

- (48) a. nad / pod / před / za / mezi růž-ema  
above under in front of behind among roses-INS.PL

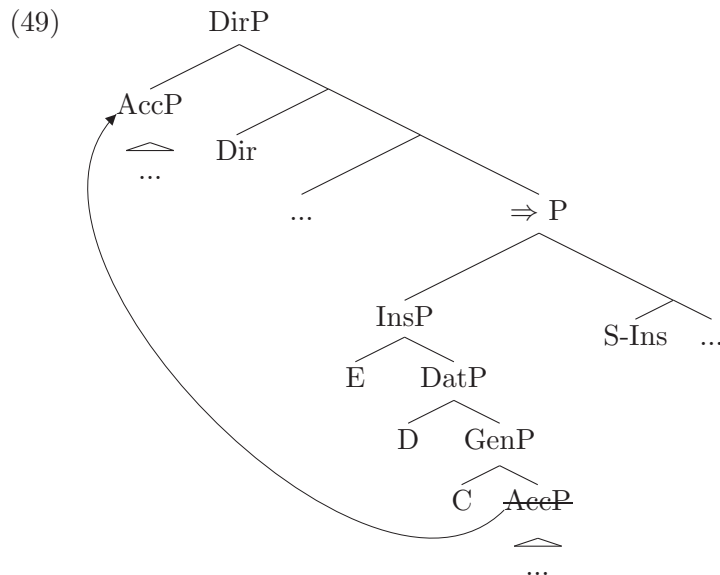
‘above / under / in front of / behind / among the roses’

(coll. Czech, locative)

- b. nad / pod / před / za / mezi růž-e  
 above under in front of behind among roses-ACC.PL  
 ‘above / under / in front of / behind / among the roses’

(coll. Czech, directional)

In Caha (2007a), I analyze this phenomenon as a sub-extraction of the accusative from within the instrumental, triggered by a position which is only available in directional PPs (drawing on Koopman 2000, Helmantel 2002, den Dikken 2003, van Riemsdijk 2007). I show the process in (49), and I label the attracting position *Dir*. I also propose that the peels are spelled out as part of the preposition, hence I assume that *P* spells out the constituent dominating the shells as well as other terminal positions.



Turning now to a related Slavic language Russian, (50a) shows the same set of (obviously cognate) locative prepositions. As (50b) shows, only two of them can appear with the accusative.

- (50) a. nad / pod / pered / za / među na-mi  
 above under in front of behind among we-INS  
 ‘above / under / in front of / behind / among us’

(Russian, locative)

- b. \*nad / pod / \*pered / za / \*među na-s  
 above under in front of behind among we-ACC  
 ‘above / under / in front of / behind / among us’

(Russian, directional)

Thus, what we have here is a process which is regular and predictable concerning both the formal change (INS  $\Rightarrow$  ACC) and its semantic correlate (directionality). The process is not restricted to Czech and Russian, but finds parallels widely across Slavic and other Indo-European languages, both contemporary and extinct (outside of Slavic, e.g., Icelandic, Latin, Ancient Greek, Classical Armenian). However, as the Russian examples show, the process is available only for a subset of prepositions, and it cannot be predicted which prepositions are subject to the process, and which are not.<sup>25</sup>

Ideally, we would like to capture both the syntactic/semantic regularity of the process as well as its item sensitivity. The proposal in (49), i.e., that the stranded shells must be lexicalized as part of the preposition, provides an easy way to achieve this. Thus, suppose that some prepositions are lexically specified as capable of spelling out the stranded heads, see (51a), but some are not capable of doing that, see (51b).

- (51) a. an alternating adposition: [ case shells [ P ] ]  
 b. a non-alternating adposition: [ P ]

This achieves the result that the alternation is fully regular in the syntax, but only items which can lexicalize the stranded shells will be able to support such a derivation. The general idea is that a well-formed syntactic structure leads to a crash if some of the features are left un-pronounced, see The Exhaustive Lexicalization Principle of Ramchand (2007) and Fábregas (2007).

The approach highlighted in (51) leads again to a prediction. In Czech or Russian, we found evidence that prepositions have either the entry (51a) (alternating adpositions), or (51b) (non-alternating adpositions). What is now predicted is a language where a given preposition (like IN) has both the entry (51a) and (51b). In such a case, we would get an allomorphy of the preposition depending on whether it spells out the shells and acts as directional, or does not spell out the shells and acts as locative.

Ancient Greek (Smyth 1974, Luraghi 2003:p.72) has such a preposition. The first thing to note is that the language has the adposition *para* ‘at,’ which alternates between dative (for location) and accusative (for direction).<sup>26</sup>

- (52) a. *parà* + DAT = at X  
 b. *parà* + ACC = to X

<sup>25</sup>Zwarts (2008) observes that there is an implicational hierarchy involved, such that if an item *x* alternates, items lower on the hierarchy do as well, although further interfering factors (such as suppletion) blur the picture. Still, the tipping point on the hierarchy cannot be predicted from anything else in the language, as far as I know.

<sup>26</sup>Recall from ch. §3.2.5 that the Ancient Greek dative has also an instrumental function, and hence it is structurally comparable to the Slavic instrumental.

The same alternation is attested with ‘in:’ the locative adposition takes again dative, and the directional adposition takes again accusative. However, the forms of the adpositions differ: we get *en* ‘in’ with dative, and *eis* ‘into’ with accusative:

- (53) a. *en* + DAT = in X  
 b. *eis* + ACC = into X

This overt distinction is captured if *eis* has the entry (54a), while *en* has the entry (54b):

- (54) a. /eis/  $\Leftrightarrow$  [ case shells [ P ] ]  $\Leftrightarrow$  IN  
 b. /en/  $\Leftrightarrow$  [ P ]  $\Leftrightarrow$  IN

Thus, the prediction is borne out and confirms the view that the locative-directional alternation (as seen in Czech and Russian) changes not only the instrumental to accusative, but it also affects the feature composition of the adposition. The change in the feature composition is predicted by the present approach, because the preposition is required to spell out the left-over peels.

## 4.7 Case and word order

In the Peeling theory, case changes due to stranding movements, and the theory thus predicts that k-selection and KP\* movement are the same process. This puts Peeling into a class of theories which see case as a by-product of movement (or vice versa), as in, e.g., Chomsky (1995b), Kayne (2004), Pesetsky (2007), Jayaseelan (2007). These theories further branch depending on whether the movement is always overt (before Spell out), or only sometimes, in which case the movement can also be covert (after Spell out). What puts these theories together is that the KP\* has moved to (or through) the k-selecting position by the end of the derivation.

These theories differ from another broad class where movement of the KP\* is not required at any level of representation, as in the Agree theory of Chomsky (1998), see in particular Wurmbrand (2006) for relevant discussion and an argument for this view.<sup>27</sup> Another proposal along these lines is the idea of the so-called default case (see, e.g., van Riemsdijk 1983, Schütze 2001, McFadden 2007). In such theories, default case is essentially an unmarked way to pronounce a case-less KP\*, irrespectively of its position.

<sup>27</sup>It would be probably inappropriate to say that the Agree theory does not require any movement at all. That is because the valuation of a feature is similar to a lowering movement of the case value, NOM from T down on the KP\*, and ACC down from *v*. From this perspective, the Agree based theory is also a movement based theory, but it differs from the theories above in that it moves something else than the KP\* (namely the value of a feature).

In this section, I present evidence supporting movement-based accounts in general, and the Peeling theory in particular. I start with the background I assume.

### 4.7.1 Structuring word order

Over the past decade, a strand of research has accumulated evidence that movement is ubiquitous, and that remnant movement is likely to be the norm, rather than the exception (see, a.o., Kayne 1998, Müller 1998, Koopman and Szabolcsi 2000, Nilsen 2003, Bentzen 2007).<sup>28</sup> The lesson which I take from this line of research is that the surface word order is related to structure in non-trivial ways.

As an example, consider the fact that in some Danish sentences, pronouns must surface to the left of the negation (*ikke*), while full KP\*s surface to its right:

- (55)    Studenten læste (den / \*bogen) ikke (bogen / \*den)  
          student.DEF read (it / book.DEF) not (book.DEF / it)  
          ‘The student did not read it / the book.’ (Danish)

Under traditional analyses, the full KP\*s are taken to be in situ, while the pronouns are proposed to move above the negation (object shift). Under such an interpretation, the movement of the pronoun appears to be subject to certain restrictions, expressed by the so-called Holmberg’s generalization (Holmberg 1986, Holmberg 1999). The generalization says that object shift cannot cross VP internal material, the main verb in particular. This is shown in (56). The sentence includes an auxiliary, which forces the main verb to stay low. As a result, the pronoun follows the negation, since it must follow the verb.

- (56)    Studenten har \*den ikke [<sub>VP</sub> læst den ]  
          student.DEF has it not read it  
          ‘The student has not read.’ (Danish)

Data such as (56) lead Nilsen (2003) to propose an alternative interpretation of the facts. According to Nilsen, (weak) pronouns (such as *den* above) in fact never move, and that is why they never cross any VP internal material (the verb in particular). The reason why they appear to the left of the negation in (55) is that the movement of the verb is phrasal, and it carries the pronoun along.<sup>29</sup>

<sup>28</sup>Remnant movement in general is not incompatible with Cinque (2005) – Cinque only rules out certain kinds of remnant movement. Remnant movement of the allowed type is in fact required in Cinque’s account.

<sup>29</sup>I am simplifying the account here for expository reasons. See Nilsen’s work for

(57) The students [<sub>VP</sub> read it ] not t-VP.

From that perspective, the fact that the full KP\* *bogen* ‘the book’ does not move together with the verb across the negation in (55) means that the KP\* is outside of the VP. Thus, *bogen* extracts out of the VP before the VP shifts across the negation:

(58) The students [<sub>VP</sub> read ~~the book~~ ] not the book t-VP.

The two accounts of object shift in Scandinavian, the traditional one and the one due to Nilsen, draw opposite conclusions concerning the position of the KP\*s in question. Under the traditional account, pronouns move, and full KP\*s do not. Under Nilsen’s account, full KP\*s move, pronouns don’t.

The point here is not to decide which of these analyses is correct, but to illustrate that the analytical tools at our disposal lead to a number of possible (and plausible) derivations for a given string. Two features of Nilsen’s analysis are of direct concern when judging the structural position of a KP\*: (i) An apparently high position of a KP\* does not entail KP\* movement; the KP\* can move inside a larger (possibly remnant) constituent. (ii) An apparently low position of a KP\* does not entail the lack of KP\* movement; the KP\* could have moved so as to end up outside of a constituent which moves to a yet higher position, crossing additional material on its way.

In Caha (2007a) and Caha (to appear), I argue that the analysis of certain case alternations in terms of overt movement and a subsequent remnant movement has advantages over traditional analyses involving no (or covert) movement. I turn to an example below.

### 4.7.2 The directional-locative alternation

The main point of this section is to show that a case alternation in German which apparently involves no movement has the same properties as movement in Dutch. This is captured if case requires movement, but remains unclear otherwise.

Consider the data (59), which show a case alternation in German PPs between dative (for location) and accusative (for direction). This is similar to the alternation observed above for Czech, Russian and Ancient Greek which I have discussed in the preceding section.

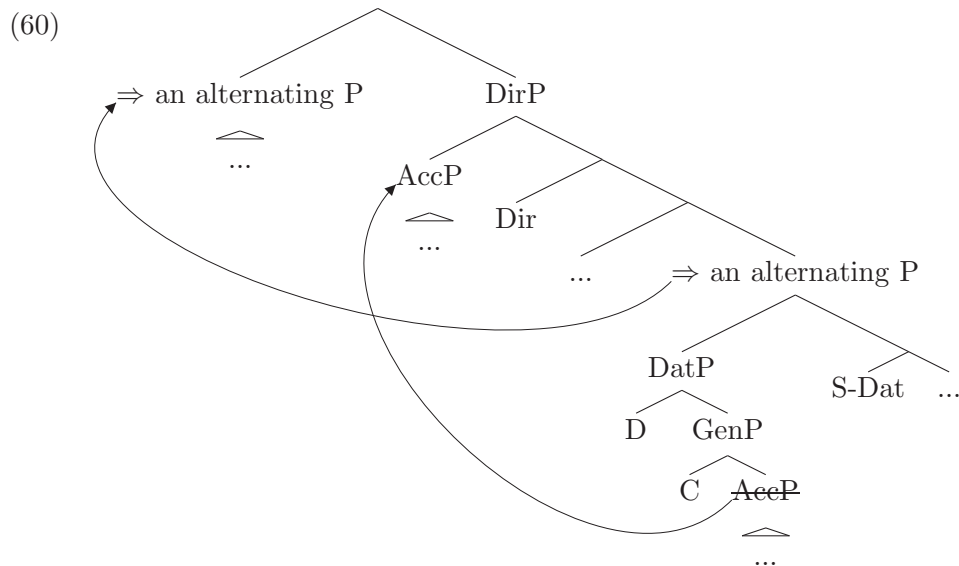
(59) The locative-directional alternation in German: DAT → ACC  
 a. Alex tanzte in dem Zimmer.  
     Alex danced in the.DAT room  
     ‘Alex danced in the room.’ (Zwarts 2006:2a)

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details.

- b. Alex tanzte in das Zimmer.  
 Alex danced in the.ACC room  
 ‘Alex danced into the room.’ (Zwarts 2006:2b)

As highlighted above, the Peeling theory leads to an analysis according to which the accusative sub-extracts from within the dative (or instrumental in Czech/Russian), and moves to a high position available only in directionals, see (49), partially modified in (60). The labeling of the landing site encodes the dependence of accusative on directionality, and its high position reflects the consensus in the field that directional expressions are based on locative expressions, see van Riemsdijk (1978), Jackendoff (1983), Koopman (2000), van Riemsdijk and Huybregts (2002), den Dikken (to appear), Svenonius (to appear), Pantcheva (2008c). However, since such a movement has no effect on the word order in German, we are led to propose that the KP\* movement is followed by remnant fronting of the constituent spelled out by the alternating preposition (see van Riemsdijk 2007 for a proposal along similar lines, but with a head-movement of the P):



As a side issue, I mention here that such an account – with a remnant movement of the adposition – forces me to a conclusion that most (if not all) spatial prepositions are a separate lexical category, and not part of the extended NP\*. That is because movement of constituents without the N head is disallowed for members of the NP\* projection line. Thus, since spatial prepositions move by themselves, they must be treated here as a separate category.<sup>30</sup>

<sup>30</sup>The same conclusion has been defended recently also in den Dikken (to appear), and a possible rationale can be provided by the fact that many prepositions have “nominal” characteristics (Terzi to appear, Svenonius 2006). According to Terzi (to

Coming back to the main narrative, evidence for the existence of complex derivations such as (60) is based on Dutch where a meaning-wise identical alternation changes the word order, see (61).<sup>31</sup>

- (61) a. Willemijn zwom [                    in **het meer** ].  
           Willemijn swam                    in the lake  
           ‘Willemijn swam in the lake.’  
       b. Willemijn zwom [ **het meer** in                    ].  
           Willemijn swam    the lake    in  
           ‘Willemijn swam into the lake.’

(both Dutch, Gehrke 2008:p.90, 91)

Under the approach in (60), we can easily capture both the parallels and the differences between Dutch and German. The idea is that both languages exhibit KP\* movement to Spec,Dir, but Dutch has no remnant adposition movement. The absence of the remnant P movement allows us to observe the KP\* movement on the surface.<sup>32</sup>

This view is supported by the existence of an apparently exceptional class of certain directional adpositions in Dutch, see (62).

- (62) Marjo is naar het meer gezwommen.  
       Marjo is to    the lake swum  
       Marjo swam to the lake. \*locative / directional        (Dutch, Gehrke  
       2008:p.107)

(62) contrasts with (61b): both are directional, but in one case, we have a postposition, and a preposition in the other. A relevant generalization is that directional *prepositions* (such as *naar* in (62)) are “strictly directional,” i.e., they have no locative use (other items are *van* ‘from,’ or *tot* ‘up to’). For these adpositions, the KP\* movement to Spec,Dir must be blocked one way or another. In Caha (2007a), I suggest that these unambiguously directional adpositions lexicalize Dir, and the KP\* movement to Spec,Dir is thus blocked by a filter which prohibits that both the head and the Spec position are simultaneously lexicalized, building on insights by Koopman (1996) and Starke (2004).

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appear) and subsequent work (e.g., Botwinik-Rotem 2008, Pantcheva 2008b), this is captured by the proposal that certain adpositions are built on the basis of an additional nominal element (PLACE), distinct from the Ground argument. (In the present system, PLACE can be spelled out as a part of the adposition.)

<sup>31</sup>Relevant works on the Dutch alternation include van Riemsdijk 1978, Koopman 2000, Helmantel 2002, den Dikken to appear, Gehrke 2008. See esp. den Dikken and Gehrke for the discussion of the Dutch-German parallel. See also den Dikken (2003).

<sup>32</sup>Since P is taken here to be a lexical category, variation in the height of PP\* movement is independently expected, and comparable to the variation in VP\* or NP\* movement.



Of relevance is now the fact that in a comparable class of unambiguously directional adpositions, German shows dative, rather than accusative (see Gehrke 2007:p.109, Zwarts 2006):

- (63) Er rannte zu-m Park.  
 He ran to-the.DAT Park  
 ‘He ran to the park.’ (German, Zwarts 2005:ex. 6b)

Thus, there is a parallel between (62) and (63): movement to Spec,Dir (resulting in postpositional order in Dutch) fails under the same abstract conditions which prevent the emergence of accusative in German. This correlation is predicted under the proposal in (60), according to which the accusative in German is the result of the same movement which leads to the postpositional order in Dutch.

### 4.7.3 Linear placement correlates with case

In what follows, I will try to generalize beyond particular examples (such as the one from German and Dutch) and build a case for the claim that overt movement into a case position is the typical case. I will base the argument on the observation (to be illustrated) that surface case is a better indicator of linear position than semantic role. This is expected if KP\*s have to move to the relevant case position, leaving the base-position behind. In the next section, I will provide a detailed argument for overt movement based on such a reasoning. In this section, I briefly illustrate the logic on two examples drawn from the literature.

The simplest, though somewhat crude illustration of case-based ordering can be provided by the fact that nominative-accusative languages with SVO order in transitive sentences are SV in intransitive sentences, rather than VS (Dryer 2008a). This is expected if arguments must overtly move to the nominative position, which is to the left of the verb in SVO languages. If no movement had to take place in order for an argument to be marked nominative, underlying internal arguments would yield VS orders even in SVO languages, nothing else said.<sup>33</sup>

As another illustration, consider English sentences such as (64):

- (64) I believe **the troops commanded by the drunken general** to be  
 advancing into a minefield. (Postal 1977:ex.6a)

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<sup>33</sup>The reasoning here glosses over the distinction between the notion of subject and nominative case, which is not innocent. Further, it should be mentioned that the parallel is less than perfect. Dryer points out three languages “in which the dominant order for transitive subjects is SV, but where neither order is dominant for intransitive subjects.”

The boldfaced argument is base-generated as the subject of the embedded verb ‘advance,’ and its case is determined by the matrix verb (the so-called Exceptional Case Marking, or Raising to Object). The former claim is based on the interpretation (cf. *I believe that the troops...*). The latter conclusion is based on the fact that when the matrix verb is passivized, the boldfaced KP\* becomes the subject:

- (65) **The troops commanded by the drunken general** were believed to be advancing into a minefield.

In early transformational grammar, two possible analyses (which can still be replicated in current theories) were considered. The first analysis claims that the KP\* ‘the troops’ is in the base position in (64), and it is assigned case “long distance,” see, e.g., Chomsky (1973). The second possible analysis claims that the accusative marking of the underlying subject is accompanied by movement (or transformation) which places the KP\* to an object position of the matrix verb, see, e.g., Postal (1974), Postal (1977).

Postal (1974) puts forth a number of arguments which support the latter analysis, some of which are based on the logic which has been sketched above: it is the case, and not the base-generated position that decides the word order possibilities. Thus, for instance, Postal notices that the boldfaced KP\* in (65) can undergo the so-called Heavy NP-shift:

- (66) I believe to be advancing into a minefield – **the troops commanded by the drunken general**. (Postal 1977:ex.6b)

The relevance of such an observation (as Postal argues) is due to the fact that Heavy NP-shift is restricted to objects, and does not apply to other KP\*s, subjects in particular:

- (67) a. **The troops commanded by the drunken general** are advancing into the minefield.  
 b. \*Are advancing into the minefield – **the troops commanded by the drunken general**.

Thus, Postal’s argument goes, the object-like behavior of the KP\* ‘troops’ does not concern only case, but a number of other properties as well, the availability of heavy NP shift in particular. This is explained if bearing a particular case is connected to movement to a particular syntactic position, and this position is the starting point of various other operations.

#### 4.7.4 Raising to object in PPs

In this section, I discuss a novel argument for the claim that case and position in the linear string are related. The example comes from the domain of PPs,

and the discussion draws on Caha (to appear). I will be using mostly German examples, but the same facts can be replicated in a number of other languages which I mention as we go.

What I want to show is that there are PPs where a measure phrase (base-generated above the preposition) is marked by the same case which normally occurs on the Ground argument (the semantic complement of P). Crucially, when this happens, the measure phrase fails to occupy its regular position, and necessarily switches to the word-order customary for Grounds. This can be captured if bearing a particular case entails movement to a particular position, but remains unaccounted for otherwise. Crucially, this behavior is exceptionless, as far as I know, basing the conclusion on the sample of 53 languages discussed in Haspelmath (1997) (and a couple of others).

As a general background leading to the argument, consider a connection between the spatial and temporal domain in German, namely the homophony between spatial ‘in front of’ (68a) and temporal ‘before’ (68b), both *vor*.

- (68) a. *vor dem Haus*  
in front the.DAT house
- b. *Die Dinosaurier sind vor der Eiszeit ausgestorben.*  
the dinosaurs are before the.DAT ice age died out  
‘The dinosaurs died out before the ice age.’
- (Haspelmath 1997:ex.10a)

A typological study by Haspelmath (1997) reveals that such a connection between spatial *in front of* and temporal *before* is quite common in languages. A possible interpretation of the pattern in (68) is that the adposition *vor* ‘in front of’ is syntactically and semantically identical to *vor* ‘before.’ The possibility of *vor* to be used in both contexts would then be due to the fact that space and time are (cognitively) structured in similar ways.<sup>34</sup>

Under such an interpretation, *vor* in (68a) locates the Figure along an axis projected from the center of the house through its “front.”<sup>35</sup> In (68b), the same preposition does the same job; it locates a Figure (the event of dinosaurs’ dying out) on the (time-)axis projected through (what is conceptualized as) the “front” of the period denoted by ice age. This will lead to the right semantics just in case the front part of an interval is its beginning. The explanation for this usually relies on a cognitive model of time; I do not go into this here in detail; see e.g. Jackendoff (1983:ch.10) and Haspelmath (1997:§4.2).

A use of *vor* which is interestingly different from (68) is in (69). Here again we see *vor* in a temporal use, but at first blush, the meaning is not

<sup>34</sup>See, e.g., Jackendoff (1983:ch.10) for such a proposal, and Haspelmath (1997:ch.1) for literature overview.

<sup>35</sup>See, e.g., Levinson (2003) for how the front axis is anchored in the object, and Zwarts and Winter (2000) for a formal implementation of “located along an axis.”

compositional; *vor einem Monat* does not mean: an event X is located along an axis projected through the beginning of a(n arbitrary) month(-long interval). What (69) means is ‘a month before the utterance time.’

- (69)    *vor*    ein-em Monat  
           before a-DAT month  
           ‘a month ago’

There are at least two possible analyses of (69), which maintain the idea that the meaning of spatial and temporal *vor* are identical, or at least related. The first account is based on the idea of a semantic shift, and I review it immediately below. I will, however, point out certain shortcomings of this solution and propose an alternative where the problems are avoided. The alternative will say that ‘a month’ in the example above is base-generated as a measure phrase, rather than the Ground argument.

I start with the approach based on a semantic shift due to Haspelmath (1997). What Haspelmath proposes is that in order to obtain the correct meaning of (69), we have to do two things. First, we have to make sure that *einem Monat* ‘a month’ denotes ‘the last month,’ i.e. the month long interval preceding the utterance time. Then *vor einem Monat* will locate the Figure on the time axis as preceding the last month. But as Haspelmath observes, this is not enough, because while *vor der Eiszeit* in (68b) can mean ‘ANYTIME, as long as that time precedes the ice age,’ *vor einem Monat* rather means ‘EXACTLY before the last month.’ Hence, we have to add that *vor* in (69) is semantically enriched by a component of pragmatic strengthening. I state the two ingredients as (70):

- (70)    a.    *einem Monat* ‘a month’ denotes ‘the last month’  
           b.    *vor* in (69) is semantically enriched by a component of pragmatic strengthening

Such a solution has at least two problems. The first is that while *vor* now means roughly what we would expect (modulo the strengthening), the phrase *einem Monat* ‘a month’ does not. Rather than solving the puzzle, we shift it from the preposition on the noun phrase.

The second point of criticism concerns the way the proposal distributes the work-load between the preposition and the noun phrase. Empirically, (70a) and (70b) are related. That is because we cannot allow ‘a month’ to denote ‘the last month’ across the board, but rather just in case it is the complement of *vor*. At the same time, *vor* obligatorily undergoes pragmatic strengthening just in case it is followed by a complement that undergoes the relevant semantic shift. However, the factual relatedness of these processes is theoretically obscured by the fact that (70a) targets the noun phrase, and (70b) targets the preposition. As things stand, we are left without a deeper

understanding of why these processes should work in tandem, except for saying that they do.

I do not think that one can improve much on the analysis with the assumptions Haspelmath starts from. Specifically, he assumes that *einem Monat* is a semantic complement of the preposition, i.e., the Ground. This assumption in turn stems from the fact that the phrase ‘a month’ follows *vor* and bears dative. The step from “X is a syntactic complement of a preposition” to “X is a semantic complement of the preposition” is, however, not necessary, if the semantic role and the case selecting position are distinct (the standard assumption for VPs).

Hence, I propose instead that the phrase *einem Monat* is generated as a measure phrase, grounding the proposal in the paraphrase of *vor einem Monat*: ‘a month before utterance time.’<sup>36</sup> The analysis is depicted below in (71): the semantic complement of *vor* is a silent deictic element UT, the utterance time.

(71) [ a month [ before = *vor* [ UT ] ] ]

*Vor* ‘before’ projects an axis through the “front” part of UT, i.e., in the direction towards past. The measure phrase ‘a month’ indicates the distance from UT to the Figure on this axis (see Zwarts and Winter 2000 for the precise semantics of measure phrases assumed here). This analysis gives us compositionally the meaning of (69) without the need to say anything special about the semantics of the expressions involved; ‘before’ means ‘before,’ ‘a month’ means ‘a month,’ and there is no pragmatic strengthening.<sup>37</sup>

<sup>36</sup>This analysis is inspired by van Riemsdijk’s (2007) analysis of English *a month ago*. In English, *a month* shares distribution with measure phrases, which in general appear to the left of the adposition.

<sup>37</sup>The analysis should be improved by clarifying the status of the unpronounced UT. I see two options. First, UT is pronounced as a part of the adposition, hence, the lexical entry of *vor* ‘before, in front of’ is something like (i):

(i) /*vor*/ ⇔ [ P [ UT ] ]

By the Superset Principle, when the complement is different than UT, the adposition will lexicalize just P. (There is a potential issue here with the Anchor Condition, but assuming that P is a lexical category, UT is likely to be an argument selected by some functional head in its projection. This makes the issue disappear, since the lexical P will be lower than the head selecting the argument UT, and count as an anchor.)

This analysis allows for a neat statement of the difference between the English *before* and *ago*:

(ii) a. *ago* ⇔ [ P [ UT ] ] ⇔ BEFORE  
b. *before* ⇔ [ P ] ⇔ BEFORE

Alternatively, UT is absent in syntax altogether, and *vor* ‘before’ appears without

The proposal gains independent support from two facts. First, phrases similar to *einem Monat* surface as measure phrases in a variety of languages (see also van Riemsdijk 2007). I illustrate this on Farsi:<sup>38</sup>

- (72) Farsi, Haspelmath (1997), Marina Pantcheva (p.c.)
- a. piš æz jæng  
front from war  
'before the war'
  - b. **do sa'æt** piš æz æmæl  
two hours front from operation  
'two hours before the operation'
  - c. **do sa'æt** piš  
two hours front  
'two hours ago'

(72a) shows that the preposition *piš* means 'before,' and the Ground is marked by *æz*. In (72b), we add a measure phrase to (72a). In (72c), the measure phrase still precedes the adposition, and it is formally identical to the measure phrase in (72b). This in turn makes the measure phrase analysis of *do sa'æt* 'two hours' in (72c), the analogue of *einem Monat*, quite straightforward for Farsi.<sup>39</sup>

Second, even within German, one finds parallels between measure phrases and the object of *vor* in the meaning 'ago.' For instance, van Riemsdijk (2007) notes that measure phrases productively combine with modifiers such as *halb* 'half,' but ordinary Grounds do not. Now note that *halb* 'half' is fine in (73a), but not in (73b):

- (73) a. vor einem halben Monat  
before a half month  
'half a month ago'
- b. \*vor einem halben Konzert  
before a half concert

The semantically neat and independently confirmed analysis in (71) leads to an obvious question, which is the main topic of this section: how come that

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any complement. This is parallel to adjectives: *tall* means in fact *tall-ER THAN STANDARD*, where the 'standard' of comparison is usually assumed to be missing in syntax, but filled in by default. The same reasoning applies to *vor*, which means 'before UT' by default, i.e. when no complement is present.

<sup>38</sup>*Piš* also means spatial 'front,' similarly to the German *vor*. The use of *piš* in spatial contexts, however, is restricted to particle-like uses. I thank to Marina Pantcheva for her help with the Farsi data. She notes that there is variation among speakers concerning (72), which I ignore here.

<sup>39</sup>Thus, the syntax of the measure phrase in (72c) is different in Farsi and in German. I discuss this in more detail below.

if *einem Monat* is a semantic measure phrase, it does not share syntax with other measure phrases? Consider (74): here the measure phrase precedes the adposition, and it is marked accusative.

- (74) einen Monat vor dem Konzert  
 a.ACC month before the.DAT concert  
 ‘a month before the concert’

To answer this question, a syntactic analysis must find (i) a way to force the appearance of dative on the measure phrase, rather than the usual accusative, and (ii) a way to make the measure phrase follow the adposition. (i) and (ii) are obviously related: to bear dative and to follow the adposition are the two properties that syntactic objects of adpositions have in German. And it is this connection between case and word order what is the core of my argument here.

Thus, looking at cross-linguistic parallels of the expression ‘a month ago,’ a generalization emerges: whenever the semantic measure phrase bears the same case which normally occurs on Grounds (as in German, but unlike in Farsi), it occupies the same position in the linear string as the Ground. This means that it follows the adposition in prepositional languages (such as German), and precedes it in postpositional languages.

To illustrate the latter point, I give an example below from Tamil.

- (75) Tamil (diacritics omitted)  
 a. tinkakkeZame-kki munnaale  
 Monday-DAT before  
 ‘before Monday’  
 b. muuNu maNi-kki munnaale  
 three hours-DAT before  
 ‘three hours ago’ (Tamil, Haspelmath 1997)

In (75a), we see the postposition *munnaale* ‘before,’ k-selecting a dative on the Ground. (*Munnaale* is like the German *vor*, and it also means ‘in front of’ in the spatial domain.) In (75b), the same expression (*munaale*) is used to mean ‘ago,’ with the measure phrase bearing dative. Crucially, it occurs to the left of the adposition, as regular Grounds do. Tamil is thus like German, but with postpositions, rather than prepositions.<sup>40</sup>

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<sup>40</sup>The split in PPs between languages where the measure phrase raises to object (German, Tamil), and languages where it does not (Persian, English), is found also in VPs.

As Svenonius (2002) points out, Finnish temporal adverbials are promoted to nominative in passive (i), but Icelandic temporal adverbials are not (ii).

- (i) a. Olen Suomessa viikon.  
 I.am in.Finland week.ACC

To point out what is crucial: there appear to be no languages where case marking of the measure phrase and its position in the linear string are not in harmony. Thus, Haspelmath's sample does not include a language where the measure phrase acquires the case of the syntactic object, but not the position, as in (76) or (77).

- (76) An unattested language 1  
 a. P > Ground- $K_x$   
 b. Measure- $K_x$  > P

- (77) An unattested language 2  
 a. Ground- $K_x$  > P  
 b. P > Measure- $K_x$

Thus, acquiring the case of the syntactic object entails occupying the same position as the syntactic object. To capture the generalization, k-selection must be the result of overt movement. The details of the derivations follow.

As highlighted above, we start from the base-generated structure (78).

- (78) [ a month [ BEFORE [ UT ] ] ]

The facts discussed here require that adpositional phrases include a k-selecting position which attracts a KP\*. I understand this position as the PP analogue to a structural object position in VPs, and I label it k-S-OP, for Object-of-P k-selector.<sup>41</sup>

- 
- b. 'I am in Finland for a week'  
 Siellä viivytettiin kokonainen viiko.  
 there stayed.PASS whole week.NOM  
 'We/they/one stayed there a whole week' (Finnish, Svenonius (2002))
- (ii) a. María las allan daginn.  
 Maria read all day.ACC  
 'Maria read all day.'  
 b. það var lesið allan daginn.  
 it was read all day.ACC  
 'Reading went on all day.'  
 c. \*það var lesið allur dagurinn.  
 it was read all day.NOM  
 (Icelandic, Svenonius (2002))

This can be captured if Finnish temporal adverbials raise to the object position, but Icelandic ones don't. The distinction between the two types of languages is blurred in active sentences ((ia) vs. (iia)), because both types of adverbials end up in the accusative (but for different reasons). The difference only shows up in the passive ((ib) vs. (iic)), where only adverbials which have been raised to object prior to the application of passive can move to the nominative position.

<sup>41</sup>The PP–VP parallelism idea is not new, and it is defended in detail by den



(79) [ k-S-OP [ a month [ BEFORE [ UT ] ] ] ]

This position attracts a KP\* of a particular size to its Spec, thus determining its case. Prototypically, the Ground argument moves. However, since in examples like *vor einem Monat* ‘a month ago’ the Ground is null, in some languages, the measure phrase moves to this position instead of the Ground:<sup>42</sup>

(80) [ a month [ k-S-OP [ ~~a month~~ [ BEFORE [ UT ] ] ] ] ]

As a result of this movement, the measure phrase (i) takes on the case k-selected by k-S-OP, and (ii) comes to occupy the same position in the linear string as any other argument attracted to this position (i.e., the Ground in the prototypical case). This overt movement into the k-selecting position is the crucial ingredient from which the split between attested and unattested languages follows. Without this movement, there is no guarantee that Grounds and measure phrases end up in the same position when bearing the case k-selected by the k-S-OP.

It is also worth pointing out that if this analysis is correct, we have an example of raising into an oblique case position.<sup>43</sup>

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Dikken (to appear). Den Dikken labels the k-selecting position Aspect, stressing thus the parallel to VPs, where Asp is assumed to be the k-selector of the object case. Den Dikken’s Asp head has a predecessor (called Place) in the work of Koopman (2000). See also Bošković (2004).

<sup>42</sup>A clarification is needed. When I say that the Ground is null, this is intended to generalize over the two possible analyses of the element UT highlighted in fn. 37. Thus, recall that under one possible scenario, the element UT is absent in syntax altogether, and hence, it cannot move to the k-selecting position simply because it does not exist.

Under the alternative analysis, UT is pronounced as a part of the adposition. If in such an entry, the Ground occupies the complement position, then it can be pronounced (spelled out) as part of the adposition only if it does not move from that position.

<sup>43</sup>A prediction of the Peeling theory is that measure phrases are base-generated bearing a case which is bigger than the dative in the Case sequence. This is confirmed by languages like Hungarian, which has measure phrases in the instrumental case. The idea is that Hungarian PP measure phrases stay in situ, and show the original oblique marking.

(i) két perc-cel a koncert előtt  
 2 minutes-INS the concert before  
 ‘2 minutes before the concert’ (Hungarian, Andréa Markus, p.c.)

In German, the measure phrase appears in the accusative, a sign of the fact that it has been displaced from the base-generated position.

English apparently allows the measure phrase to surface in either position (in some cases), as pointed out to me by Peter Svenonius (p.c.). Thus, (iia) and (iib) seem to mean the same:

The structure (80) is where the derivation stops in postpositional languages, yielding the order  $O > P$ . Since in prototypical PPs (with an overt Ground), Spec,k-S-OP is targeted by the movement of the Ground, the structure predicts that when the Ground and the measure phrase co-occur, the Ground ends up to the left of the measure phrase (nothing else said, i.e., if the measure itself does not move, or a constituent which contains it). This is attested in some of the postpositional languages. I give an example from Japanese:

- (81)    *sensoo-no ni-zi-kan        mae-ni*  
           war-GEN 2-hour-period before  
           ‘2 hours before the war’ (Japanese, K. Takamine, N. Yamato, p.c.)

In prepositional languages, the preposition precedes the object. This is the result of a movement which brings the constituent (spelled out by the preposition) to the left of the KP\*, as shown in (82). The derivation stops here.

- (82)    [ BEFORE [ UT ] ] [ a month [ k-S-OP [ ~~a month~~ [ BEFORE [ UT ] ] ] ] ]

To sum up the argument: bearing a particular case entails occupying a particular position in the linear string, regardless of the base-generated position. This shows that movement to a k-selecting position is overt (across languages), as predicted by the Peeling theory.

## 4.8 Conclusion

In this chapter, I have adopted the Peeling theory of movement (Starke 2005) and argued that when the proposal is combined with the proposed decomposition, we obtain interesting results.

First, we predict that the empirical behavior of nominative is only compatible with Peeling if nominative is small (which derives the observation). Second, we have seen that in nominalizations, the Peeling theory delivers the generalization that genitive can only “over-ride” cases which are smaller than the genitive itself. (This requires an extra assumption, namely that nominalizations correspond to a subset of verbal structure.)

Then I have discussed the theoretical possibilities open for the spell out of case shells stranded by movement. Without introducing any new machinery, a large amount of data falls naturally in place. The spell out theory developed independently up to that point has the ability to handle various

- 
- (ii)    a.    When the clock ran out, he was ahead of me **by five meters**.  
           b.    When the clock ran out, he was **five meters** ahead of me.

There are acceptability differences between the two measures in other cases, but I don’t go into this here.

types of applicatives (Mokilese vs. Chichewa) including applicative syncretism (Chichewa), it can capture auxiliary shifts (be vs. get passives in Czech), and the semi-productivity of syntactic processes (the locative directional alternation). Various predictions arise along the way concerning possible languages, and to the extent that I was able to track these predictions down, such languages are attested (Japanese passives, preposition (non-)alternation in Ancient Greek, raising to dative in French causatives).

Finally, I have discussed in detail the marking of measure phrases in PPs, showing that there is a cross-linguistic correlation between case and position in the linear string. This suggests that overt movement is required for k-selection, another prediction of Peeling.

On the general level, there are three features which are important part of Peeling derivations when applied to case. The first two of these features, which I give in (83a,b), distinguish Peeling from most traditional or recent approaches to case (see, e.g., Chomsky 1998, or Woolford 2006 for a recent discussion).

- (83)
- a. KP\*s can pass through multiple case positions in the course of a single derivation
  - b. KP\*s can alternate between an oblique case and a structural case, or two oblique cases, subject to restrictions imposed by the Case sequence
  - c. Only overt movement has effects on case

The third feature, (84c), is a feature which Peeling partly shares with other frameworks, for instance, the checking theory of Chomsky (1995b). However, Peeling is different from classical checking in that only overt movement is reflected in the case of the KP\*.

Finally, the theory presented here is light on theoretical tools it uses. Throughout the chapter, I have not used any extra technology beyond (independently needed) structure, movement and spell-out. To the extent that this approach is on the right track, it essentially eliminates case theory as a special sub-discipline within grammar.



# Chapter 5

## Czech Passives and the semantics of Case

### 5.1 Introduction

In this chapter, I look at the final aspect of the proposed decomposition: semantics. So far, I have been conveniently designating individual features as [A] or [B], without being explicit about the semantics of these features. Such a situation is clearly undesirable, and consequently, I provide some suggestions as to how the semantics of case can be worked out in the confines of the present model.

To this end, I discuss data from Czech to argue that the semantics of the dative is based on the semantics of the genitive by adding a transition which leads to the denotation of the genitive. If tenable, this provides a semantic argument for the proposal that genitive is contained inside the dative, a conclusion which has been reached independently for morphology and syntax.

The argument builds on several independent proposals that have been established in the course of the discussion. Thus, it is a theory internal argument to a certain extent, incorporating assumptions which are not widely shared. On the other hand, the chapter shows that the tools which have been developed up to now can be used to handle elegantly a relatively intricate set of data, which involve case-shifting and its interaction with auxiliaries, distinctions between various types of passives, and related phenomena.

### 5.2 Genitives, datives, locatives and directionals

In this chapter, I lay out a proposal for the semantics of a particular part of the Case sequence, according to which the dative contains the genitive:

- (1) The Case sequence
- a. genitive: [*genitive* CP ]
  - b. dative: [*dative* D [*genitive* CP ] ]

What I propose is that the head D contributes a “change of state” semantics leading to the denotation of its complement, i.e., the genitive. If we simplify the meaning of the genitive to “possession,” we obtain the following semantic representation:

- (2) The semantics of case
- a. genitive: [ possession ]
  - b. dative: [ change of [ possession ] ]

The exact meaning of the genitive is irrelevant here, what is relevant is that the head D adds a change component to a stative genitive meaning, whatever that meaning exactly is. To provide evidence for the claim, I show that Czech treats the genitive as a “stative” version of the “change-of-state” dative. The reasoning is based on the following syllogism:

- (3)
- |    |  |
|----|--|
| a. | The semantics of directionals is [ change of [ locative ] ]                |
| b. | The relation of dative to genitive is like that of directional to locative |
|    |  |
| c. | The semantics of the dative is [ change of [ genitive ] ]                  |

If the premises are valid, the syllogism provides an independent argument from the meaning of case for the conclusion that the dative contains the genitive, something I have argued for on the basis of the morphology and the syntax of case as well.

I take (3a) for granted, drawing on a long tradition of investigation going back at least to Jackendoff (1983). The semantics of locatives is thus taken to be (4a), and the semantics of directionals is (4b). To give a concrete example: the idea is that *into the room* denotes a change of location from not being in the room to being in the room.<sup>1</sup>

- (4) The semantics of locatives and directionals
- a. locative: [ location ]
  - b. (goal) directional: [ TO [ location ] ]

What is now to be established is (3b). The individual arguments which support this claim each form a separate section.

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<sup>1</sup>See Kracht (2002) for an alternative view on the structure of locatives and directionals, which does not propose a containment between the two.

### 5.3 Argument 1: Stative verbs

One of the facts which follows from the presence of TO with directionals is that they are incompatible with simple stative verbs, like the locative copula ‘be’ (see Svenonius to appear). Locatives, on the other hand, are perfect:<sup>2</sup>

- (5) Petr je na zahrad-ě / \*na zahrad-u (LOC/\*DIR)  
 Peter is on garden-PRE / on garden-ACC  
 ‘Peter is in the garden.’

The same holds for the distribution of the dative and the genitive. While dative is excluded to occur in a possessive sentence, genitive is impeccable:

- (6) To auto je Petr-a / \*Petr-ovi (GEN/\*DAT)  
 That car is Peter-GEN / Peter-DAT  
 ‘This car is Peter’s (lit. of Peter).’

Thus, datives are like directionals in being incompatible with verbs denoting simple states. This follows if both datives and directionals denote a change of state, contributed by the element *i* notate as TO.<sup>3</sup>

It will shortly become relevant that simple stative possession can also be expressed by a nominative KP\* if the verb is ‘have.’

- (7) Petr má auto  
 Peter has car-ACC  
 ‘Peter has a car.’

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<sup>2</sup>The locative P *na* ‘on’ assigns prepositional when locative, and accusative when directional.

<sup>3</sup>There are contexts in Czech where a simple stative possessive sentence can feature a dative, but it cannot feature a genitive, as in (i):

- (i) To patří-í \*Petr-a / Petr-ovi  
 this belongs Peter-GEN / Peter-DAT  
 ‘This belongs to Peter.’

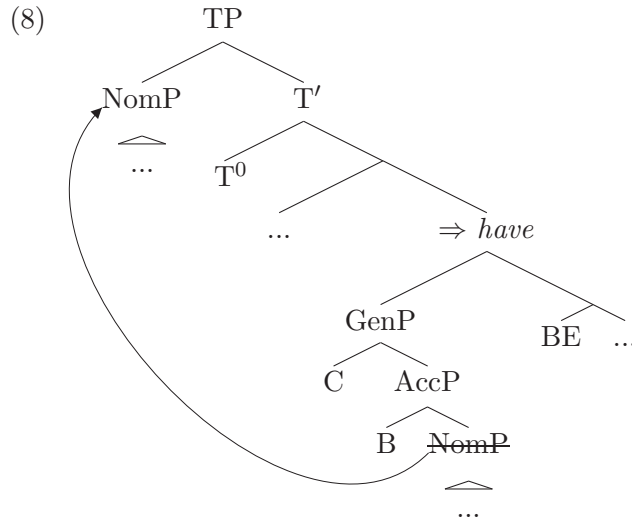
In these contexts, however, Czech also uses directionals rather than locatives:

- (ii) To patří-í \*na zahrad-ě / na zahrad-u  
 this belongs on garden-PREP / on garden-ACC  
 ‘This belongs in the garden.’

It is clear that to account for (i) and (ii), something beyond simple change of state semantics should be added (for both datives and directionals).

Similar remarks apply throughout. It is clear that the distribution of genitives and datives (also cross-linguistically) is not so clear-cut so as to be exhausted by the distinction “state vs. change of state.” The same, however, holds for directionals and locatives. See Fong (1997) for relevant discussion.

I will assume here an analysis which transformationally relates the sentences (6) and (7). Drawing on Freeze (1992) (see also Kayne 1993, Mahajan 1993, Belvin and den Dikken 1997, Taraldsen 2008c), I propose that both (6) and (7) are derived from the same underlying structure, where the possessor ('Peter') starts out as a genitive. In (6), it stays in situ, and the possessee raises to Spec,TP. In (7), it is the possessor which moves to Spec,TP, leaving its case shells behind. These case shells are spelled out as part of the copula BE, which thus turns to 'have.'



The insight that in Czech, HAVE = BE + GEN is a modified version of a general proposal by Freeze (1992), who argues (following Benveniste) that HAVE = BE+P. Thus, we have the following entry for BE and HAVE in Czech:

- (9)
- a. be = BE
  - b. have = [ [GenP ... t-NomP ... ] [ BE ] ]

The import of this section is thus two-fold. First, we have seen that in Czech stative sentences, possession is expressed by the genitive, and not by the dative. The distribution mirrors the distribution of locatives and directionals. Second, from now on I take 'have' in Czech to have a derivational origin, namely as the spell out of the copula BE in constructions where a genitive KP\* is promoted to nominative.

## 5.4 Argument 2: Dynamic verbs

Turning now back to our main line, we observe that the distribution of locatives and directionals reverses for dynamic verbs. With some, directionals are



obligatory, and locatives impossible:

- (10) Dej to \*na zahrad-ě / na zahrad-u (\*LOC/DIR)  
 Give it on garden-PREP / on garden-ACC  
 ‘Put it in(to) the garden.’

With the same verbs (where applicable), genitives become bad and datives are required:

- (11) Dej to \*Petr-a / Petr-ovi (\*GEN/DAT)  
 give it Peter-GEN / Peter-DAT  
 ‘Give it to Peter.’

These two facts confirm the proposal that dative is parallel in its abstract meaning to directionals, and denotes a change of state leading to the denotation of the genitive.

## 5.5 Argument 3: Chameleons

The parallels between locatives/genitives and directionals/datives are strengthened in Czech by the fact that under specific syntactic and semantic conditions, we can observe directionals turn into locatives (see Taraldsen and Medová 2007). Under the same conditions, datives become genitives. Because of these changes of one category into another, I follow Taraldsen and Medová (2007) and label such constructions as chameleons.

I separate the argument into two sub-sections. The first one shows the facts for locatives/directionals, and the second one replicates the same contrasts for genitives/datives.

### 5.5.1 The Czech locative-directional chameleon

This section reviews the observations made by Taraldsen and Medová (2007). The authors first note that some Czech verbs (like ‘hang’) take only directional PPs in active sentences, and refuse locative PPs. This is exemplified in (12a). The same holds for the eventive passive sentence (12b), based on the same verb (‘hang’). The eventive passive reading of (12b) is forced by the presence of the by-phrase. See, e.g., Emonds (2006) for an overview of the stative–eventive passive distinctions.

- (12) a. Pověsil ten kabát na věšák-ø / \*na věšák-u  
 Hung.3SG that coat on hanger-ACC / on hanger-PREP  
 ‘He hung the coat on the hanger.’ (\*LOC/DIR)

- b. Ten kabát byl pověšen- $\emptyset$  na věšák- $\emptyset$  / \*na věšák-u  
 that coat was hung on hanger-ACC / on hanger-PREP  
 sekretářk-ou ústavu  
 secretary-INS of department  
 ‘The coat has been hung on the hanger by the secretary of the  
 department.’ (\*LOC/DIR)

Such verbs, however, strongly prefer locative PPs in adjectival (stative) passives, see (13).<sup>4</sup>

- (13) Ten kabát je stále ještě pověšen-ej ??na věšák- $\emptyset$  / na věšák-u  
 that coat is still still hung on hanger-ACC / on hanger-PREP  
 ‘The coat is still hanging on the hanger.’ (LOC/??DIR)

I summarize the facts abstractly below:

(14)

	sentence	DIR	LOC
a.	active	ok	*
b.	eventive passive	ok	*
c.	stative passive	??	ok

For the purpose of the discussion to come, let me point out two grammatical distinctions in Czech between stative and eventive passives. The first distinction has to do with the form of the participle agreement, and the other concerns the interaction between perfective verbs and the tense of the copula. I review these in turn.

The passives in (12b) and (13) differ by the agreement morphology on the participle. There is a  $\emptyset$  in (12b), but *-ej* in (13). The agreement in (12b) is called ‘the short form agreement,’ and the agreement in (13) is called ‘the long form agreement’ (for apparent reasons). The short form is identical to nominal marking, the long form to adjectival marking.

As Taraldsen and Medová (2007) but also Veselovská and Karlík (2004) point out, these two different agreement forms distinguish the eventive and stative passive. In particular, the long form agreement uniquely identifies the stative passive. The short form, on the other hand, is ambiguous between eventive and stative passive.<sup>5</sup>

<sup>4</sup>Note that we actually have a double contrast here. The first contrast is that locatives become available, and the second contrast is that directionals become impossible. The first contrast is clear-cut, the second (marked by ??) is not completely black and white, and varies across verbs and speakers. According to my judgement, the directional is strongly degraded.

<sup>5</sup>There is a dialectal variation, with speakers from the Bohemian part of the Czech Republic more readily accepting eventive readings with the long form. My own judgements represent the speech of the Moravian capital Brno, and go with the description

The fact that the long form agreement forces the stative reading is shown by the fact that the instrumental by-phrase is possible only with the short form agreement, i.e., in eventive passives:

- (15) a. Karel byl oholen- $\emptyset$  Petr-em  
 Karel was shaved Peter-INS  
 ‘Karel was shaved by Peter.’ (short form agr)  
 b. \*Karel byl oholen-ej Petr-em  
 Karel was shaved Peter-INS  
 ‘Karel was shaved by Peter.’ (long form agr)

I repeat the relevant information in (16):

- (16) The long/short agreement  
 a. short form: stative or eventive  
 b. long form: stative

Yet another grammatical difference which is relevant in Czech for the difference between stative and eventive passive is the interaction between the tense of the copula and the aspect of the verb. Specifically, the present tense copula combined with a perfective verb yields a stative passive. This is shown in (17), the ungrammaticality of the by-phrase being the evidence of the necessarily stative meaning. (Compare this to (15a), which differs only in the tense of the copula.)<sup>6</sup>

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provided by the works cited: no long form agreement in eventive passives. I use my judgments throughout.

<sup>6</sup>To understand why this is so, I have to make a brief remark on the class of perfective verbs in Czech. These so-called perfective verbs are telic verbs, denoting temporally bounded events (like shaving a person until the person is shaven). For that reason, they do not have an ongoing reading, since it is impossible to claim that an event is both ongoing and completed. Instead, their present tense form has the interpretation of the future tense. I show this in the two sentences below. The first one features an imperfective verb which has an ongoing interpretation. The same Tense/Agreement morphology leads to a future reading with the perfective verb (ib).

- (i) a. Petr hol-í Karla.  
 Peter shave-s letter  
 ‘Peter is shaving Karel.’  
 b. Petr o-hol-í Karla.  
 Peter PERF-shave-s Karel  
 ‘Peter will shave Karel.’

With this background in mind, we can see that the eventive passive of a perfective verb will have the same properties as the (eventive) active: it does not have an ongoing eventive interpretation. Thus, the present tense copula which *has* an ongoing interpretation forces a stative interpretation of the participle, leading to the interpretation of an ongoing state.

- (17) Ten voják je o-holen- $\emptyset$  (\*Petrem).  
 the soldier is PERF-shaven-SHORT Peter.INS  
 ‘The soldier is shaven.’

With the two tests for stative readings in place, I now proceed to make a more precise statement about the distribution of locatives and directionals in stative passives (still following Taraldsen and Medová 2007). That is required because stative passives parallel to (13) become acceptable with the directional as soon as the modifier ‘still’ is dropped, even though the long form agreement and the present tense copula (both indicative of a stative reading) are included in the sentence. This is shown in (18):

- (18) Ten kabát (už) je pověšen-ej na věšák- $\emptyset$   
 this coat already is hung-LONG on hanger-ACC  
 ‘The coat has been hung on the hanger.’

The proposal that Taraldsen and Medová (2007) put forth to explain this is that stative passives are ambiguous between two different stative readings, one for the directional PP (18) and one for the locative PP (13). Further, these two distinct readings correspond to the two types of stative passives identified by Kratzer (2000): the target state passive and the resultant state passive.

The target state passive denotes a simple state which is transitory (like being hungry), and does not entail a prior event. An intuitive example of the target state reading of a participle is the locution *a hidden place* (hidden without a prior hiding event).<sup>7</sup> For Kratzer (2000), the hallmark of this type of state is the fact that it can be modified by *still*. In Czech, when ‘still’ is present – forcing the target state reading, the locative PP is required. This has been shown by (13).

In Kratzer (2000), the target state passive is opposed to a different type of state, the so-called resultant state passive. This latter type of stative passive denotes a state of having undergone an event. Consider, for instance, kissing. Once a person has been kissed, that person is in a state of having been kissed. This state cannot be undone, and hence it is ungrammatical to say *\*John is still kissed*.

Now since the directional PP becomes grammatical in stative passives once ‘still’ is dropped, the proposal that Taraldsen and Medová (2007) put forth is that the directional PP is available in resultant state passives, but unavailable in target state passives (i.e., when ‘still’ is present). This leads to the following updated picture:

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<sup>7</sup>See also the discussion in Embick (2004), who points out that also contexts such as *The door was built closed* require a target state reading of the participle (no prior closing event entailed), and they are distinguished by special allomorphy for some verbs in English.

(19)

	sentence	DIR	LOC
a.	active	ok	*
b.	eventive passive	ok	*
c.	resultant state passive	ok	*
d.	target state passive	??	ok

The simplest way to look at the distribution is thus similar to the overall pattern that we have observed before we started looking at the chameleons. Since target state passives denote a simple state without any implication of a prior change, they behave like stative verbs and require locatives. Resultant states, on the other hand, describe a state which is a result of a prior change, and thus require a directional.<sup>8</sup>

### 5.5.2 The Czech genitive-dative chameleon

I now proceed to show that (20) describes the distribution of genitives and datives:

(20)

	sentence	DAT	GEN
a.	active	ok	*
b.	eventive passive	ok	*
c.	resultant state passive	ok	*
d.	target state passive	*	ok

The comparison of (19) and (20) shows that dative is replaced by genitive under the same conditions which lead to the emergence of the locative from within the directional. The parallel is captured under the proposal that datives denote a change of state leading to the denotation of the genitive, just like directionals denote a change of state leading to the denotation of the locative:

- (21)
- a. directionals: [ TO [ location ] ]
  - b. datives: [ TO [ possession ] ]

I now turn to the data which establish the distribution highlighted in (20). This task, however, has an additional twist to it: for reasons to be discussed later, both genitive and dative KP\*s must be promoted to nominative in Czech stative passives. As a consequence, the pattern of distribution cannot be observed directly. However, the underlying distinction between genitives and datives can still be detected, but in an indirect way. In particular, while the distinction is lost on the raised KP\*, it is preserved in the amount of case shells

<sup>8</sup>As Taraldsen and Medová (2007) rightly point out, to state the distribution formally is harder than it may look. I refer the interested reader to their paper.

stranded in the base position. In Czech, these stranded shells are spelled out as part of the auxiliary, and thus, we can deduce the base-generated structure from looking at passive auxiliaries.

Thus, what becomes directly relevant for the argument is the proposal that the Czech auxiliaries ‘have’ and ‘get’ are copular elements which spell out case shells stranded by Peeling movements. In particular, I have proposed in this chapter that ‘have’ is the spell out of the auxiliary ‘be’ in contexts where a genitive KP\* raises to nominative. And similarly, ‘get’ has been analyzed in the previous chapter as the shape of the copula BE in contexts where a dative KP\* raises to nominative:

- (22) The Czech auxiliaries
- a. be = BE
  - b. have = [ [*GenP* ... t-NomP ... ] [ BE ] ]
  - c. get = [ [*DatP* ... t-NomP ... ] [ BE ] ]

What this situation leads to is the following: in resultant state passives, we predict the occurrence of the auxiliary ‘get,’ which reflects the promotion of an original dative to nominative. In target state passives, the auxiliary will be ‘have,’ reflecting the shift from GEN to NOM:

(23)

sentence	DAT	GEN
a. active	ok	*
b. eventive passive	ok	*
c. resultant state passive	ok ⇒ ‘get’	*
d. target state passive	*	ok ⇒ ‘have’

With this background in mind, I proceed to the data. (24a) shows that the verb ‘prohibit’ requires dative, and disallows the genitive in the active. (24b) shows the same for the eventive passive. The eventive reading of (24b) is forced by the presence of the by-phrase.

- (24) a. Obvodní lékař zakázal {Karl-ovi / \*Karl-a} kouřit.  
 G P prohibited Karel-DAT / Karel-GEN to smoke  
 ‘His GP has prohibited smoking to Karel.’
- b. {Karl-ovi / \*Karl-a} bylo obvodním lékařem zakázán-o  
 Karel-DAT / Karel-GEN was general practitioner-INS prohibited-SHORT  
 kouřit.  
 to smoke  
 ‘Smoking was prohibited to Karel by his GP.’

This establishes the following facts:

(25)

	sentence	DAT	GEN
a.	active	ok	*
b.	eventive passive	ok	*

Consider now the two stative passives, characterized as a group by the present tense copula in combination with a perfective verb. As highlighted above, both the genitive and the dative are impossible in stative passives:

- (26) (\*Karl-ovi / -a) je zakázáno kouřit.  
 Karel-DAT GEN is prohibited to smoke

The sentence is otherwise grammatical (i.e., without the KP\* Karel), and it is ambiguous between a target state reading (easily accessible) and a resultant state reading (accessible in a context).

There are reasons to believe that the ungrammaticality triggered by the presence of the KP\* is due to the restriction that stative passives in Czech (and perhaps generally) cannot be impersonal. (Equivalently, impersonal passives are always eventive.) And since the passive in (26) is impersonal (there is no nominative subject), there is a clash between the impersonal status of such passives, and the stative interpretation (forced by the present tense copula).<sup>9</sup>

<sup>9</sup>As an independent motivation of the observation that impersonal passives cannot be stative, consider the following examples from Norwegian, which I owe to Tarald Taraldsen:

- (i) a. Han virker (hardt) skadet (\*hardt)  
 he looks badly damaged badly  
 'He looks badly damaged.'  
 b. Det ble (\*hardt) skadet tre menn (hardt)  
 It became badly damaged three men badly  
 'Three men were badly damaged.'  
 c. De hadde (\*hardt) skadet ham (hardt)  
 they had badly damaged him badly  
 'They have damaged him badly.'

(ia) shows that in the adjectival passive, the modifier *hardt* precedes the participle. In (ib), which is an impersonal passive, the modifier has to follow the participle, just like it does in the active sentence (ic). Thus, impersonal passives have to pattern with eventive sentences, and against statives.

In Czech, impersonal passives of the sort seen in Norwegian (ib) are difficult to diagnose with certainty, since Czech has no overt expletive of the Norwegian type. However, the Norwegian word order of copula-participle-subject, seen in (ib), has to be eventive in Czech as well.

- (ii) a. Byl poškozen- $\emptyset$  přístroj  
 was damaged-SHORT machine  
 'A machine has been damaged.'

Under Peeling, a way to make a passive “personal” is to sub-extract a nominative core from within a KP\* eligible for such a raising. Thus, what we expect in Czech is that in (26), the nominative will sub-extract from within the base-generated dative or genitive, and raise to the subject position. Once that happens, we render the passive “personal,” and the expected distribution of datives and genitives will emerge. However, the substitution is revealed only indirectly through the shape of the auxiliary:

- (27) The Czech auxiliaries
- a. be = BE
  - b. have = [ *GenP* ... t-NomP ... ] [ BE ]
  - c. get = [ *DatP* ... t-NomP ... ] [ BE ]

Based on the picture (27), and on the proposed distribution of datives and genitives, a way to construct a grammatical target state passive is to start with an underlying genitive, and promote it to nominative. This will lead to the emergence of the auxiliary ‘have,’ which I show in (28). Note the presence of ‘still,’ which diagnoses (28) as a target state passive:

- (28) Karel měl stále ještě zakázáno kouřit.  
 Karel.NOM had still still prohibited to smoke  
 ‘(At that time) Karel was still prohibited to smoke.’

The acceptability of (28) then shows that in target state passives, genitives can substitute for datives.

(29)

sentence	DAT	GEN
a. active	ok	*
b. eventive passive	ok	*
c. target state passive	ok	⇒ ‘have’

Turning now to target state passives, and assuming the same background, a way to construct a grammatical sentence is to start with an underlying dative, and sub-extract its nominative core in order to render the passive “personal.” This leads to the emergence of a get-passive, which I show in (30):

- 
- b. \*Byl poškozen-ej přístroj  
 was damaged-LONG machine  
 Intended: ‘A machine was damaged.’

The fact that the word order of (iia) can only be eventive is shown by the fact that this word order is incompatible with the use of the long form agreement, indicative of the stative reading. Thus, the idea is that (iia) is analogous to the Norwegian (ib), modulo the fact that the expletive *det* is covert in the pro-drop Czech. And this in turn shows that in Czech, impersonal passives must be eventive (independently of the issues with datives/genitives).



- (30) Karel dostal zakázáno kouřit.  
 Karel.NOM got prohibited to smoke  
 ‘Karel was prohibited to smoke.’

The prediction now is that since (30) contains an underlying dative (as witnessed by the auxiliary ‘get’), it cannot be a target state passive. This is confirmed by the fact that the modifier ‘still’ is ungrammatical, see (31a). Recall from above that in order to render a target state passive, Czech uses the auxiliary ‘have,’ originating from an underlying genitive:

- (31) Target state passive
- a. \*Karel dostal stále ještě zakázáno kouřit.  
 Karel.NOM got still still prohibited to smoke  
 ‘Karel was still prohibited to smoke.’
- b. Karel měl stále ještě zakázáno kouřit.  
 Karel.NOM had still still prohibited to smoke  
 ‘(At that time) Karel was still prohibited to smoke.’

There is also evidence that ‘get’ passives are not pure eventive passives, since they do not combine with agentive by-phrases, see (32):

- (32) Karel dostal (\*obvodním lékařem) zakázáno kouřit.  
 Karel.NOM got G P-INS prohibited to smoke  
 Intended: ‘Karel was prohibited to smoke by his GP.’

Hence, ‘get’ passives in Czech are resultant state passives (only). Concerning the distribution of datives and genitives in passives, the following picture then emerges from the discussion.

(33)

sentence	DAT	GEN
a. active	ok	*
b. eventive passive	ok	*
c. resultant state passive	ok ⇒ ‘get’	
d. target state passive	*	ok ⇒ ‘have’

The new information in the table has to do with adding the line for resultant state passives (‘get’ passives), but I have also added a star in the last row: no datives in target state passives. That is because ‘get’ passives do not have the target state reading, see (31a), and thus, under the assumption that ‘get’ derives from an underlying dative, datives must be ungrammatical in target state passives.

What is now to be found out is whether ‘have’ passives, originating from an underlying genitive, do or do not have a resultant state reading. There are two pieces of evidence that they don’t. I give one of them now, and keep

the second one for the next subsection. The first piece of evidence comes from the fact that certain verbs do not form target state passives, but only resultant state passives (see Kratzer 2000 for the original observation). Such verbs refuse the modification by ‘still’ altogether. The same class of verbs refuses to form ‘have’ passives, and forms only ‘get’ passives. This shows that ‘have’ passives do not have the resultant state reading. Empirical illustration follows.

Consider the two following active sentences. They are based on the same root, ‘to smack,’ but they differ by the perfectivizing prefix they take. The difference in the prefix correlates with the case the internal argument takes, accusative in (34a) and a dative in (34b):

- (34) a. Petr z-fackoval Karl-a  
 Peter PERF-smacked Karel-ACC  
 ‘Peter has smacked Karel.’  
 b. Petr na-fackoval Karlovi  
 Peter PERF-smacked Karel-DAT  
 ‘Peter has smacked Karel.’

It is possible to make a resultant state passive based on (34a), see (35).

- (35) Karel už je z-fackovan-ej.  
 Karel already is smacked-LONG.  
 ‘Intended: Karel has already been smacked.’

The sentence is stative, as indicated by the present tense copula and the long form agreement. The sentence is natural in a kind of a “game” context, where if you get a smack, you drop out of the game. (35) then conveys the meaning that Karel has already gotten a smack and thus, he is out of the game. Such scenarios are good triggers of the resultant state reading: Karel is in a state (out of the game) as a result of a prior event (getting a smack).

Verbs like ‘smack’ refuse to form target state passives, thus the addition of ‘still’ to (35) results in near ungrammaticality.

- (36) Karel je (??stále ještě) z-fackovan-ej.  
 Karel is still still smacked-LONG.  
 ‘Karel has been already smacked.’

Turning now to the same verb root with the dative argument (and a different prefix), we see that this verb only forms ‘get’ passives, and it does not form ‘have’ passives:

- (37) Karel {dostal / \*má} na-fackováno  
 Karel got has smacked  
 ‘Karel has been smacked.’

The ungrammaticality of the ‘have’ passive is sharper than the degradation in (36), which is probably due to the fact that ‘still’ can be subject to a certain degree of coercion which is unavailable for ‘have.’ In any event, there is a correlation between the unavailability of target state passives, and the unavailability of ‘have’ passives. This follows if ‘have’ passives have only the target state reading, and thus the unavailability of this reading for certain verbs automatically rules out the grammaticality of the ‘have’-passive.

Assuming again the correctness of the fact that ‘have’ reveals an underlying genitive structure, the impossibility of resultant state reading for ‘have’ passives shows that genitives are bad in resultant state passives. This leads to the following picture:

(38)

sentence	DAT	GEN
a. active	ok	*
b. eventive passive	ok	*
c. Resultant state passive	ok $\Rightarrow$ ‘get’	*
d. target state passive	*	ok $\Rightarrow$ ‘have’

Just like the locative-directional facts, this state of affairs makes sense under the initial observation that datives are good in change of state sentences, and genitives are required in stative sentences in Czech. The chameleon sentences are a specific case of the general situation: when the verb is turned into the purely stative target state passive, this requires that datives are replaced by genitives in the base-generated structure.

The facts can be observed only indirectly, though, and the abstract relationship of datives and genitives is reflected on the surface by the shift from ‘get’ to ‘have’ when we move from resultant state passives to target state passives in Czech. However, the Peeling theory allows for a straightforward understanding of how the auxiliary shift corresponds to the underlying shift from the dative to the genitive.

Now compare the table (38) with the distribution of locatives and directionals observed in Taraldsen and Medová (2007):

(39)

sentence	DIR	LOC
a. active	ok	*
b. eventive passive	ok	*
c. resultant state passive	ok	*
d. target state passive	??	ok

The comparison reveals that in chameleon structures, datives turn to genitives under the same syntactic/semantic conditions which make directionals turn to locatives. Thus, if directionals are built from locatives by the addition of an abstract change of state feature TO, harbored by a separate head, the same

holds for the relationship of datives and genitives in Czech.

### 5.5.3 The chameleon meeting

The last point is to show that when the locative-directional and the genitive-dative chameleon meet in one sentence, they change color together. In more profane language, ‘have’ passives require locative PPs (because they are target state passives), and ‘get’ passives require directional PPs (because they are resultant state passives).

In (40), I give a ditransitive sentence based on the perfective verb ‘tattoo.’ There is a PP included in the structure which must be directional, and cannot be locative:

- (40) Každému vězni            vytetovali    {na ruku    / \*na ruce}  
 each        prisoner.DAT tattooed.3PL on hand.ACC on hand.PREP  
 identifikační číslo.  
 identity        number.ACC  
 ‘They tattooed a number on the hand of each prisoner.’

In (41), I show the ‘get’ passive based on (40). Recall that ‘get’ passives arise as a result of the promotion of a dative argument, here ‘each prisoner,’ to nominative. In ‘get’ passive, the PP must remain directional:

- (41) Každý vězeň            dostal vytetováno {na ruku    / \*na ruce}  
 each prisoner.NOM got tattooed on hand.ACC on hand.PREP  
 identifikační číslo.  
 identity        number.ACC  
 ‘Each prisoner got a number tattooed on his hand.’

(41) thus shows that resultant state passives require an underlying dative and a directional PP, and hence, the two share an abstract distribution.

Finally, consider ‘have’ passives:<sup>10</sup>

- (42) Každý vězeň            má {na ruce    / ??na ruku} vytetováno  
 Each prisoner.NOM has on hand.PREP on hand.ACC tattooed  
 identifikační číslo.  
 identity        number.ACC  
 ‘Each prisoner has an identity number tattooed on his hand.’

I have argued that ‘have’ passives arise when an underlying genitive argument is promoted to nominative. The reason for the underlying genitive in (42) (as opposed to an underlying dative marking in (41)) is that (42) is purely stative.

<sup>10</sup>The fact that have passives require locatives is noted already in Taraldsen and Medová (2007:ex.17). The sentence here is a modification of their example.

In the same context which requires the shift from the dative to the genitive (reflected by the shift from ‘get’ to ‘have’), also directionals must switch to locatives. This is shown by the acceptability of the locative PP *na ruk-e* and the degraded status of the directional PP *na ruk-u*.

## 5.6 Conclusions

The reasoning in this chapter, recall, is based on the following syllogism:

- (43)
- |    |  |
|----|--|
| a. | The semantic structure of directionals is [ change of [ locative ] ] |
| b. | Dative to genitive is like directional to locative                   |
|    |  |
| c. | The structure of the dative is [ change of [ genitive ] ]            |

I took the premise (43a) for granted, and I have provided evidence for the correctness of (43b), showing that datives have the same abstract distribution as directionals, and genitives as locatives. This has to do with the fact that neither datives nor directionals are allowed in stative sentences in Czech.

Thus, to the extent that the empirical argument for (43b) is successful, this means that the decomposition of genitive and dative in terms of increasing structural complexity has a semantic correlate: dative introduces a change of state semantics leading to the denotation of the genitive.

The question of semantic composition remains open for the rest of the features; hopefully, considerations similar to the ones I have presented here will allow some progress in this domain.



# Chapter 6

## Conclusions

This is where the theoretical part of the dissertation ends, two case studies follow. This chapter thus sums up the theoretical results of this dissertation.

I started from the hypothesis that syncretism in case is restricted to occupy contiguous regions in a sequence of cases, identical across languages, see ch. §1, §3, and §8 for data which support the hypothesis. To capture such a restriction, I have adopted the view that case decomposes into features, and proposed that these features show cross-linguistically rigid internal organization. In concrete terms, the features relevant for syncretism must be organized in a binary syntactic tree, and ordered in a functional sequence.

This finding has implications for the architecture of grammar. If correct, it shows that the same principles which govern the composition of phrases in sentences govern the composition of features in morphemes (the essence of Nanosyntax, Starke 2005).

On the technical side, the proposal leads to an apparent tension between the number of terminals relevant for case (as many as there are features needed), and the number of morphemes (mostly one). This led me to adopt the hypothesis of phrasal spell out, and propose that case markers spell out whole constituents composed of the proposed case features, each feature a terminal node; this theory has been described in ch. §2, and a case study is coming up in §7.

In ch. §2, I have further investigated the consequences of phrasal spell out for the theory of grammar in general, and argued that phrasal spell out leads to architectural simplifications. The overall model which emerges is such that grammar starts from atomic features, and puts them together into large and fine-grained syntactic structures. These structures are translated on phonological and conceptual representation via lexical access.

I have further worked out and verified several predictions that the proposed case decomposition makes. In particular, when combined with the constrained theory of NP\* movement proposed in Cinque (2005), we predict that the inventory of case suffixes in a language is not random, but increases monotonically

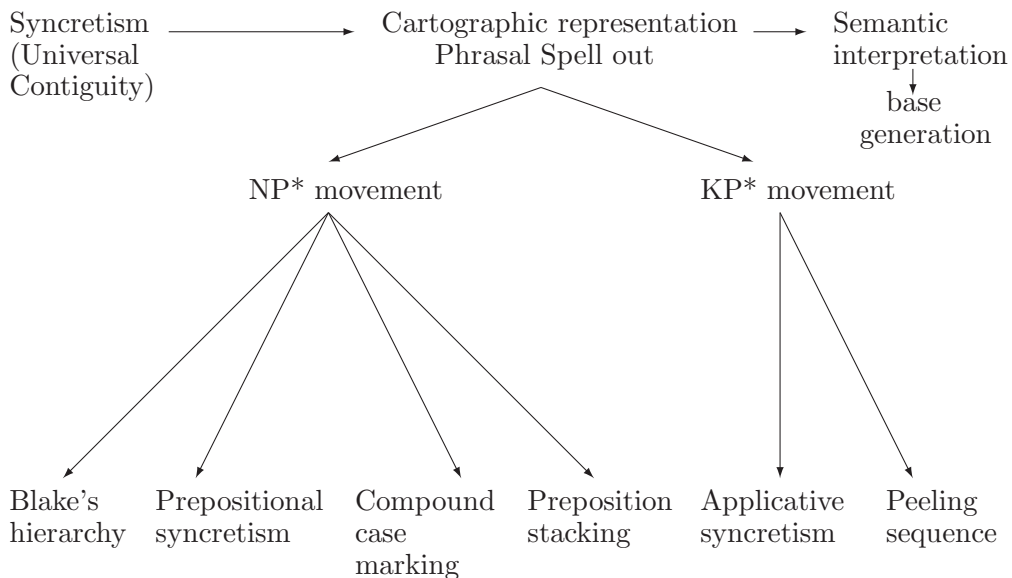
along the same hierarchy which governs syncretism in case (Blake's hierarchy).

Complementarily, we predict that case features which are not crossed by NP\* movement are spelled out to the left of the NP\* by a functional preposition. Since the preposition spells out the same features as the case suffix, the same contiguity sequence governs prepositional syncretism.

In addition, since individual cases are proposed to stand in subset-superset relations, the proposal explains (and constrains) phenomena such as Compound case marking (two suffixed case morphemes) and P-stacking (two prefixed case morphemes).

The structure of argumentation described above is (properly) contained in (1):

- (1) The structure of the argumentation



In ch. §4, I have observed that there is a correlation between the proposed representation of case and its syntax. I have shown that the correlations follow if the Peeling theory of movement is adopted (Starke 2005, see also Rizzi 2004). The theory says that arguments are base generated with a number of case projections on top of them, bearing a case which corresponds to their interpretation ( $\theta$ -role). Upon attraction, a particular size of the KP\* sub-extracts and strands some of the case projections. As a by-product, the theory derives the surface dependence of the accusative on the nominative (Burzio's generalization in the light of its later reformulations).

Since Peeling is an instance of sub-extraction, we expect that both parts



of the “split” undergo spell out. In this light, I have analyzed applicative morphemes as stranded case, adapting an earlier proposal by Baker (1988). This leads to the prediction that syncretism of applicatives is restricted by the same constraints as case syncretism.

Finally, in ch. §5, I have proposed that the semantics of dative is based on the semantics of genitive by adding a change of state component leading to the denotation of the genitive. I have provided evidence for this from Czech, where certain verbs require dative arguments when eventive, but switch to genitive arguments when turned into a stative passive.

The overall system thus accommodates the interaction of morphology, syntax and semantics of case by proposing a universal functional sequence of features. The hierarchy interacts with various processes of grammar to yield complex surface patterns of data.



**Part III**  
**Case studies**



# Chapter 7

## Classical Armenian declension: a nanosyntactic case study

### 7.1 Introduction

In this chapter, I offer a case study of the declension in Classical Armenian. I argue that to account for the observed patterns, we need to make use of two tools which have been developed in this dissertation: the highly articulate functional sequence, and phrasal spell out.

First, I show that the order of morphemes in an inflected word requires derivations involving phrasal movement, rather than head-movement. While this line of research has been pursued independently of nano-syntax (Koopman and Szabolcsi 2000, Koopman 2005a a.o.), it forms a harmonic part of the framework. Since morphemes are argued to be phrasal themselves, the fact that their ordering requires phrasal movements is expected.

Second, I show that case syncretism in the language is restricted, and it targets contiguous regions on the Case sequence.

Third, I show that categories such as case, number and class are subject to varying degree of morphological independence. In particular, in the instrumental, we need to recognize 3 separate affixes, a class marker, a case marker, and a plural marker, see the last row of the table below. In other cases, however, number and case are expressed by a single marker, and in the nominative, we only get to see one affix. This is depicted in the other two rows of the table. Of particular interest is the fact that the individuation of categories follows the Case sequence: merger in unmarked cases, splitting in marked cases.

- (1) The template for Armenian declension

NOM, ACC, LOC	stem	-class&case&number		
GEN, DAT, ABL	stem	-class	-case&number	
INS	stem	-class	-case	-number

I argue that this can be modeled by phrasal spell out: the categories which merge form a constituent which can be targeted by insertion. The fact that this process is governed by the Case sequence is explained as an effect of the feature decomposition: the more features to spell out, the more items we need.

Finally, the account of the synthetic/analytic alternations based on phrasal spell out will be shown to yield interesting predictions for consonantal declensions in the language. I show that in these declensions, the extra consonant structurally intervenes between class and case features, and forces them to be spelled out separately.

The Armenian declension thus provides evidence for the existence of a highly articulate sequence of functional projections, as well as for the phrasal spell out hypothesis.

## 7.2 Case syncretism

I start by a general description of the case system in Classical Armenian.<sup>1</sup> I draw on the description in Schmitt (1981), and I give page numbers in brackets refer to a locus of the data in the quoted reference grammar. Classical Armenian is a language with seven cases: nominative, accusative, locative, genitive, dative, ablative and instrumental. I show two sample paradigms below.

(2) Classical Armenian, a-stem declension (p.94)

	nation, SG.	nation, PL.
NOM	azg-∅	azg-kʻ
ACC	azg-∅	azg-s
LOC	azg-i	azg-s
GEN	azg-i	azg-acʻ
DAT	azg-i	azg-acʻ
ABL	azg-ê	azg-acʻ
INS	azg-aw	azg-awkʻ

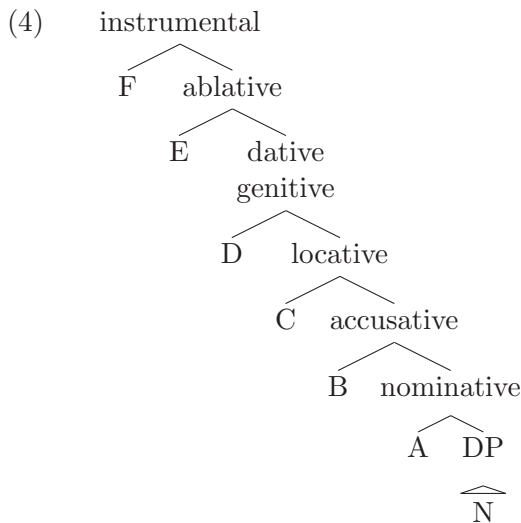
The cases show syncretisms which occupy contiguous regions in the sequence in which they have been presented. In the singular, nominative and accusative show syncretism, and accusative and locative go hand in hand in the plural.

<sup>1</sup>For an analysis of Classical Armenian within the framework of Distributed Morphology, see Halle and Vaux (1998).

This leads to  $NOM > ACC > LOC$ .<sup>2</sup> Locative in turn must be adjacent to genitive and dative (on the basis of the singular syncretism), and ablative comes after these two cases, due to the syncretism in plural. This leads to the continuation  $LOC > GEN/DAT > ABL$ .<sup>3</sup> Instrumental does not show non-accidental syncretism in this or other paradigms; it then comes either last or first.<sup>4</sup> I put instrumental last for consistency with the Case sequence (3b), observed in other languages, and discuss empirical data which independently point to this conclusion later on. I note in addition that the instrumental also serves as the comitative, an example of total syncretism (see ch. §3).

- (3) Universal (Case) Contiguity (from ch. §1):
- a. Non-accidental case syncretism targets contiguous regions in a sequence invariant across languages.
  - b. The Case sequence:  $NOM - ACC - GEN - DAT - INS - COM$

Based on the attested syncretisms, and on the fact that instrumental comes last rather than first in other languages, I show the underlying structure for Armenian in (4). Note that cases which have no place in the original statement of the Case sequence (3b) have been given their own projections as well, a proposal I have justified in chapter §3.



<sup>2</sup>The locative is similar to the Russian prepositional, it occurs only after prepositions, and never denotes location on its own.

<sup>3</sup>In nouns, genitive is always the same as dative, which I encode by the slash notation:  $GEN/DAT$ . Pronouns have a special genitive form which causes complications. I come back to this in the next chapter.

<sup>4</sup>There is one syncretism of instrumental with dative across ablative, but this is due to a phonological processes (see Halle and Vaux 1998:ftn.7). I review this syncretism in section §7.8 and I show that it arises as a result of a phonological process.

Combined with the spell out procedure developed in ch. §2, the proposal above captures the attested restriction on syncretism, so that only contiguous sequences of the hierarchy can be spelled out by the same lexical entry.

### 7.3 Case and Number

With the underlying structure in place, let me have a closer look on the singular – plural distinction. As can be observed in (5), the singular and plural endings are different for most cases. This can be understood under the proposal that as a rule of thumb, the case exponents also spell out number in Armenian. The exception to this is the instrumental plural, which is built on top of the instrumental singular by the affixation of *-k'*, a morpheme which also shows up in the nominative plural.

(5) Classical Armenian, a-stem declension (p.94)

	nation, SG.	nation, PL.
NOM	azg-∅	azg- <b>k'</b>
ACC	azg-∅	azg-s
LOC	azg-i	azg-s
GEN	azg-i	azg-ac'
DAT	azg-i	azg-ac'
ABL	azg-ê	azg-ac'
INS	azg-AW	azg-AW- <b>k'</b>

A reasonable hypothesis is that *-k'* marks plural.<sup>5</sup> This finds an independent confirmation in the verbal paradigm, where *-k'* marks the difference between the 1st.sg and 1st.pl. agreement, as shown in (6a), and in the composition of the 2nd person plural pronoun, as shown in (6b):

- (6) a. sire-m – sire-m-k'  
       love-1ST.SG – love-1ST-PL (p.138)
- b. du – du-k'  
       you.SG – you-PL (p.115)

The surprising fact here is that in the instrumental plural (see (5)), the number follows the case marker, which is the opposite order of a relatively common order N-Num-K. This latter order is attested in, for instance, Modern Armenian, its Turkish neighbor, or Finnish.<sup>6</sup>

I summarize the two relevant observations below. First, instrumental is set aside from all the other cases, because number and case are not fused.

<sup>5</sup>I slightly refine this statement below.

<sup>6</sup>Halle and Vaux (1998) give *-ner-ov* ‘-PL.-INS.’ as instrumental plural in Standard Eastern Armenian.



Second, number follows case.

(7) Case and Number

OTHER	stem	-case&number	
INS	stem	-case	-number

As far as the nominative is concerned, there are two possible analyses. Under one hypothesis,  $-k'$  is just plural, and nominative is  $-\emptyset$ . An alternative hypothesis, made available by the Superset Principle, is that  $-k'$  is both nominative and plural, as shown below:

(8)  $/-k'/ \Leftrightarrow$  Nominative

A <sup>0</sup>	PIP
Pl <sup>0</sup>	

The reason why the latter analysis is made available by the Superset Principle is that the Superset Principle allows for  $-k'$  to lexicalize only plural (i.e., a subconstituent), as needed for the examples where  $-k'$  marks only plural, see (6). The advantage of the hypothesis (8) is that nominative plural is now not considered bi-morphemic ( $-\emptyset-k'$ ), but just mono-morphemic ( $-k'$ ), which allows to state the analytic – synthetic expression of number and case in Classical Armenian along the lines of the same hierarchy which underlies the system of syncretism; analytical expression is in the most marked case, synthetic expression in less marked cases.

The analysis of  $-k'$  as a nominative plural (rather than just plural) receives support from the fact that the merger of case and some other inflectional category occurs frequently in the nominative, and its likelihood decreases as we move down on the hierarchy of cases. We have seen an example from Finnish in §2.6.3, and I repeat the paradigm below:

(9) Merger of case and number in Finnish core cases

	bear, sg.	bear, pl.
NOM	karhu	karhu- <b>t</b>
ACC	karhu-n	karhu- <b>t</b>
GEN	karhu-n	karhu-j-en
PART	karhu-a	karhu-j-a
ESS	karhu-na	karhu-i-na
TRANS	karhu-ksi	karhu-i-ksi
INE	karhu-ssa	karhu-i-ssa
ELA	karhu-sta	karhu-i-sta
ILL	karhu-un	karhu-i-hun
ADE	karhu-lla	karhu-i-lla
ABL	karhu-lta	karhu-i-lta
ALL	karhu-lle	karhu-i-lle
ABE	karhu-tta	karhu-i-tta

We see in (9) that in the two least marked cases, nominative and accusative, case and number merge into one marker, while the oblique cases have a separate number and case suffix.

As another example, consider the Mordvin definite declension, discussed in McFadden (2004).

(10) Mordvin Definite Declension (Erza dialect)

Case	‘the house,’ SG.	‘the house,’ PL.
NOM	kudo- <b>ś</b>	kudo-tńe
ACC/GEN	kudo-ńT	kudo-tńe-ń
DAT	kudo-ńT-eń	kudo-tńe-ń-eń
ABL	kudo-do-ńT	kudo-tńe-de
INE	kudo-so-ńT	kudo-tńe-se

What we see here is the stem *kudo-* ‘house,’ which is inflected for number, case and definiteness. Definiteness and number are always expressed as one marker, no matter the case. Thus, we have the singular definite *ńt*, and the plural definite *tńe*. Importantly, the nominative singular also spells out case together with these other two categories, namely as a portmanteaux *-ś*.

Hence, the bi-morphemic analysis of the nominative in Classical Armenian would be rather odd from cross-linguistic perspective. On the other hand, mono-morphemic expression of the nominative and number is attested even in languages which otherwise split number from case.

## 7.4 Class markers

Now compare the plural paradigm we have looked at with other plural paradigms:

## (11) Classical Armenian, plural (p.94 and 96-7)

	nation, PL.	river, PL.	word, PL.	time, PL.
NOM	azg-k'	get-k'	bay-k'	žam-k'
ACC	azg-s	get-s	bay-s	žam-s
LOC	azg-s	get-s	bay-s	žam-s
DAT	azg-a-c'	get-o-c'	bay-i-c'	žam-u-c'
GEN	azg-a-c'	get-o-c'	bay-i-c'	žam-u-c'
ABL	azg-a-c'	get-o-c'	bay-i-c'	žam-u-c'
INS	azg-a-w-k'	get-o-v-k'	bay-i-w-k'	žam-u-ø-k' <sup>7</sup>

The comparison clearly reveals the existence of a separate vocalic element between the stem and the morphemes *-c'* and *-w*, the quality of which is controlled by the stem. This suggests that we are looking at a separate morpheme, but what is this morpheme?

Starting from the observation that its quality is determined by the stem, whereas the quality of the plural *-k'* is not, it is attractive to analyze this morpheme as originating locally to the stem, in fact, as intervening – both in the base structure and the derived structure – between the plural *-k'* and the stem. As for its identity, Halle and Vaux (1998) take it to be a theme marker, a classifier of the noun of sorts. I adopt this approach here as well.

But why is the class marker absent in the nominative, accusative and locative? The answer which suggests itself is that in these cases, the class marker merges with the exponents of number and case. In other words, *-s* and *-k'* do not spell out only number and case, but also class. This analysis is depicted in (12) in abstract terms, and a break down of concrete paradigms is given below in (13):

## (12) The template for Armenian declension

NOM, ACC, LOC	stem	-class&case&number
GEN, DAT, ABL	stem	-class -case&number
INS	stem	-class -case -number

## (13) Case, Number and Class

NOM	stem	-k'
ACC, LOC	stem	-s
GEN, DAT, ABL	stem	-a-/o-/i- -c'
INS	stem	-a-/o-/i- -w- -k

<sup>7</sup>This form apparently lacks the instrumental *-w/v*. That is due to phonology: the class marker *u* and the instrumental *-w* fuse into one segment. I argue for this later in this chapter.

## 7.5 Deriving the order of morphemes

According to the nano-syntactic view, morphemes are phrases. This leads to the expectation that their ordering is governed by the same rule as the ordering of phrases. The particular theory of phrasal movement adopted here is due to Cinque (2005), and I have sketched it in chapter §1. The way it (empirically) differs from traditional head-movement accounts (Travis 1984, Baker 1988) is that the head of the extended projection, the noun in our case, can move across two heads without inverting their order (14a), in violation of the head movement constraint. Derivation which obeys the head movement constraint is shown in (14b), and the movement of N across X inevitably leads to the inversion of X and Y (excorporation aside).<sup>8</sup>

- (14) a. Phrasal movement:
- 
- b. Head movement:
- 

To see that the head-movement theory leads to a wrong prediction in Classical Armenian, consider the base-generated order of the markers in question. I follow the literature and adopt the base generated hierarchy in (15), where the NP is dominated by the projections of the Classifier and Number (see Borer 2005), and finally case (see Bittner and Hale 1996).

- (15) [ K [ Num [ Cl [ N ] ] ] ]

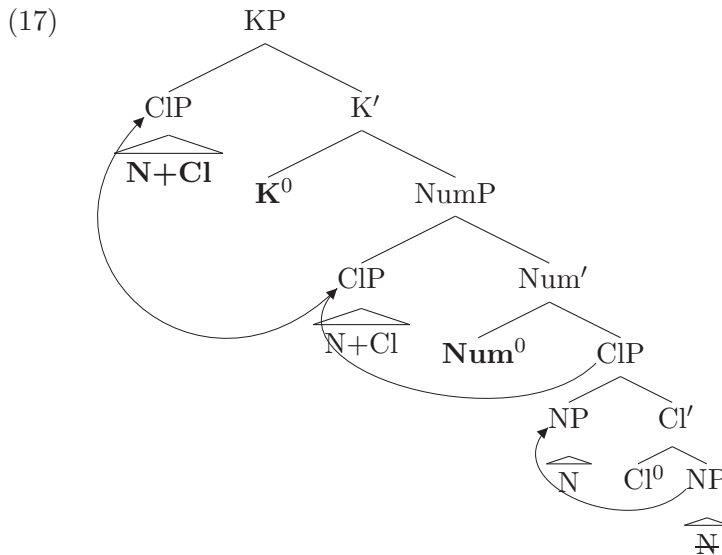
<sup>8</sup>Head movement with excorporation also leads to different predictions than Cinque compatible phrasal movement. See Cinque (2005), Muriungi (2008).

Note also that the Cinque style theory allows for all orders compatible with head movement, plus some more. Hence, even if the ordering of morphemes is overwhelmingly in accordance with the head movement constraint, that is not the point. The crucial evidence is represented by orders which are incompatible with head movement analysis.

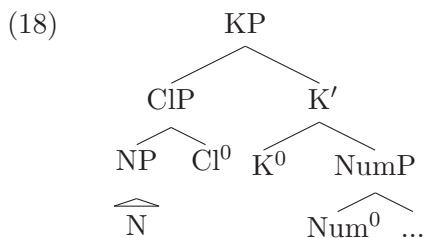
We know that N has to move higher than K, since K is a suffix; head movement then automatically produces the sequence (16), which is empirically wrong: Num follows K in Classical Armenian.

(16) \*N-Cl-Num-K

We need a derivation which looks like (17). First NP and Cl invert, forming a constituent that will keep moving as a unit. Then we add Number, which is crossed by this constituent, leading to an intermediate stage N-Cl-Num. Num must end up last in the sequence, and hence stays in situ. I put it in bold. Upon the addition of K, only the constituent N-Cl moves across K (without pied-piping Num), leading to N-Cl-K-Num. This is the correct order, and the derivation is Cinque compatible: we keep moving a constituent with the noun in it, and movement goes leftwards only.

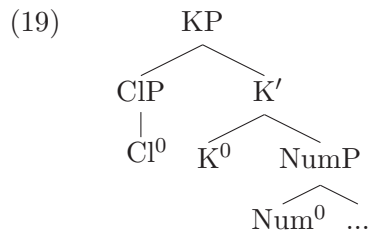


A simplified constituent structure is below:

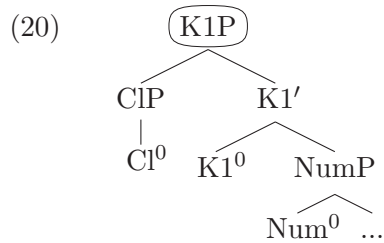


## 7.6 Packaging and Splitting

The structure (18) is subject to insertion. The lexicon of Classical Armenian contains various entries for nouns, which apply at the NP node. These entries do not interact with the slots of the paradigm where the action is. Hence, under the assumption that nodes which are spelled out can be ignored, I simplify the structure even further by leaving NP out.<sup>9</sup>



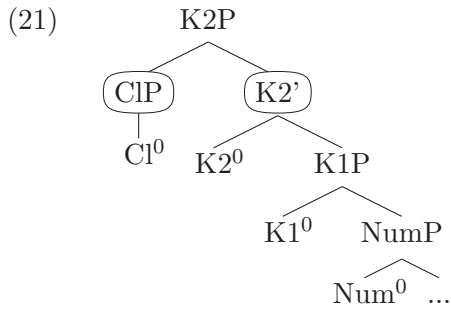
We have seen that there are three distinct ways to carve up this constituent into morphemes; the element which (descriptively) controls the cutting up is K. In unmarked cases, insertion targets the whole constituent, see (20). Such is the entry of *-k'* and *-s*, each specified, of course, for an appropriate amount of case layers.



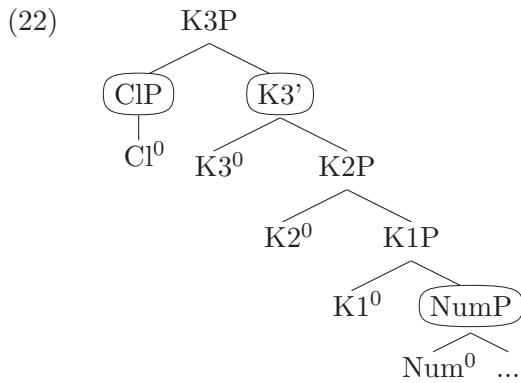
As the amount of case layers in syntax increases as we move down on the hierarchy, a lexical entry has to become bigger and bigger in order to provide a match for the whole constituent. At a certain point, Armenian lexicon gives up and splits the constituent into two entry points, see the schematic illustration in (21).

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<sup>9</sup>Under the rigid matching approach, we have to add a step of NP sub-extraction, which will derive the same constituent as shown in (19).



As the number of case layers grows even further compared to (21), the constituent has to become bigger and bigger to fuse case and number. At a certain point, the lexicon allows for two separate entry points again, as shown in (22).



The way individuation of categories works follows from two proposals. The first proposal is that the number of features increases as we move down the Case sequence. The second component is the Superset Principle. The interaction of these two tools derives the observation that if the marking for case and number is synthetic for a case X, it is also synthetic for cases lower on the hierarchy. Consider this on an example.

The ablative plural  $-c'$  has an entry big enough to spell out the constituent K2' depicted in (21). By the Superset Principle, every structure which is “smaller” than the ablative will in principle be eligible for a spell out by this marker. Hence, every case lower on the hierarchy than the ablative will also fuse number and case. (Of course, the combination need not be spelled out as  $-c'$ , if there is a better suited synthetic marker.)

However, when we move from the ablative to the instrumental, we add an extra layer not specified in the entry for  $c'$ . Hence,  $-c'$  is no longer a match, and it cannot be inserted in (22) to spell out all the case features. Consequently, the lexicon either provides an entry big enough, or spells out the constituent by a combination of markers. What happens in Armenian is that number is spelled out by  $-k'$ , and it is ignored for further insertion. The

reminder of the features is spelled out by the instrumental *-w*.<sup>10</sup>

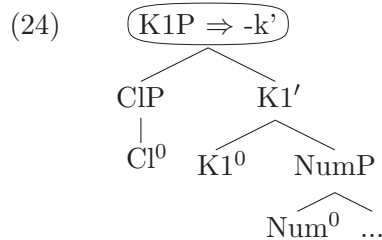
## 7.7 -n- stems

Coming back to where we started from, consider again the declension of the a-stems.

(23) Classical Armenian, a-stem declension (p.94)

	nation, SG.	nation, PL.
NOM	azg-∅	azg-k'
ACC	azg-∅	azg-s
LOC	azg-i	azg-s
GEN	azg-i	azg-a-c'
DAT	azg-i	azg-a-c'
ABL	azg-ê	azg-a-c'
INS	azg-a-w	azg-a-w-k'

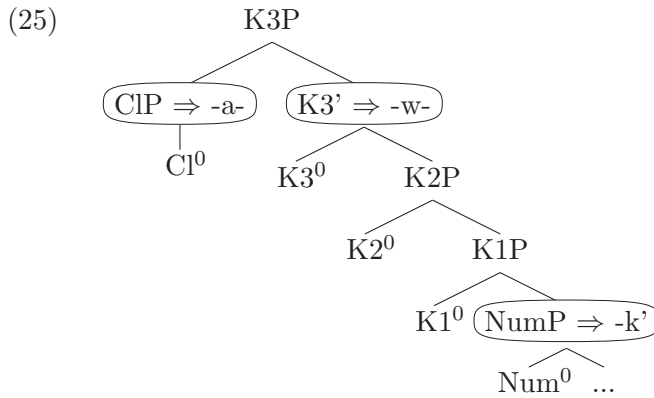
In the instrumental plural, we have identified a sequence of three morphemes: *-a-w-k'*. I have suggested that *-a-* is a class marker, which is fused together with other inflectional categories in the unmarked cases, i.e., in NOM, ACC and LOC. I show that on the example of the nominative:



Under this hypothesis, *-k'* in the nominative plural actually spells out the features which are realized as *-a-* in the instrumental. Combining these statements together, we realize that the reason why *-a-* and *-k'* cannot fuse in the instrumental plural is constituency: the features expressed as *-w-* intervene between the class marker and plural:

<sup>10</sup>The rigid matching theory has to evacuate Num to a right adjoined position. Alternatively, Num moves left, and K3P moves back to the left of it.





The structural intervention of *-w-* thus forces a single morpheme to split in two, and reveals a hidden structure inside an indivisible nominative plural *-k'*.

N-stems in Classical Armenian offer another opportunity to observe the nominative plural *-k'* break into components. I give two examples of this declension type below, each in singular and plural. The two types differ by vowel quality in NOM., ACC. and GEN.PL.

(26) Classical Armenian n-stems (p.101-2)

	race, SG.	race, PL.	part, SG.	part, PL.
NOM	az-n	az-in-k'	mas-n	mas-un-k'
ACC	az-n	az-in-s	mas-n	mas-un-s
LOC	az-in	az-in-s	mas-in	mas-un-s
DAT	az-in	az-an-c'	mas-in	mas-an-c'
GEN	az-in	az-an-c'	mas-in	mas-an-c'
ABL	az-n-ê	az-an-c'	mas-n-ê	mas-an-c'
INS	az-am-b	az-am-b-k'	mas-am-b	mas-am-b-k'

The traditional approach to n-stems (to be rejected) analyzes *-n-* and the preceding vowel (if any) as a single morpheme, which combines together with the root to form a stem. The stem is subject to further affixation by case and number morphemes. The variation in the vocalic element of the theme marker is then seen as a variation of the stem, distinct from affixation.

However, if we follow the variation of the vowel in the singular a bit more closely and compare it to the rest of the Armenian system, we notice that the vowel (if any) which precedes *-n-* is similar to the vowel we observe (as a case ending) in a-stems. The purpose of the following table is to bring the similarity out, boldfacing parts which find direct match between the paradigms. In the boldfaced forms, I follow the source grammar (p.46) and also Halle and Vaux 1998 in equating the instrumental *-w* and *-b* as phonological guises of the same underlying morpheme, realized as *-b* after consonants, and *w* after vowels.

(27) Classical Armenian, a-stem / n-stem declension

	SG., A-STEM	SG., N-STEM
NOM	azg- $\emptyset$	mas- $\emptyset$ -n
ACC	azg- $\emptyset$	mas- $\emptyset$ -n
LOC	azg- <b>i</b>	mas- <b>i</b> -n
GEN	azg- <b>i</b>	mas- <b>i</b> -n
DAT	azg- <b>i</b>	mas- <b>i</b> -n
ABL	azg- <b>ê</b>	mas-n- <b>ê</b>
INS	azg- <b>a-w</b>	mas- <b>a-m-b</b>

The observation that the markers of the a-stem declension are replicated in the n-stem declension leads to the hypothesis that the two declensions above differ only in that the second column has *-n-* where the first column has nothing. Following that analysis, we uncover two facts. The first one is a positional asymmetry between the case marker *-i-* on the one hand (precedes *-n-*), and the case markers *-ê* and *-w* on the other (which follow the *-n-*). The existence of such an asymmetry is interesting, and the way it cuts across the paradigm (ins + abl vs. the rest) helps us establish the place of the instrumental next to the ablative. (Recall that the instrumental shows no syncretisms.)

Further, the asymmetry makes sense from the perspective of our hypothesis that the system of syncretism in a given language (expressed by an ordering on the paradigm) is directly connected to other phenomena related to syntax and morphology of case. Previously, we have seen that analytic vs. synthetic alternations run along the same hierarchy. Presently, we observe that the structure which underlies syncretism manifests itself in an asymmetric ordering of the elements which express the structure. Comparison with plural where *-n-* invariably precedes K makes it clear that it is the order *-i-n* which is the odd man out. That is independently confirmed by the rarity of a situation where a case marker infixes between the root and the stem formative.<sup>11</sup>

The second observation is directly relevant for the present concerns: unlike in the singular, where we find a perfect match between the a-stem and the n-stem (modulo *n*), a vowel emerges between the root and *-n-* in the plural. The vowel finds no parallel in the declension without the *-n-*, and I put it in small caps:

(28) Classical Armenian, a-stem / n-stem declension

<sup>11</sup>In the present account, this ordering is due to phrasal movement. The root moves above case, without pied-piping the stem marker along.

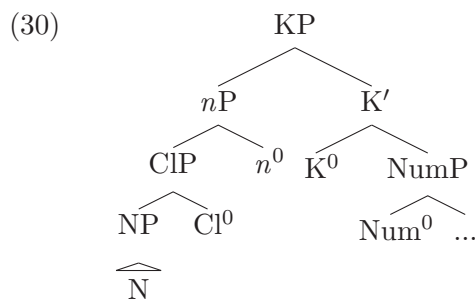
	PL., A-STEM	PL., N-STEM	PL., N-STEM
NOM	azg- <b>k'</b>	mas-U-n- <b>k'</b>	az-I-n- <b>k'</b>
ACC	azg- <b>s</b>	mas-U-n- <b>s</b>	az-I-n- <b>s</b>
LOC	azg- <b>s</b>	mas-U-n- <b>s</b>	az-I-n- <b>s</b>
GEN	azg- <b>a-c'</b>	mas- <b>a-n-c'</b>	az- <b>a-n-c'</b>
DAT	azg- <b>a-c'</b>	mas- <b>a-n-c'</b>	az- <b>a-n-c'</b>
ABL	azg- <b>a-c'</b>	mas- <b>a-n-c'</b>	az- <b>a-n-c'</b>
INS	azg- <b>a-w-k'</b>	mas- <b>a-m-b-k'</b>	az- <b>a-m-b-k'</b>

I suggest that the emergence of this vowel can be understood along the same lines which lead to the emergence of the class marker *-a-* in the instrumental plural of a-stems (*-a-w-k'*). I have proposed that the features expressed by *-w-* structurally intervene between the class marker and the nominative plural *-k'*, making it impossible for *-k'* to spell out both. In this case, *-n-* plays the same role.

To formalize the analysis, I propose the following. First, I assume that the stem marker *-n-* is adjacent to the vocalic class marker in the base-generated sequence, which is motivated by their similar function. I do not have much support for putting *-n-* either higher or lower than the vocalic class marker *-a-*. It makes more sense from the perspective of the ordering of the elements to put *-n-* higher, which I show in (29). Nevertheless, what I have to say about this issue is compatible with the inverse base order of these two markers as well.

$$(29) \quad [ K [ Num [ n [ Cl [ N ] ] ] ] ]$$

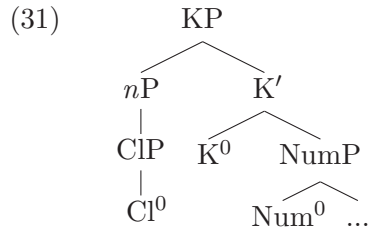
The derivation starts by a series of roll up movements of the Noun: first leading to N-Cl, then N-Cl-n and finally to [N-Cl-n]-Num. Upon the merger of K (K ... [N-Cl-n]-Num), the constituent [N-Cl-n] moves across it without pied-piping the Num, leading to the following (simplified) structure:



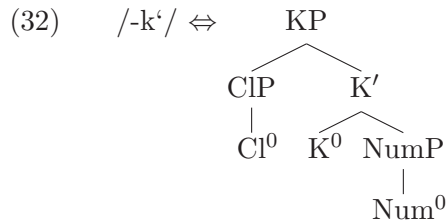
The left-peripheral NP need not concern us; it is spelled out and ignored for further insertion. The same obtains for the *-n-*.<sup>12</sup> The simplified structure

<sup>12</sup>Once again, the rigid matching approach can perform two steps of sub-extraction.

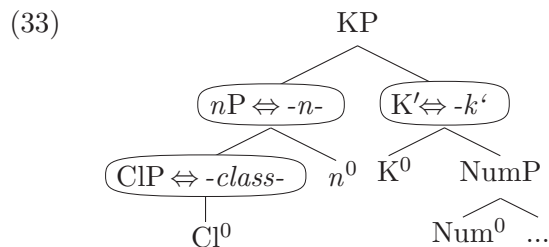
with these markers ignored is shown in (31):



Now recall from above that  $-k'$  (and  $-s$ ) spell out a constituent composed of the Class marker, K heads, and Plural, as depicted below:



This constituent, however, is unable to match KP in (31), because of the non-branching  $nP$  node, which intervenes between K and ClP. As a result, Class and K+Num have to split. This is shown in (33):



Thus, the way insertion is set up predicts that once the class marker is structurally separated from the case markers by the intervening  $-n-$ , each must be spelled out separately. This in turn explains the appearance of the additional class marker between the root and the stem marker  $-n-$  in NOM, ACC and LOC plural. This is an interesting result, because the occurrence of the vowel is unexpected on other grounds; in particular, its emergence disturbs the otherwise perfect parallel (modulo  $n$ ) between the a-stem and the n-stem declensions, shown below:

(34) Classical Armenian, endings of the a-stem / n-stem declension

	A sg.	N sg.	A pl.	N pl.
NOM	-∅	-∅-n	-k'	-U-n-k'
ACC	-∅	-∅-n	-s	-U-n-s
LOC	-i	-i-n	-s	-U-n-s
GEN	-i	-i-n	-a-c'	-a-n-c'
DAT	-i	-i-n	-a-c'	-a-n-c'
ABL	-ê	-n-ê	-a-c'	-a-n-c'
INS	-a-w	-a-m-b	-a-w-k'	-a-m-b-k'

As things stand, however, this picture leads also to the prediction that the vowel which appears between the noun and *-n-* is identical to the class marker which occurs also in the oblique cases. As I show in a moment, this is correct for some nouns, but it is wrong for the paradigm above. We do not get *-a-*, but *-u-*.

I do not know what is the source of the difference. What is needed is a proposal of how individual class markers break down into components, where exactly *-n-* and *-a-* come in and so on and so forth. Alternatively, one can see the *-u-* as a result of ablaut, output of the apophonic derivation applied to *-a-* (see Guerssel and Lowenstamm 1996). I leave this for future research.

In this light, however, consider the plural forms of the noun 'sister in law,' shown below:

(35) Classical Armenian, 'sister in law' (p.108)

sister in law, PL.	
NOM	nu-(a-n)-k'
ACC	nu-(a-n)-s
LOC	nu-(a-n)-s
GEN	nu-a-(n)-c'
DAT	nu-a-(n)-c'
ABL	nu-a-(n)-c'
INS	nu-a-w-k'

This particular noun shows variable declension in the NOM – ABL plural: *n-*stem or *a-*stem, which provides us with a minimal pair. Importantly, the inclusion of *-n-* in NOM, ACC or LOC immediately leads to the emergence of an additional vowel, *-a-*. Equivalently, the absence of *-n-* leads to the disappearance of this vowel. The paradigm shown above thus bears out the predictions in their strongest form.

## 7.8 On phonological conflation

In this section, I address an apparent syncretism of the instrumental with the dative (and other cases) across the ablative in *u*-stems, shown in (36).

(36) Instrumental-dative syncretism in Classical Armenian

<u>time, SG.</u>	
NOM	žam
ACC	žam
LOC	žam-u
GEN	žam-u
DAT	žam-u
ABL	žam-ê
INS	žam-u

The discussion of this piece of data will ultimately show that the syncretism is irrelevant for the Case sequence, because it is the product of a phonological conflation. The discussion will also provide additional evidence for the analysis of morpheme splitting given in the preceding section.

The highlighted syncretism goes against the order of cases in Classical Armenian, because instrumental must be separated from the dative by the ablative. (This has been established on the grounds of the syncretism in plural, where the marker *-c'* groups ablative with dative to the exclusion of the instrumental.) This creates an apparent situation in which non-adjacent layers of case show syncretism, and this cannot be accounted for by the present system. However, I am going to argue that the syncretism is the result of a phonological process which merges *u* and *w* into one segment, (37), and thus the underlying system looks as depicted in the table (38).

(37) Dative – Instrumental homophony is due to phonology

- a. Dat: *u*
- b. Ins:  $u-w \Rightarrow -u$

(38) The proposed underlying system of Classical Armenian

<u>time, SG.</u>	
NOM	žam
ACC	žam
LOC	žam-u
GEN	žam-u
DAT	žam-u
ABL	žam-ê
INS	žam-u-w ( $\Rightarrow -u$ )

There are two aspects of the proposal. The first aspect is that the sequence *uw* is simplified to *u* in Classical Armenian. The second aspect is the hypothesis that there is an underlying *-uw* present in the instrumental. I provide evidence for these two claims in turn.

The evidence for the existence of the relevant phonological process (whose existence has been suggested also in the source grammar (p.46)) consists in showing that the process is attested elsewhere in the language. The following example shows this: the stem *zimu-* combines with the affix *-wor*, creating the relevant sequence *uw*. The resulting form *zimu-or* then confirms that *uw* yields *u* quite generally.

- (39)    *zimu*    *-wor*    → *zimuor*  
           *weapon* *-suffix*    *soldier*

Now to the second point: what evidence is there for the underlying presence of the sequence *-uw*? The evidence is provided by the (singular) declension of the noun ‘day,’ shown in (40) in comparison with the *u*-stem ‘time.’

(40)    An r-stem ‘day’ with a mysterious *b*

	<u>time, SG.</u>	<u>day, SG.</u>
NOM	žam-∅	aw-∅-r
ACC	žam-∅	aw-∅-r
LOC	žam- <b>u</b>	aw- <b>u</b> -r
GEN	žam- <b>u</b>	aw- <b>u</b> -r
DAT	žam- <b>u</b>	aw- <b>u</b> -r
ABL	žam-ê	aw-r-ê
INS	žam- <b>u</b>	aw- <b>u</b> -r-B

We can observe that in NOM-ABL, the noun ‘day’ inflects just like the *u*-stem ‘time,’ plus an additional consonant. The two declensions thus show a similar parallel as the *n*-stem paradigm ‘part’ compared to the *a*-stem paradigm ‘nation.’ I repeat the two latter paradigms in (41).

(41)    Classical Armenian, a-stem / n-stem declension

	<u>nation, SG.</u>	<u>part, SG.</u>
NOM	azg-∅	mas-∅-n
ACC	azg-∅	mas-∅-n
LOC	azg- <b>i</b>	mas- <b>i</b> -n
GEN	azg- <b>i</b>	mas- <b>i</b> -n
DAT	azg- <b>i</b>	mas- <b>i</b> -n
ABL	azg-ê	mas-n-ê
INS	azg- <b>a-w</b>	mas- <b>a-m-b</b>

What is to be noted is the presence of two markers (apart from *r*) in the instrumental singular of the paradigm ‘day’ in (40) (*u* and *b*), which contrasts with apparently only one marker in the paradigm ‘time’ (*u*). This contrast sticks out when we realize that the dative singular *u*, which shows an apparent syncretism with the instrumental *u*, does not split, but it is ordered to the left of *r*. Hence, what is initially mysterious is the emergence of the *-b* in *aw-u-r-b*; that’s why I have put it in small caps in (40).

The point is that the unexpected appearance of *b* becomes predictable and completely regular once we adopt the proposal that the instrumental *-u* is underlyingly *u-w*. This sequence is merged into one segment in cases where they end up adjacent, but it is preserved when they are separated by the consonantal stem marker. The splitting of the class marker *u* and the case marker *w/b* by the consonantal stem marker is completely parallel to the instrumental singular of n-stems, shown in (41).

(42)      (43)      An r-stem ‘day’ explained

	time, SG.	day, SG.
NOM	žam- $\emptyset$	aw- $\emptyset$ -r
ACC	žam- $\emptyset$	aw- $\emptyset$ -r
LOC	žam- <b>u</b>	aw- <b>u</b> -r
GEN	žam- <b>u</b>	aw- <b>u</b> -r
DAT	žam- <b>u</b>	aw- <b>u</b> -r
ABL	žam-ê	aw-r-ê
INS	žam- <b>u-w</b> ( $\Rightarrow$ -u)	aw- <b>u-r-B</b>

This provides the needed evidence for the underlying presence of the *w* in the instrumental of u-stems. The paradigm of ‘day’ is interesting also for the phenomenon of morpheme splitting discussed in the previous section. Because of the parallel between n-stem ‘time’ and the r-stem ‘day,’ we now predict that in the nominative, accusative and locative plural, a class marker will emerge between the root *aw* ‘day’ and the consonantal stem marker *r*. The prediction is borne out. As the table below shows, the class marker *-u-* (in small caps) appears in NOM, ACC and LOC, even though this marker has no counterpart in the (otherwise parallel) declension of the u-stem noun ‘time:’

(44)      Morpheme splitting in r-stems



	time, PL.	day, PL.
NOM	žam-k'	aw-U-r-k'
ACC	žam-s	aw-U-r-s
LOC	žam-s	aw-U-r-s
GEN	žam-u-c'	aw-u-r-c'
DAT	žam-u-c'	aw-u-r-c'
ABL	žam-u-c'	aw-u-r-c'
INS	žam-u-w-k'	aw-u-r-b-k'

The paradigms above show that the appearance of the vocalic class marker in the relevant cells of the paradigms is not an effect of a particular class (the n-stems or the r-stems). It is a structurally governed process, which appears every time the relevant structural configuration obtains.

## 7.9 Summing up

Classical Armenian offers some more intriguing patterns which I won't go into here. The purpose of this chapter was to show how the interaction of syntax and insertion delivers the effects which are usually seen as belonging in the domain of a dedicated morphological structure.

We started from the line-up of cases determined by syncretism, and realized that the synthetic – analytic spell out of categories runs along the same hierarchy. I have proposed that the effects are due to the fact that in Classical Armenian, class and number are structurally separated by layers of case. As the number of these layers grows, lexical items have to accommodate more and more intervening material. The resistance to package too big a chunks of features leads to a gradual individuation of categories, first class and then number are factored out.

This view was supported by the fact that not only case has this effect; the stem marker -n- also intervenes between the class and the number/case marker, which leads to their individuation even in the unmarked nominative.

The analysis presented here thus derives various packaging and morpheme splitting effects from two general mechanisms: syntax (with Cinque compatible movement) and phrasal spell out. There are no case specific morphological operations of Fusion or Fission; instead, packaging is driven by phrasal spell out, and splitting by structural intervention.

The significance of these facts for the model of grammar adopted and developed here is that while the spell out of a structure can feel like shifting sands, there is no need to give up the idea that syntax and lexicalization is all we need. The interaction of a rigid (in fact, universal) functional structure with (constrained) movement and (non-terminal) lexicalization accounts for the richness of surface phenomena.



# Chapter 8

## The Universal Contiguity

The aim of this chapter is to look more closely at some empirical and theoretical issues surrounding the Universal Contiguity. There are two reasons for devoting a whole chapter to this issue. First, the Universal Contiguity helps us select among possible representations of case. In particular, it cannot be captured by traditional cross-classification, but it can be captured by a standard binary syntactic structure. Because of this, this chapter enriches the sample of languages and investigates certain patterns in more detail than it was possible in the selective overview of the section 1.1.

Second, it has been claimed in the literature (e.g., Plank 1991) that the adjacency requirement in a total linear ordering is too strong a restriction on case syncretism. Hence, we need to see how the proposal squares with some of the syncretism facts presented by Plank (1991) as problematic.<sup>1</sup>

My goal here is to argue that the counterexamples we find are mostly either the result of a phonological process, or just accidental. Further, I show that when the counterexamples are not accidental, then they are due to the intervention of some independent mechanisms of grammar. For instance, we will see that genitives of personal pronouns are often ill-behaved from the perspective of Universal Contiguity in general and the Case sequence in particular. At the same time, it seems that genitives of personal pronouns “misbehave” in other respects as well, and they are better classified as possessive pronouns, rather than run-of-the-mill genitives. The fact that expressions which violate the Universal Contiguity are grammatically special in other ways as well then provides an interesting support for the hypothesis, rather than against it.

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<sup>1</sup>Note that Plank (1991) also rejects the stand that anything goes: “[P]atterns of homonymy are [...] manifold. Their diversity, all the same, is subject to limitations which can be expressed in terms of the arrangement of paradigms. If such relations cannot always be linear, it is these partly linear or partly circular structures themselves which reflect the networks of functional and semantic affinities...” (p.191).

## 8.1 Kinds of homophonies

Not all homophonies are the same, and I start by making clear which ones are relevant for present concerns and which ones are not. In the present model, the Universal Contiguity holds at lexical insertion. This level is followed by phonological computation which has the power to alter (in predictable ways) the representations which arise as a result of insertion. If such a phonological process conflates two distinct representations into one, causing a homophony, this will have no bearing on the validity of the proposal.

- (1) Homophony caused by a phonological conflation of two underlying patterns is irrelevant for (Universal) Contiguity.

Further, if a syncretism is an instance of an accidental homophony (e.g., English *two/too*), the counterexample is irrelevant as well. That is because the theory regulates the spell out of multiple cases by a single lexical item, and does not say anything about multiple lexical items, even if these turn out to have the same sound associated to them. The crucial question then is what is to be treated as accidental.

In this respect, I follow Johnston (1996) and take advantage of the fact that some of the languages under consideration exhibit a large degree of allomorphy. In these languages, I am going to consider as non-accidental those syncretisms which are replicated by at least two markers. On the other hand, syncretisms which are exhibited only by a single marker can be accidental.

- (2) Accidental vs. non-accidental syncretisms in languages with allomorphy
  - a. Accidental syncretisms are limited to a single exponents
  - b. Non-accidental syncretisms are replicated by various markers

What about languages with little allomorphy? Here, I will rely on a characteristic of non-accidental syncretism, namely that it targets relatively large classes of items (for instance plural), and within that class, it is distributed across various parts of speech (nouns, adjectives, pronouns).<sup>2</sup> This criterion is used in e.g., Plank (1991). On the other hand, accidental syncretism is limited to a specific feature combination which delimits a relatively small class; it is “isolated.”

- (3) Accidental vs. non-accidental syncretisms in languages without allomorphy
  - a. Accidental syncretism is isolated to a specific feature combination
  - b. Non-accidental syncretism targets larger morpho-syntactic classes

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<sup>2</sup>Similarly, it can be characteristic of a part of speech, and then it is attested in various numbers.

Why should this be so? The idea is that when we have two independent but homophonous exponents, each will be restricted to some context. Accidental homophony arises in cases where the contexts intersect. Because of this, the distribution of the accidental homophony is necessarily narrower than that of the individual markers.

I show that on an example. Assume a language with two inflection classes, I and II, and two genders, masculine and feminine. Suppose further that there are two homophonous markers,  $M_1$  and  $M_2$ , such that  $M_1$  marks the nominative of masculine nouns, and  $M_2$  marks the genitive of the second declension. This gives the following picture:

(4) Narrow distribution of accidental homophony

	MASC, CLASS I	MASC, CLASS II	FEM, CLASS II	FEM, CLASS I
NOM	$M_1$	$M_1$		
ACC				
GEN		$M_2$	$M_2$	

As can be observed, this produces a non-contiguous homophony in the masculine paradigm of the second declension. Crucially for the criterion (3), the paradigm with the accidental homophony is identified by a specific feature combination defining a narrow class (masculines of the 2nd declension), rather than a general context (all masculines).

Of course, I do not want to say that syncretisms with narrow extensions are always accidental. However, I accept the conclusion that the evidence offered by such paradigms is of limited value for the understanding of mechanisms that govern syncretism.

## 8.2 Where we are

Let me first recapitulate the empirical results reached in the preceding chapters. I have started from Modern and Ancient Greek, showing that their syncretisms can be expressed by a total linear order. The order was NOM – ACC – GEN for Modern Greek, and NOM – ACC – GEN – DAT for Ancient Greek. I have then introduced the findings of Baerman et al. (2005) who report that in their 200 language sample, if one of nominative or accusative is syncretic with an oblique case, it is the accusative.<sup>3</sup> To account for this, I have concluded that there is a universal sequence of cases, the Case sequence, where only contiguous regions show non-accidental syncretism. The sequence enabled us to encode the observations by Baerman et al. (2005) by putting

<sup>3</sup>There are counterexamples, but as far as I know, these should be reanalyzed. See the discussion of Arabic below. The syncretism of nominative with an oblique is also attested in Slovene and Czech, which I discuss later in this chapter. In both cases I show that a reanalysis is justified on independent grounds.

ACC next to the oblique cases, at the same time separating the NOM case from them: NOM > ACC > OBL.

Then we have seen that this hierarchy is also at work in Arabic. Arabic has 3 cases (NOM, ACC, GEN) and one non-accidental syncretism: accusative with genitive. There is also an irrelevant nominative – genitive syncretism caused by a phonological conflation. These facts follow the cross-linguistically established order NOM – ACC – GEN. The orders are shown in the first three lines of table below.

(5) Summing up Universal Contiguity

Language	A possible ordering of cases with syncretisms adjacent							
Ancient Greek	NOM	ACC		GEN	DAT	–		
Modern Greek	NOM	ACC		GEN	–	–		
Arabic	NOM	ACC		GEN	–	–		
Russian	NOM	ACC		GEN	PREP	DAT	INS	
Sanskrit	NOM	ACC	LOC	GEN	ABL	DAT	INS	
Latin	NOM	ACC		GEN	LOC	DAT	INS	
Classical Armenian	NOM	ACC	LOC	GEN		DAT	ABL	INS
Case sequence	NOM	ACC		GEN		DAT	INS	

Then we looked at languages with more cases, and this allowed us to split the group of oblique cases into finer-grained categories. It was proposed that the ordering within the obliques is cross-linguistically consistent with the ordering GEN > DAT > INS > COM. I have illustrated the validity of the ordering on Russian and Sanskrit, see (5).

The interest raised by these languages is the fact that they bring in additional cases (locative, ablative, prepositional), which end up sandwiched between the cases which form the line of the Case sequence as originally stated. For these cases, I have argued in ch. §3 that they are in fact an inherent part of the sequence, but their presence in other languages is blurred due to total syncretism, but additional reasons for “missing cases” will be investigated in the course of this chapter.

Still in ch. §3, I have briefly introduced Latin, shown in the row below Sanskrit. Finally, in ch. §7, I discussed the nominal declension of Classical Armenian, with the order shown in the last row of the table.<sup>4</sup>

Not mentioned in the table are Ugro-Finnic languages (Estonian, Finnish, Northern Saami) which I discussed in ch. §3, as well as some languages with prepositional syncretism (§1.8.1) and applicative syncretism (§4.6.3). In the Ugro-Finnic languages, we have seen frequent NOM/ACC and ACC/GEN syncretisms, but their oblique cases do not exhibit complex syncretism patterns as known from the discussed Indo-European languages.

<sup>4</sup>I will come back to both Latin and Classical Armenian in this chapter, and discuss potential problems for the ordering, mostly in their pronominal declensions.

Baerman et al. (2005) observe that syncretisms in oblique cases is indeed a characteristic feature of Indo-European languages, practically absent elsewhere. Consequently, Indo-European is where I have looked for most of the time, and will continue doing so in this chapter.<sup>5</sup>

## 8.3 More of Slavic

The Slavic languages are traditionally divided on East, West and South Slavic (see, e.g., Schenker 1993). The case systems of East and West Slavic are quite similar; South Slavic languages, on the other hand, are characterized by eliminating the case distinctions made by the East and West Slavic branches. Macedonian and Bulgarian (the latter briefly discussed in §1.8.1) have retained only the nominative and accusative case, and replaced all other cases by prepositions.<sup>6</sup>

I start the investigation of Slavic by looking at two South Slavic languages, Serbian and Slovene. These two languages still show richness of cases and syncretic patterns, making the enterprise more interesting.

### 8.3.1 Serbian

Recall that syncretism in Russian (East Slavic) is restricted by adjacency in the order:

(6) Russian: NOM – ACC – GEN – PREP – DAT – INS

As we will see below, syncretisms in Serbian are consistent with the same order as syncretisms in Russian, which I state in (7). (The generalization is based on the paradigms given in Brown and Alt 2004 and Gvozdanović 1991.)

(7) Serbian: NOM – ACC – GEN – [PREP – DAT] – INS

I have put brackets around the [PREP – DAT] pair for the following reason. Serbian never shows distinct endings for the prepositional and dative, suggesting that this might in fact be a “single” case. Despite this, both my sources still distinguish prepositional and dative. Why? It is because some monosyllabic nouns show different stress pattern in the prepositional and in the dative. Following these sources, I will present here the paradigms with distinct dative and prepositional cells, keeping in mind that it is also possible that the stress

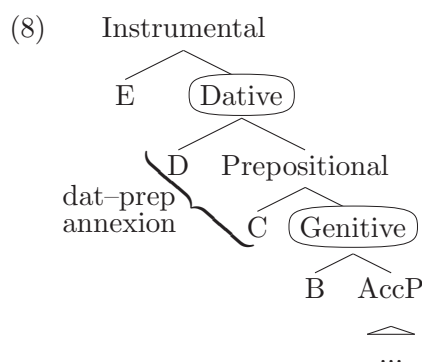
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<sup>5</sup>In non-Indo-European languages, syncretism takes on the form of total syncretism (if present at all). The present framework thus makes a prediction for such languages as well, but I do not address this here.

<sup>6</sup>Recall that the difference between these two languages and the remaining Slavic languages in terms of the case inventory can be modeled as the difference in the height of NP\* movement.

difference stems from orthogonal factors, and that there is in fact only a single “surface” DAT/PREP case in Serbian.<sup>7</sup>

The fact that Serbian is on its way to eliminate the prepositional case raises an interesting question: how can we capture the change, and the resulting difference between Serbian and those Slavic languages which have kept the prepositional? Drawing on the proposal made in ch. §3, we can encode this by saying that Serbian simply stopped distinguishing two layers of structure. The underlying functional sequence for both Serbian and, say, Russian is the same and each involves a separate layer for the prepositional. However, there is no lexical item with prepositional as the highest layer; every lexical entry will either be specified for the higher dative, or the lower genitive, see (8). As a result, the prepositional is annexed by the dative.



After this general remark concerning the Serbian prepositional, let me now present here all the nominal paradigms given in Gvozdanović (1991). Brown and Alt (2004) give a more extensive list, and I incorporate from their description those paradigms which bring additional information into the picture (these are the paradigms of ‘man’ and ‘heart’).<sup>8</sup>

(9) Serbian nominal declension: singular

	son	city	man	village	heart	sheep	death
NOM	šîn	grâd	muž	sèlo	srce	òvca	smřt
ACC	šîna	grâd	muža	sèlo	srce	òvcu	smřt
GEN	šîna	grâda	muža	sèla	srca	òvcē	smřti
PREP	šînu	grâdu	mužu	sèlu	srcu	òvci	smřti
DAT	šînu	grâdu	mužu	sèlu	srcu	òvci	smřti
INS	šînom	grâdom	mužem	sèlom	srcem	òvcōm	smřću

<sup>7</sup>Recall that the prepositional only occurs after prepositions, and these in turn are strongly prosodically integrated with the following DP.

<sup>8</sup>These two additional paradigms are deducible on phonological grounds, once we know that Serbian grammars count with a rule which turns *o* into *e* in certain environments.



## (10) Serbian nominal declension: plural

	son	city	man	village	heart	sheep	death
NOM	s̃novi	gr̃dovi	muževi	s̃l̃a	srca	ôvce	sm̃ti
ACC	s̃nove	gr̃dove	muževe	s̃l̃a	srca	ôvce	sm̃ti
GEN	sinóvā	gradóvā	mūžēvā	s̃l̃ā	s̃rcā	ovácā	sm̃tī
PREP	s̃novima	gr̃dovima	muževima	s̃l̃ima	srcima	óvcama	sm̃tima
DAT	s̃novima	gr̃dovima	muževima	s̃l̃ima	srcima	óvcama	sm̃tima
INS	s̃novima	gr̃dovima	muževima	s̃l̃ima	srcima	óvcama	sm̃tima

The first and most important thing to note here is that there is no syncretism in these paradigms which does not obey the ordering of the Case sequence. This can be checked graphically: no syncretism crosses an intervener in a given column. This means that Serbian nouns are perfectly in line with the Universal Contiguity.

Keeping in mind that some of these syncretisms may be accidental, the next question is how well attested individual syncretisms are. With the exception of (11c), all syncretisms are quite well attested:

- (11) a. NOM – ACC: neuters in the singular and plural; feminine plurals  
 b. ACC – GEN: the singular of masculine animates  
 c. GEN – PREP: the singular of nouns of the paradigm ‘death’  
 d. PREP – DAT: almost omnipresent  
 e. DAT – INS: plurals

Next, I present pronominal paradigms:

## (12) Serbian (full) pronouns

	1SG	2SG	3M/N.SG	3F.SG	1PL	2PL	3PL
NOM	ja	ti	on ono	ona	mi	vi	on-i / -a / -e
ACC	mene	tebe	njega	nju	nas	vas	njih
GEN	mene	tebe	njega	nje	nas	vas	njih
PREP	meni	tebi	njemu	njoj	nama	vama	njima
DAT	meni	tebi	njemu	njoj	nama	vama	njima
INS	mnom	tobom	njim	njom	nama	vama	njima

The situation with pronouns is similar as with full nouns. We get a frequent ACC – GEN syncretism, and the omnipresent PREP – DAT syncretism. In the plural, INS joins in with the latter pair. Concluding: Serbian can be thought of as another poster child for Universal Contiguity, with no violations thereof. Further, almost all of the allowed syncretisms are well attested, with only GEN – PREP restricted in scope. Last but not least, we have seen that the present model can capture – without any additions – the development of Serbian where the prepositional is being swallowed by the dative.

### 8.3.2 Slovene

Another South Slavic language, Slovene, keeps all the six cases distinct: there is no PREP – DAT annexion, unlike in Serbian. My description here is based on Greenberg (2008) and Herrity (2000), see also Caha (2008) and Börjesson (2006) for more theoretical approaches. The declension paradigms in the reference grammars are extensive and do not permit an exhaustive display. Let me then just present what is relevant from the perspective of syncretism, starting with those paradigms that are in line with the Universal Contiguity. For convenience, I repeat the Slavic specific mutation of the Case sequence below:

(13) Slovene: NOM – ACC – GEN – PREP – DAT – INS

All of the possible pairs are attested in Slovene, and I illustrate part of this in the table below. The graphics follow Greenberg (2008), where “the acute mark (á) signifies a long, lowered or “rising” pitch; the circumflex (â) marks a long, raised or “falling” pitch; the grave (à) marks a short, raised or “falling” pitch” (op.cit., p.21).

(14) *Syncretisms in Slovene*

	table, du.	peach, sg.	peach, pl.	apple, sg.	farmer du.	farmer sg.	I
NOM	míz-i	brêskv-ø	brêskv-e	jábolk-o	kmèt-a	kmèt-ø	jàz
ACC	míz-i	brêskv-ø	brêskv-e	jábolk-o	kmèt-a	kmét-a	mén-e
GEN	míz	brêskv-e	brêskv-ø	jábolk-a	kmèt-ov	kmét-a	mén-e
PREP	míz-ah	brêskv-i	brêskv-ah	jábolk-u	kmèt-ih	kmét-u	mén-i
DAT	míz-ama	brêskv-i	brêskv-am	jábolk-u	kmét-oma	kmét-u	mén-i
INS	míz-ama	brêskv-ijo	brêskv-ami	jábolk-om	kmét-oma	kmét-om	men-ój

(15) Syncretisms

- a. NOM – ACC is widespread; notably in all neuters, and all duals.
- b. ACC – GEN: characteristic of most pronouns, and all masculine animate nouns in the singular
- c. PREP – DAT: all singular nouns
- d. DAT – INS: all duals

As we can observe, these syncretisms target whole classes of items identifiable by their category (e.g., dual). To the extent that given categories show allomorphy, the syncretism is repeated by more than one exponent. As highlighted in §8.2, this is taken as the criterion and hallmark of non-accidental syncretism. The remaining syncretism is GEN – PREP. I show it below:

(16) *Syncretism of genitive and prepositional in Slovene*

	my, pl.m.	both	we	two of us	thread,sg.	lady,sg.
NOM	mɔj-i	dv-â	mî	mîdva	nît	gosp-á
ACC	mɔj-i	dv-â	nà-s	ná-ju	nît	gosp-ó
GEN	mɔj-ih	dv-ēh	nà-s	ná-ju	nít-i	gosp-é
PREP	mɔj-ih	dv-ēh	nà-s	ná-ju	nít-i	gosp-é
DAT	mɔj-im	dv-ēma	nàm	ná-ma	nít-i	gosp-é
INS	mɔj-imi	dv-ēma	nami	ná-ma	nít-jo	gosp-ó

The first two columns show two syncretic pairs of GEN – PREP. The syncretism is characteristic for all adjectives (and other adjective-like items) in the plural. However, this category does not exhibit allomorphy, and consequently, the syncretism is not replicated by various exponents. (The markers *ih* and *ēh* plausibly decompose into a vocalic part, appearing in all oblique cases, and the GEN – PREP marker *-h*, which is then the only marker with specifically GEN – LOC distribution. Thus, we have only one marker which exhibits the relevant distribution.)

However, there are more instances of GEN – PREP syncretism, which show its non-accidental nature, and they are shown in the last four columns of the table. Each of them extends to other cases, which is irrelevant for the GEN – PREP syncretism itself. (What is relevant, though, is that they extend to the neighbors of this pair.) Thus, we find two triplets of ACC – GEN – PREP (a pattern characteristic of plural and dual personal pronouns), and also two instances of GEN – PREP – DAT, in two classes of feminine singular nouns (though not with all feminines).

Expanding the Slovene database still, we find one more triplet, NOM – ACC – GEN, illustrated below, which can also be illustrated by two allomorphs, although it is somewhat restricted:

(17) *Syncretism of NOM – ACC – GEN in Slovene*

	day,du.	accountant,sg.
NOM	dn-í	računovod-ja
ACC	dn-í	računovod-ja
GEN	dn-í	računovod-ja
PREP	dn-éh	računovod-ju
DAT	dn-éma	računovod-ju
INS	dn-éma	računovod-jem

Apart from these, the following problematic syncretisms are found:

(18) *Non-adjacent syncretisms in Slovene*

	this, n.	traveller, pl.	this, f.
NOM	tô	pótnik-i	tâ
ACC	tô	pótnik-e	tô
GEN	têga	pótnik-ov	tê
PREP	têm	pótnik-ih	têj
DAT	têmu	pótnik-om	têj
INS	têm	pótnik-i	tô

The paradigms present a challenge for the Universal Contiguity, because the confluations do not target contiguous regions on the Case sequence. Thus, the present system does not allow other options of analysis than phonological conflation, or a plain accident. I now look at the syncretisms in turn.

There is independent evidence that the first paradigm (the syncretism of PREP and INS of the proximal demonstrative ‘this’) is a case of phonological conflation. It can be shown that there are two distinct underlying forms, *-em* (DAT) and *-im* (INS). These are both realized as *-em* under the influence of tone (which is marked by the diacritic above the *e* in the relevant paradigms). To see that, consider the paradigm of the distal demonstrative ‘that,’ which is based on the form of the proximal ‘this’ by prefixing *tîs-*:

- (19) The phonological nature of the PREP – INS syncretism I

	that, n.	this, n.
NOM	tîs-t-o	t-ô
ACC	tîs-t-o	t-ô
GEN	tîs-t-ega	t-êga
PREP	tîs-t-em	t-êm
DAT	tîs-t-emu	t-êmu
INS	tîs-t-im	t-êm ( $\Leftarrow$ t-îm)

As can be observed, the prefixation of *tîs-* “steals” the tone from the vowel of the ending. Once that happens, the lexical difference between the prepositional (*-em*) and the instrumental (*-im*) shows up. Thus, I add the presumed source of the instrumental *t-êm* to the bottom right cell of the paradigm of ‘this.’

This analysis is supported by the observation that all paradigms where the ending has no tone show a difference between PREP and INS. As an illustration, consider the paradigm of the possessive pronoun ‘your.’

- (20) The phonological nature of the PREP – INS syncretism II

	this,n.	your,n.
NOM	t-ô	váš-e
ACC	t-ô	váš-e
GEN	t-êga	váš-ega
PREP	t-êm	váš-em
DAT	t-êmu	váš-emu
INS	t-êm	váš-im

Here I close the discussion of the PREP – INS syncretism, concluding that there is solid evidence for phonological conflation. Now I turn to the other two paradigms.<sup>9</sup>

Similar evidence, although weaker, is available also for the syncretism of nominative and instrumental. Here, nominative and instrumental plurals show differences in tone.<sup>10</sup> Nouns with the acute tone in the nominative plural (e.g., *kováč-i* ‘blacksmith, NOM.PL.’), allow for a circumflex tone in the instrumental (*kováč-i* ‘blacksmith, INS.PL.’). This is an indication that despite the segmental homophony, the nominative and instrumental are different.

Further, the paradigm with the offending syncretism has “counterexamples” to it. As Herrity (2000:p.50) points out, “[t]he noun *otròk* ‘child’ declines regularly [i.e., just like ‘traveller’] in the singular and dual. In the plural, however, its nominative and [prepositional] forms have **-c-** instead of **-k-** before the case endings.” Thus, we get *otròc-i* ‘children, NOM. PL.’ but *otrók-i*, ‘children, INS.PL.’<sup>11</sup> The differential behavior of NOM.PL. and INS.PL. casts further doubt on the non-accidental nature of this syncretism: if it was a deep-seated fact that NOM and INS of this declension go together, why the difference for the noun ‘child’?

The last one of the syncretisms (ACC – INS syncretism in certain feminine singular paradigms) does not exhibit differential behavior, and the present

<sup>9</sup>The pattern of the PREP – DAT – INS triplet is interesting in its own right, even after the problematic syncretism is removed. That is because the PREP shows *-m*, the dative apparently adds an *-u*, leading to *-m-u*, but then the *-u* disappears in the instrumental, and the quality of the vowel preceding *-m* changes instead. Similar pattern can be observed in other Slavic languages.

It is not clear to me what exactly is going on here. A possible analysis can be that a marker similar to the dative *-u* attaches to the left of *-m*, triggering the change of the vowel preceding *-m*. Alternatively, the instrumental adds some supra-segmental prosodic requirement to the *-m*, which causes the change of the vowel to its left.

Interesting is the situation in the plural, where the pattern of the DAT/INS marking is the “reversed.” Dative is *-m* (compare *-mu* in SG.), and instrumental *mi* (compare *-m* in SG.); e.g. *mjji-m* ‘my, DAT.PL.’ and *mjji-mi* ‘my, INS.PL.’ Similarly in other Slavic languages.

<sup>10</sup>I am grateful to Peter Jurgec (p.c.) for pointing this out to me, and for providing the examples.

<sup>11</sup>Note also the difference in tone.

system thus requires that it is treated as an accidental homophony. This treatment is consistent with the fact that the syncretism is restricted to a quite specific niche – one declension of feminine singulars, and it is not attested for other feminine singular (or any other) declensions. In other words, the syncretism is isolated. There is no other exponent which shows the same distribution as the two *-o-s*.

Summing up, I provide an overview of the system in numbers:

- (21) Syncretism in numbers
- a. Possible contiguous syncretisms: 15, out of these 9 attested (60%)
  - b. Non-contiguous syncretisms: 42, out of these 3 attested (cca 7%)

I add that all the non-contiguous syncretisms are restricted to single markers, and there is evidence that two of them show underlying (and surface) differences. The third non-adjacent syncretism of ACC – INS can only be treated as an accident under the present approach, which is consistent with its limited distribution.

I now move on to West Slavic, Czech in particular.

### 8.3.3 Syncretism in Czech

If one wants to show that restrictive hypotheses provide interesting results also in languages where one would initially not hope for anything but chaos, there is perhaps no better language to look at than Czech. Czech, like other Slavic languages discussed here, has six cases (vocative aside): nominative, accusative, genitive, prepositional, dative and instrumental. When it comes to syncretism, it seems at first blush that “anything goes.” Making justice to this curious property of Czech, I first present Czech as a desperate system which has (almost) nothing to do with (Universal) Contiguity.

Then I bring it back in line with the hypothesis, showing that most of the offending syncretisms are the result of a phonological conflation of distinct underlying representations. In some cases, the syncretisms must be treated as accidental homophonies, with the automatic consequence that their scope is restricted.

I present the syncretisms case by case, proceeding along the Case sequence (NOM, ACC, and so on). Preferably, I give pairs of syncretic cases. In paradigms where more than two cases show syncretism, I set aside those examples where the syncretism can be decomposed into independently established pairs. (For instance, NOM – ACC – GEN syncretism is decomposed as independently needed NOM – ACC, and ACC – GEN, and not listed as a separate NOM – GEN syncretism.) If this is not possible, then I present syncretisms with more than two members as well.

In the discussion, I draw on my native speaker knowledge of the language and the descriptions in reference grammars such as Petr (1986), or Janda and

Townsend (2002).

I start by presenting all the syncretism which the nominative case can participate in. As the following table shows, it can be syncretic with accusative, genitive and instrumental. The first column presents no problem for the Case sequence, the latter two do, because they are not adjacent.<sup>12</sup>

(22) *Nominative*

	window, sg.	street, sg.	man, pl.
NOM	OKN-O	ULIC-E	MUŽ-I
ACC	OKN-O	ulic-i	muž-e
GEN	okn-a	ULIC-E	muž-ů
PREP	okn-ě	ulic-i	muž-ích
DAT	okn-u	ulic-i	muž-ům
INS	okn-em	ulic-í	MUŽ-I

Accusative can be syncretic with the genitive, prepositional/dative and instrumental. Again, the first syncretism complies with the Universal Contiguity, the latter two don't.<sup>13</sup>

(23) *Accusative*

	man	street, sg.	good, f.sg.
NOM	muž	ulic-e	dobr-á
ACC	MUŽ-E	ULIC-I	DOBR-OU
GEN	MUŽ-E	ulic-e	dobr-é
PREP	muž-i	ULIC-I	dobr-é
DAT	muž-i	ULIC-I	dobr-é
INS	muž-em	ulic-í	DOBR-OU

<sup>12</sup>Wedges over consonants indicate palatalization, e.g. š = sh in *shot*. Accute accents over vowels indicate length, except for long *u* which is *ů*. While the pairing of long and short vowels looks straightforward, the phonological system brings twists that we will encounter later on. The following table gives pairs of vowels where the right one is the long counterpart of the left one in length alternations. The table is simplified for expository purposes, additional complications concern the lengthening of *e*.

(i) Phonological long/short alternations in Czech

short	long
í	í
e	í
a	á
o	ů
u	ou

<sup>13</sup>I do not mention here again that accusative can be syncretic “upwards” with the nominative, which has already been shown above. The same strategy applies throughout.

Genitive can be syncretic with the prepositional.

(24) *Genitive*

	good, pl. m.
NOM	dobrý
ACC	dobrý
GEN	DOBRÝ-CH
PREP	DOBRÝ-CH
DAT	dobrý-m
INS	dobrý-mi

Moving one notch down, the prepositional shows syncretism with both the dative and the instrumental.

(25) *Prepositional*

	man	bigger, m.sg.
NOM	muž	větš-í
ACC	muž-e	větš-ího
GEN	muž-e	větš-ího
PREP	MUŽ-I	VĚTŠ-ÍM
DAT	MUŽ-I	větš-ímu
INS	muž-em	VĚTŠ-ÍM

Finally, the dative can be syncretic with the instrumental.

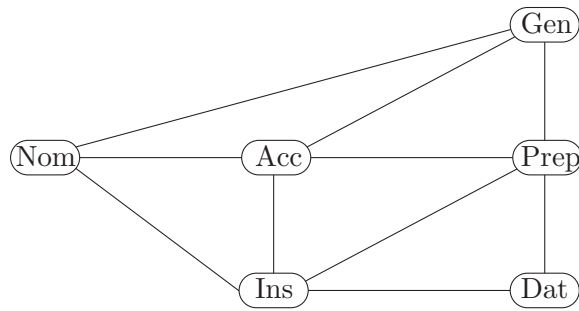
(26) *Syncretism of dative and instrumental in Czech*

	both
NOM	ob-a
ACC	ob-a
GEN	ob-ou
PREP	ob-ou
DAT	OB-ĚMA
INS	OB-ĚMA

Taking all these syncretisms at face value, we arrive at the following picture:

(27) Czech syncretism

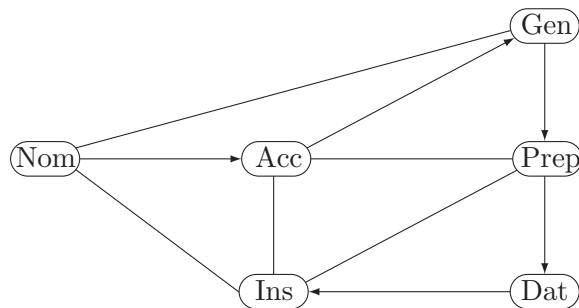




On the face of it, it seems that Czech is doomed. Three of its six cases (accusative, prepositional and instrumental) show 4 syncretisms, almost all of the 5 which are logically possible. Nominative and genitive have each 3 connecting lines, which is still bad given that nominative is supposed to have one (to accusative) and genitive two at most. The only well-behaved case is dative.

In the remainder of this Czech section, I revisit the cases one by one (from NOM to INS) and show that all but the allowed syncretisms are irrelevant. This means that the non-adjacent syncretisms are either the result of predictable phonological processes, or they are accidental homophonies. The latter situation is reflected by the fact that such syncretisms are restricted in scope, and opposed to a wide-spread distribution of the predicted syncretisms. The picture we end up with is the same as for the other Slavic languages, and I highlight it by drawing arrows to the lines which will be preserved.

(28) Czech syncretism: A path through the labyrinth



### Czech nominative revisited

I start by re-visiting the three syncretisms of nominative, repeated below.

(29) *Nominative*

	window, sg.	street, sg.	man, pl.
NOM	OKN-O	ULIC-E	MUŽ-I
ACC	OKN-O	ulic-i	muž-e
GEN	okn-a	ULIC-E	muž-ů
PREP	okn-ě	ulic-i	muž-ích
DAT	okn-u	ulic-i	muž-ům
INS	okn-em	ulic-í	MUŽ-I

The syncretism of nominative and accusative is quite widespread. It occurs in various paradigms and it is replicated by a number of different exponents, see (30). This tells us that it is non-accidental.

(30) *Non-accidental syncretism of nominative and accusative in Czech*

	machine, sg.	both	machine, pl.	castle, pl.	that, fem., pl.
NOM	STROJ-Ø	OB-A	STROJ-E	KOST-I	T-Y
ACC	STROJ-Ø	OB-A	STROJ-E	KOST-I	T-Y
GEN	stroj-e	ob-ou	stroj-ů	kost-í	t-ěch
PREP	stroj-i	ob-ou	stroj-ích	kost-ech	t-ěch
DAT	stroj-i	ob-ěma	stroj-ům	kost-em	t-ěm
INS	stroj-em	ob-ěma	stroj-i	kost-mi	t-ěmi

The other two syncretisms are accidental. The syncretism of nominative and genitive in the paradigm *ulice* ‘street,’ will be treated as an accidental homophony. I provide independent arguments for this in the next section, because the paradigm also contains an offending syncretism of the accusative. I will show for both the nominative and accusative that they differ from the oblique case inflection by belonging to a “pronominal” series of case endings, while the oblique cases belong to a “nominal” series. For now, I only make explicit what this solution entails, namely that the distribution of this syncretism should be limited. That is the case: there is no other paradigm with the same syncretism, or an exponent which would show the same distribution as *-e*.

As for the NOM – INS syncretism, there are reasons to think that it is the result of a phonological conflation. It can be shown that the nominative is an underlying *-i*, but the instrumental is an underlying *-y*.<sup>14</sup> The instrumental *-y*, however, changes to *-i* when it follows one of the ‘soft’ consonants *ž, š, č*,

<sup>14</sup>The situation is less transparent than one would like due to the fact that in Czech, *-i* and *-y* are pronounced the same, specifically as a high front vowel. However, it is clear that they correspond to two distinct phonological objects, because one triggers palatalization (*i*) and the other one does not (*y*). See, e.g., Anderson and Browne (1973): “The distinction between palatalizing and non-palatalizing /i/ [...] is pervasive in Czech morphology [...] and must be represented in any adequate description of the language” (p.454).

$\check{r}$ ,  $c$ ,  $j$ ,  $d'$ ,  $t'$ ,  $\check{n}$ .

There are two aspects of the proposal. First, I show that the process of  $-y$  to  $-i$  conversion is a regular process which occurs elsewhere in the grammar. The second task is to show that the process actually happens in the instrumental plural. I take these points in turn.

To see the phonological process independently in action, consider the two following paradigms:

(31)  $-y \rightarrow -i$

	villa, sg.	Michelle, sg.
NOM	vil-a	Míš-a
ACC	vil-u	Míš-u
GEN	VIL-Y	MÍŠ-I
PREP	vil-e	Míš-e
DAT	vil-e	Míš-e
INS	vil-ou	Míš-ou

The two nouns belong to the same declension, and they take the same endings. In the genitive singular, however, we can observe a difference between  $-i$  (after soft consonants) and  $-y$  (elsewhere). The difference thus exemplifies the change of the underlying  $-y$  to  $-i$  after soft consonants, the same process which presumably takes place in the instrumental plural of the paradigm ‘man.’ I turn to this now, and argue that the paradigm is to be analyzed as depicted in (32).

(32) NOM – INS *syncretism as a phonological process*

	man, pl.
NOM	muž-i
ACC	muž-e
GEN	muž-ů
PREP	muž-ích
DAT	muž-ům
INS	MUŽ-Y $\Rightarrow$ MUŽ-I

The argument for this analysis comes from the fact that it makes two predictions which are borne out. The predicted facts would, however, remain mysterious if the two markers were the same.

First, since the INS.PL.  $-i$  is the result of a phonological process, it only occurs after consonants which trigger that process, but not elsewhere. I state the prediction as (33).

(33) INS.PL. in C-i occurs only if the C is soft

The prediction is correct. The second prediction is that this does not hold for the nominative plural.

(34) There are nouns with NOM.PL. in C-*i*, where C is not soft

This prediction is borne out as well. In fact, most masculine animates take *-i* in nominative plural regardless of the quality of their final consonant. The following two paradigms illustrate both of the points (34) and (33).

(35) *The nouny 'ox' and 'boy'*

	ox, pl.	boy, pl.
NOM	VOL-I	HOŠ-I
ACC	vol-y	hoch-y
GEN	vol-ů	hoch-ů
PREP	vol-ech	hoš-ích
DAT	vol-ům	hoch-ům
INS	VOL-Y	HOCH-Y

The first paradigm shows a noun which ends in an *-l*, a consonant that can be followed by both *-i* and *-y*, and the presumed difference between the two markers shows up. The second column presents a noun which ends in *-ch*, a consonant that undergoes palatalization when followed by *-i*. What happens with this noun is that the consonant is palatalized in the nominative (due to the ending *-i*), but no palatalization occurs in the instrumental (the ending *-y*).

The paradigms (35) thus show that we must posit two distinct morphemes for NOM.PL and INS.PL anyway: the nominative *-i*, and the instrumental *-y*. Further, we need a process which turns *-y* into *-i* after soft consonants, as demonstrated by (31). The analysis (32) then puts these two independent pieces together and yields a prediction which correctly limits the distribution of *-i* in the instrumental plural to positions following soft consonants.

Additionally, the conclusion that the NOM – INS syncretism is the result of a phonological conflation of two distinct markers is strengthened by the observation that the nominative *-i* is restricted to animates, while the instrumental *-y* (*i* after soft Cs) is not. This is shown in (36):

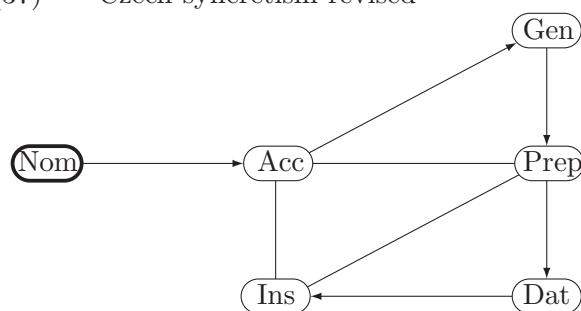
(36) *The nominative -i is restricted to animates*

	machine, pl.	man, pl.
NOM	stroj-e	muž-i
ACC	stroj-e	muž-e
GEN	stroj-ů	muž-ů
PREP	stroj-ích	muž-ích
DAT	stroj-ům	muž-ům
INS	stroj-y ( $\Rightarrow$ <i>-i</i> )	muž-y ( $\Rightarrow$ <i>-i</i> )

Here we have the masculine animate noun ‘man,’ and a masculine inanimate noun *stroj* ‘machine.’ The two paradigms are identical, with a difference in the nominative plural (marked by grey shade). The difference is due to the fact that *-i* only goes with animates. The difference, however, does not carry over to the instrumental, where also the inanimate ‘*stroj*’ takes the orthographic *-i*. This tells us that the appearance of the nominative and the instrumental marker are conditioned by different factors: the nominative one is restricted to animates, the instrumental one is not.

To conclude: The three syncretisms of the nominative were examined. The NOM – ACC syncretism is widespread, attested for 6 different markers. On the other hand, the two other syncretisms are isolated, limited to a single exponent/paradigm. Additionally, the NOM – INS syncretism is the result of a phonological conflation. Encoding the syncretism of NOM – GEN in the paradigm ‘street’ as an accidental homophony (for which I provide evidence below) leads to the following picture:

(37) Czech syncretism revised



### The Czech accusative revisited

Recall now that the accusative shows three syncretisms “downwards:”

(38) *Accusative*

	man, sg.	street, sg.	good, f.sg.
NOM	muž	ulic-e	dobr-á
ACC	MUŽ-E	ULIC-I	DOBR-OU
GEN	MUŽ-E	ulic-e	dobr-é
PREP	muž-i	ULIC-I	dobr-é
DAT	muž-i	ULIC-I	dobr-é
INS	muž-em	ulic-í	DOBR-OU

Looking beyond the paradigms above, we find that the accusative – genitive syncretism extends to other paradigms and it is replicated by two more exponents. Further, with 1/2nd person plural pronouns, it extends to PREP. This

indicates that the syncretism is not accidental.

(39) *Non-accidental syncretism of accusative and genitive in Czech*

	šir, sg.	that, masc. an.	we
NOM	pán	t-en	my
ACC	PÁN-A	T-OHO	NÁ-S
GEN	PÁN-A	T-OHO	NÁ-S
PREP	pán-ovi	t-om	NÁ-S
DAT	pán-ovi	t-omu	ná-m
INS	pán-em	t-ím	ná-ma

Now I turn to the two problematic syncretisms, starting with the accusative – prepositional syncretism. As for its distribution, the syncretism is restricted to the paradigm *ulic-e* ‘street,’ and it is not replicated by any other exponent. Thus, there is no obstacle to treat this as an accidental homophony, which is what I suggest. When we combine this with the problematic nominative – genitive syncretism of the same paradigm, the result is that the paradigm ‘street’ contains 5 different markers with two accidental homophonies. The proposed morphological structure of the paradigm is depicted below, with indexes distinguishing the homophonous, but distinct lexical entries.

(40) *The problematic paradigm of ‘street’*

	street, sg.
NOM	ulic-e <sub>1</sub>
ACC	ulic-i <sub>1</sub>
GEN	ulic-e <sub>2</sub>
PREP	ulic-i <sub>2</sub>
DAT	ulic-i <sub>2</sub>
INS	ulic-í

Is there any evidence to support such an analysis? I think that there is, and I provide it below. I will argue that the endings with the subscript 1 are “pronominal,” and the endings with the subscript 2 are “nominal.” To see that, consider the following table.

(41) *The paradigm ‘street:’ the cocktail of pronominal and nominal endings*

	she		our, f.sg.		street, sg.		stress, sg.
NOM	(ona)/∅		naš-e <sub>1</sub>	↔	ulic-e <sub>1</sub>		zátěž-∅ <sub>2</sub>
ACC	j-i <sub>1</sub>	↔	naš-i <sub>1</sub>	↔	ulic-i <sub>1</sub>		zátěž-∅ <sub>2</sub>
GEN	j-í <sub>1</sub>	↔	naš-í <sub>1</sub>		ulic-e <sub>2</sub>	↔	zátěž-e <sub>2</sub>
PREP	j-í <sub>1</sub>	↔	naš-í <sub>1</sub>		ulic-i <sub>2</sub>	↔	zátěž-i <sub>2</sub>
DAT	j-í <sub>1</sub>	↔	naš-í <sub>1</sub>		ulic-i <sub>2</sub>	↔	zátěž-i <sub>2</sub>
INS	j-í <sub>1</sub>	↔	naš-í <sub>1</sub>		ulic-í <sub>2</sub>	↔	zátěž-í <sub>2</sub>

I start unpacking the condensed system of the table by pointing at the second column, which contains the feminine singular forms of the agreeing possessive pronoun ‘our.’ The endings of this paradigm are obviously related to the pronoun ‘she’ (as indicated by the arrows), which is in the leftmost column, and the set of endings will thus be called pronominal.<sup>15</sup> I mark the pronominal endings by the subscript 1.

Crucially for our purpose, the paradigm ‘street’ has its nominative and accusative ending identical to the pronominal inflection. This is indicated by darker shading and arrows between the two paradigms. The subscript 1 is preserved for the pronominal endings in the paradigm ‘street.’

The rightmost column shows the paradigm of the feminine noun ‘stress.’ The set of endings of this noun will be called nominal, and it is marked by the subscript 2. The noun ‘street’ shares its endings with this paradigm in all the remaining forms (also in the plural), and I indicate this by the lighter shading and arrows. The subscript 2 is also copied over to the paradigm ‘street.’<sup>16</sup>

The point is that the apparently arbitrary subscripts 1 and 2 that we were forced to adopt in order to make the paradigm ‘street’ compatible with the (Universal) Contiguity have linguistic reality: 1 means pronominal, 2 means nominal.

This analysis is nicely confirmed by the closely related Slovak (Dvonč et al. 1966). The first thing to note is that Slovak has no offending syncretism in the paradigm of ‘street.’ This is because the nominative and accusative endings of this paradigm (subscript 1) are different from Czech:

(42) *The Slovak nominal and pronominal paradigms*

<sup>15</sup>There is a difference in the nominative singular, where the strong pronoun has the suppletive form *ona*, and the weak pronoun is null. I neglect this here, and take the possessive paradigm to be the representative of the feminine pronominal declension.

<sup>16</sup>The marking by 1 and 2 applies throughout the paradigm, and crates an artificial distinction in the instrumental, where the set 1 and 2 overlaps. Such an overlap between nominal and pronominal paradigm is a characteristic feature of the instrumental singular in Czech (also in masculine and neuter nouns), but I do not discuss this here. I mark the instrumental of the noun ‘street’ by the subscript 2, to capture the generalization that ‘street’ and ‘stress’ are the same (also in the plural), except for nominative and accusative singular, where ‘street’ takes the pronominal inflection.

	she		our, f.sg.		street, sg.		press, sg.
NOM	(ona)/Ø		naš-a <sub>1</sub>	↔	ulic-a <sub>1</sub>		tlač-Ø <sub>2</sub>
ACC	j-u <sub>1</sub>	↔	naš-u <sub>1</sub>	↔	ulic-u <sub>1</sub>		tlač-Ø <sub>2</sub>
GEN	j-ej <sub>1</sub>	↔	naš-ej <sub>1</sub>		ulic-e <sub>2</sub>	↔	tlač-e <sub>2</sub>
PREP	j-ej <sub>1</sub>	↔	naš-ej <sub>1</sub>		ulic-i <sub>2</sub>	↔	tlač-i <sub>2</sub>
DAT	nj-ej <sub>1</sub>	↔	naš-ej <sub>1</sub>		ulic-i <sub>2</sub>	↔	tlač-i <sub>2</sub>
INS	nj-ou <sub>1</sub>	↔	naš-ou <sub>1</sub>		ulic-ou <sub>2</sub>	↔	tlač-ou <sub>2</sub>

That is correlated with the fact that Slovak differs from Czech in its pronominal endings in nominative and accusative in precisely the same way as the noun ‘street,’ see the paradigm of the possessive pronoun ‘our.’ The genitive, prepositional and dative of the Slovak noun ‘street,’ however, inflects just like its Czech counterpart. That in turn correlates with the fact that the nominal paradigm ‘press’ is in these cases just like its Czech counterpart. The analysis in terms of the nominal/pronominal distinction cutting across the paradigm ‘street’ captures these correlations directly.<sup>17</sup>

On the other hand, if we would treat the Czech paradigm ‘street’ as containing only a single NOM – GEN *-e* and a single ACC – PREP – DAT *-i*, we would not be able to deal with the fact that the shape of the NOM and ACC form is correlated with the shape of the pronominal declension, while the rest of the forms is not. The analysis in terms of accidental homophony between the pronominal NOM/ACC and the nominal GEN/PREP is thus independently justified.

I now turn to the remaining offending syncretism of the accusative: the ACC – INS homophony. This is an interesting type of a counterexample. Unlike other offending syncretisms, it is not restricted to a single exponent, as the following table shows:

(43) *ins – acc*

	boy, pl.	good, f.sg.
NOM	hoš-i	dobr-á
ACC	HOCH-Y	DOBR-OU
GEN	hoch-ů	dobr-é
PREP	hoš-ích	dobr-é
DAT	hoch-ům	dobr-é
INS	HOCH-Y	DOBR-OU

<sup>17</sup>Upper Sorbian Schuster-Šewc 1996 confirms the correlation and behaves like Slovak. The two relevant paradigms in the source grammar are *duša* ‘soul,’ which is the parallel to ‘street’ (see p.80-81 of the reference grammar). The nominal set of endings is given in the paradigm ‘mouse’ (p.81-82), and the pronominal possessive paradigms are on p.120-121.



I will first show that the syncretism in feminine adjectives is a case of phonological conflation. Then I turn to the syncretism in the nominal declension, and show that the syncretism is possibly spurious. Then I propose an analysis according to which the instrumental contains a silent marker. What the two analyses have in common is that in both cases, I will propose that the form of the instrumental is derived from the form of the accusative by the addition of a marker. Hence the name of the next section: the syncretism is in fact containment, but one which is blurred on the surface.

### acc – ins as [ [ acc ] ins ] ]

The syncretism in the declension of the adjectives is a case where the containment relation is not reflected due to a phonological conflation. To show that, I place the declension of the singular feminine adjective in the context of two other feminine declensions, nominal this time.

(44) *Accusative*

	woman, sg.	street, sg.	good, f.sg.
NOM	žen-a	ulic-e	dobr-á
ACC	ŽEN-U	ULIC-I	DOBR-OU
GEN	žen-y	ulic-e	dobr-é
PREP	žen-ě	ulic-i	dobr-é
DAT	žen-ě	ulic-i	dobr-é
INS	ŽEN-OU	ULIC-Í	DOBR-OU

Focussing first on the two nominal declensions, we can observe that there is a systematic relationship between the accusative and instrumental here as well, but not one of syncretism. Rather, the instrumental represents the output of a lengthening process applied to the accusative:  $u + 1\mu = ou$ ,  $i + 1\mu = í$ .<sup>18</sup> In other words, in the two feminine nominal declensions, the instrumental is morphologically based on the accusative by adding a bi-moraic template scoping over the accusative exponent:

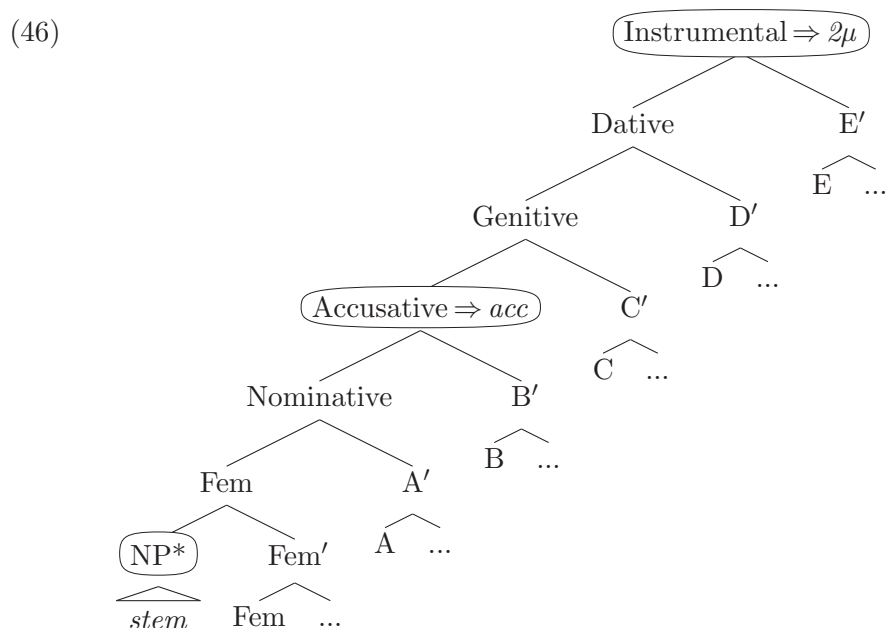
(45) INS. SG. for feminines: [ [ acc ] + bi-moraic template ]

In feminine adjectives, however, the accusative is bi-moraic to begin with. As a consequence, the prosodic requirement of the instrumental, which distinguishes it from the accusative, applies vacuously, and we get homophony. The

<sup>18</sup>Lengthening has the same output in verbs. As shown in Caha and Scheer (2008), the Czech infinitive has to have minimally two morae. If concatenation provides only 1 mora, lengthening applies. The past participle *zu-l* ‘take off one’s shoes’ would “normally” have the infinitive *\*zu-t*, but due to the two morae requirement, lengthening gives *zou-t*. Similarly for the past participle *pi-l* ‘drink,’ the infinitive is not *\*pi-t*, but *pi-t*. See the table in fn.12 for the table showing length alternations.

homophony, however, is not a result of lexical identity of the instrumental and the accusative. The homophony is a result of a phonological conflation of two underlyingly distinct forms.

To highlight the details of the account better, I note that the bi-moraic template is understood as a morpheme, namely the phonological information associated to a particular chunk of structure (see, e.g. Marantz 1982). Specifically, the template spells out the chunk of structure which distinguishes the instrumental from the accusative.<sup>19</sup> The templatic requirement targets the immediately embedded exponent, i.e. the accusative marker. This is depicted in the tree below:



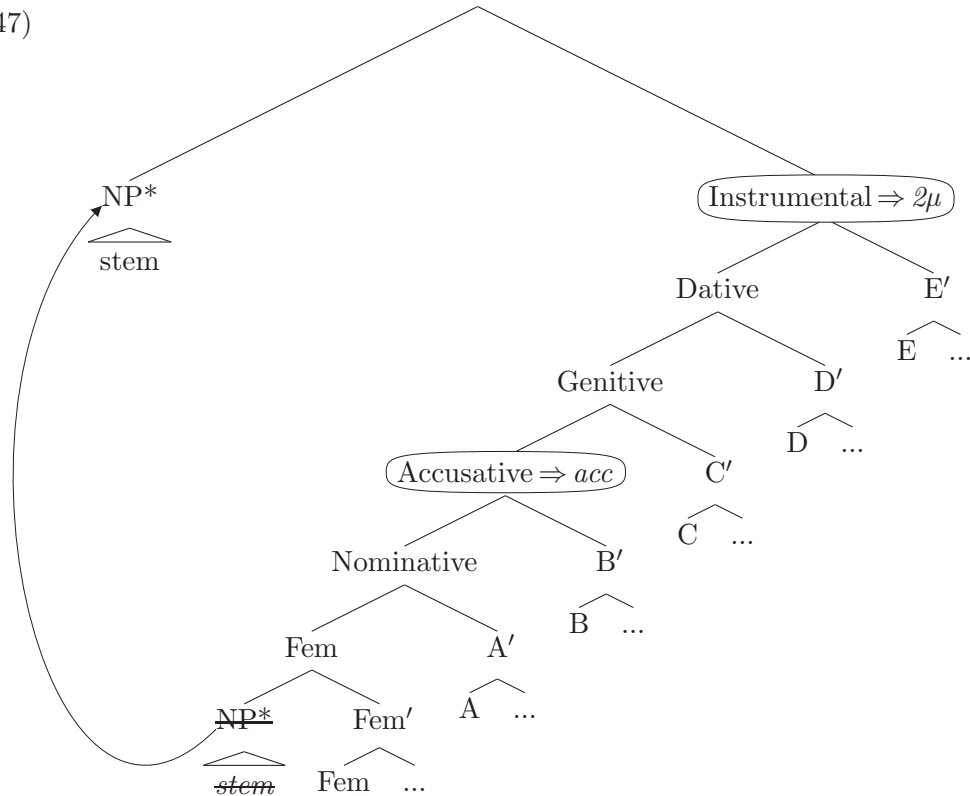
The structure represents the output of a roll up derivation, the phrasal counterpart of a head-movement derivation. Apart from the case layers, I have also included the gender head “Fem.” This is a shortcut which serves to encode that we are looking at the feminine declension – developing a more accurate structure is left for future research. To understand why the bimoraic template attaches on top of the accusative (rather than any other case), see §2.9.

The interest of the Czech situation is that it potentially provides an argument for the rigid matching approach. Recall that under this approach, the NP\* has to either sub-extract out of the instrumental constituent, or move

<sup>19</sup>I do not go into phonological details here. Following Marantz (1982), we can assume that we affix a skeletal unit CV, whose nucleus is filled by the accusative *u*. Alternatively, the template corresponds to some phonological constituent (a foot), which must be filled by the segmental material.

directly on top of the instrumental without any pied-piping. The derivation with sub-extraction is depicted below.

(47)



The reason why this derivation (forced by the rigid matching approach) is preferable to the alternative (46) is that it must be somehow encoded that the bi-moraic requirement applies to the accusative ending alone, and not to the combination of the ending and the stem. A natural way to encode this, using an approach developed by M. Starke, would be to say that the templatic requirement targets the material contained in the “templatic” constituent, i.e. in the projection of E in (47). The point is that after the evacuation movement (required by rigid matching), the relevant constituent contains just the accusative, but not the noun. The approach which assumes that the NP\* is inside the constituent which is subject to the templatic requirement must find an alternative way to encode the fact that the template targets the accusative marker only. Here I finish the discussion of the instrumental in the feminine singular, and turn to the other offending syncretism of the accusative.

The syncretism is repeated below, see (48). I will first show that the syncretism is possibly spurious.

(48) *ins* – *acc*

boy, pl.	
NOM	hoš-i
ACC	hoch-y
GEN	hoch-ů
PREP	hoš-í-ch
DAT	hoch-ům
INS	hoch-y

The first thing to know is that Czech is a language with a written standard (described here) which is distinct in certain respects from the way Czech is commonly spoken, the so called colloquial Czech.<sup>20</sup> The differences between the two varieties have mainly to do with certain phonological developments (for instance, the literary *é* > colloquial *i*), and hence the two systems usually map one on the other once these factors are taken into consideration.

Beyond phonology, perhaps the most striking difference pertains to the paradigm above, in which colloquial Czech has replaced the instrumental *-y* by another marker which is clearly not a phonological version of that *-y*. I show that below, and illustrate also the fact that the change targets all instrumental plural *y*-s, regardless of whether they are syncretic with the accusative or not.

(49) *Literary Czech vs. colloquial Czech*

	boy, pl., lit.	boy, pl., coll.	man, pl., lit.	man, pl., coll.
NOM	kluc-i	kluc-i	muž-i	muž-i
ACC	KLUK-Y	KLUK-Y	muž-e	muž-e
GEN	kluk-ů	kluk-ů	muž-ů	muž-ů
PREP	kluc-ích	kluk-ách	muž-ích	muž-ích
DAT	kluk-ům	kluk-ům	muž-ům	muž-ům
INS	KLUK-Y ⇒	KLUK-AMA	MUŽ-I ⇒	MUŽ-EMA

The fact that the instrumental has undergone a change, leaving the accusative intact, indicates that the syncretism does not have a place in the grammatical system of the speakers: it is spurious.

The replacement of the instrumental *-y* is not a peculiarity of colloquial Czech. The table below shows that the history of the proto-Slavic instrumental *-y*, as attested in Old Church Slavonic, is the history of elimination.

(50) *The disappearance of INS – ACC syncretism in Slavic*<sup>21</sup>

<sup>20</sup>Janda and Townsend (2002:p.4) characterize it as follows: After the protracted domination of Czech by German in the 17th-18th centuries, Czechs went back to their Kralice bible of the 16th century as a model for constructing their modern literary language in the 19th century. Vernacular Czech had, of course, continued to evolve in the intervening two centuries, and there is, hence, a pronounced gap between the spoken and literary languages.

	OCS	coll. Cz	Pol	UpSrb	Slk	Rus	Ukr	Serb	Slov
	grad	kluk	tygrys	vol	dom	stol	plug	grad	pótnik
	city	boy	tiger	ox	house	table	plough	city	traveller
nom	-i	-i	-y	-y	-y	-y	-y	-i	-i
acc	-y	-y	-y	-y	-y	-y	-y	-e	-e
gen	-ъ	-ŭ	-ow	-ow	-ov	-ov	-iv	-ā	-ov
prep	-ěчъ	-ách	-ach	-ach	-och	-ach	-ach	-ima	-ih
dat	-омъ	-ŭm	-om	-am	-om	-om	-am	-ima	-om
ins	-y	-ama	-ami	-ami	-ami	-ami	-ami	-ima	-i

In the columns following OCS, I give the descendant paradigms of the o-stem declension, marking by shading changes which have happened either to the instrumental or the accusative. As can be observed, the instrumental *-y* was eliminated almost everywhere. This indicates its extremely fragile position, and thus, the spurious nature of the syncretism.

The only language which has preserved the instrumental (literary Czech aside) is Slovene, which has replaced the accusative. This shows again that the two markers lead separate lives.

I now turn to the question what the reason is for the fragile position of the instrumental plural *-y*. As the table below with sample paradigms shows, the instrumental plural in literary Czech is always expressed analytically, except for the *-y*. Analytical marking is highlighted by shading (also outside of the instrumental):

(51) *Analytical marking in the Czech plural*

	boy, pl.	woman, pl.	song, pl.	good, m. pl.
NOM	hoš-i	žen-y	písn-ě	dobr-é
ACC	HOCH-Y	žen-y	písn-ě	dobr-é
GEN	hoch-ŭ	žen-ø	písn-í	dobr-ý-ch
PREP	hoš-í-ch	žen-á-ch	písn-í-ch	dobr-ý-ch
DAT	hoch-ŭ-m	žen-á-m	písn-í-m	dobr-ý-m
INS	HOCH-Y	žen-a-mi	písn-ě-mi	dobr-ý-mi

Further, the analytical expression of instrumental is not unique to the plural. I have shown that the feminine declension in the singular derives the instrumental marking by combining the accusative morpheme with a bi-moraic template, and a similar (though weaker) point can be made for the singular masculine and neuter declension. Thus, the point is that the *-y* is odd in the instrumental because otherwise, the instrumental is always analytical.

<sup>21</sup>Old Church Slavonic: Večerka (1996), Upper Sorbian: Schuster-Šewc (1996:p.71), Polish: Feldstein (2001:p.42), Slovak: Dvonč et al. (1966:p.87-8), Russian: Andrews (2001:p.25), Ukrainian: Medushevsky and Zyatkovska (1963:p.25), for Serbian and Slovene, see above.

This leads me to suggest an analysis according to which the instrumental plural with *-y* (in literary Czech and OCS) is in fact expressed analytically as well, namely by the accusative *-y* and an additional silent marker. The silent marker spells out the features which the instrumental has in addition to the accusative. See the first column for the analysis.

(52) *Analytical marking in the Czech plural*

	boy, pl.	woman, pl.	song,pl.	good,m.pl.
NOM	hoš-i	žen-y	písn-ě	dobr-é
ACC	HOCH-Y	žen-y	písn-ě	dobr-é
GEN	hoch-ů	žen-ø	písn-í	dobr-ý-ch
PREP	hoš-í-ch	žen-á-ch	písn-í-ch	dobr-ý-ch
DAT	hoch-ů-m	žen-á-m	písn-í-m	dobr-ý-m
INS	HOCH-Y-Ø	žen-a-mi	písn-ě-mi	dobr-ý-mi

The motivation for the analysis is to reflect both the fact that instrumental plural is expressed analytically, and create a situation which is prone to a change. Since zero marking is not an acquisition friendly way to reflect the underlying syntactic structure, the analysis predicts that change is likely to occur. At the same time, the syncretism of accusative and instrumental becomes only apparent, because of the presence of the silent marker in the instrumental.<sup>22</sup>

To sum up the discussion of the last two sections. I have first shown independent evidence for the accidental nature of the ACC – PREP syncretism and the NOM – GEN syncretism, which both occur in the same paradigm ‘street’ (and only there). The account in terms of accidental homophony is justified by the correlation of the NOM – ACC marker with the pronominal declension, and the lack of such correlation in the rest of the paradigm.

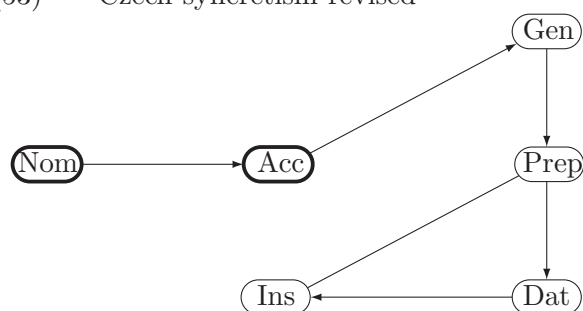
Then I have addressed the syncretism of ACC – INS, which is the only offending syncretism in Czech that is not limited to a single marker. In the case of feminine adjectives, I have shown that the instrumental is derived from the accusative by a bi-moraic template, which applies vacuously in this particular case, because the accusative is bi-moraic to begin with. This yields a surface conflation without a correspondig morpho-syntactic conflation.

<sup>22</sup>This analysis rises the question of the formal power of zero marking in relation to the (Universal) Contiguity and the current system. The situation is such that each zero marker creates an (apparent) extra connecting line between two cases which are not adjacent in the hierarchy, this time between the instrumental and accusative. Note also that the expressive power of zeroes is equivalent to the so called Impoverishment, see Trommer (1999), although the conceptual/architectural implications are quite different. Zero marking does not – whereas Impoverishment does – require a separate Morphology module. See Bobaljik (2002) for the discussion of Impoverishment in the context of syncretism.

The syncretism of the accusative and instrumental *-y* was first shown to be spurious, due to the fact that the instrumental *y* has a doubtful status in Czech and Slavic languages in general. Finally, I have proposed an analysis for the situation attested in OCS and literary Czech as an instance of a larger morphosyntactic pattern in Czech, where the instrumental contains morphologically the accusative. However, the marker which marks the instrumental happens to be null, which yields a surface non-distinctness. This analysis was supported by the fact that the instrumental plural *-y* is one of the most fragile parts of the Slavic system, and it was eliminated on a large scale. This is seen as a result of the fact that the null marking blurs the underlying relations, and is thus subject to change.

The picture of the syncretism patterns which emerges from the discussion is given in the following picture:

(53) Czech syncretism revised



### The Czech genitive revisited

The genitive has now no problematic neighbors. Hence, I only briefly illustrate the fact that the genitive – prepositional syncretism is not accidental. First, it is attested for two distinct exponents, *ch*, and *ou*.

(54) *Non-accidental syncretism of genitive and prepositional in Czech*

	good, pl. m.	both, m.
NOM	dobrý	ob-a
ACC	dobrý	ob-a
GEN	DOBRÝ-CH	OB-OU
PREP	DOBRÝ-CH	OB-OU
DAT	dobrý-m	ob-ěma
INS	dobrý-mi	ob-ěma

For four other exponents, the GEN – PREP syncretism extends downwards to the (adjacent) dative. In the last column, the GEN – PREP syncretism extends upwards to the (adjacent) accusative:

(55) *Syncretism of Gen – Prep: triplets*

	good, fem.	bone, sg.	castl, sg.	we
NOM	dobr-á	kost-ø	hrad-ø	my
ACC	dobr-ou	kost-ø	hrad-ø	NÁ-S
GEN	DOBR-É	KOST-I	HRAD-U	NÁ-S
PREP	DOBR-É	KOST-I	HRAD-U	NÁ-S
DAT	DOBR-É	KOST-I	HRAD-U	ná-m
INS	dobr-ou	kost-í	hrad-em	ná-mi

### The Czech prepositional revisited

The pre-last case to be considered is the prepositional. It shows a systematic syncretic relationship with the dative in the singular.

(56) *Non-accidental syncretism of prepositional and dative in Czech*

	man, sg.	city, sg.	woman, sg.
NOM	muž	měst-o	žen-a
ACC	muž-e	měst-o	žen-u
GEN	muž-e	měst-a	žen-y
PREP	MUŽ-I	MĚST-U	ŽEN-Ě
DAT	MUŽ-I	MĚST-U	ŽEN-Ě
INS	muž-em	měst-em	žen-ou

Now I turn to a problematic syncretism of the prepositional with the instrumental, see below, and argue that it is an instance of a phonological conflation.

(57) *An offending PREP – INS syncretism*

	bigger, n.sg.
NOM	větš-í
ACC	větš-í
GEN	větš-ího
PREP	VĚTŠ-ÍM
DAT	větš-ímu
INS	VĚTŠ-ÍM

The analyzes takes the following steps. The first thing to know is that historically, the adjectival declension in Czech (and Slavic generally) arose from the combination of a nominal case marker (mostly a vowel) and an additional 3rd person pronoun *je-* in the appropriate case. These forms were reduced in Czech by a contraction of the vowel and the initial *je-* of the pronoun, leading to the situation where all the endings of the adjective start with a long vowel (Večerka 1996).<sup>23</sup>

<sup>23</sup>While the starting point which juxtaposes the case ending and the pronoun is presumably the same for all Slavic languages, the results of various contractions differ



While I do not think that a synchronic analysis works the same way as described above, this historical scenario is partly reflected in the present day language. In the table below, we can see the obvious similarity between the adjectival ending and the 3rd person neuter pronoun, the suppletive nominative *ono* ‘it’ being an exception.

(58) *Adjectival and pronominal declension*

	bigger, n.sg.		it
NOM	větš- <b>í</b>	←	(j- <b>e</b> ) ono
ACC	větš- <b>í</b>	←	j- <b>e</b>
GEN	větš- <b>ího</b>	←	j- <b>eho</b>
PREP	větš- <b>ím</b>	←	j- <b>em</b>
DAT	větš- <b>ímu</b>	←	j- <b>emu</b>
INS	větš- <b>ím</b>	←	j- <b>ím</b>

To complete the parallel, I have added to the nominative cell of the pronominal paradigm the source form (in brackets) of the nominative adjectival ending, which is not used as a personal pronoun, but it is a form attested elsewhere (as a part of a relative pronoun *je-ž* ‘which, nom.n.sg.’).

Synchronically, we can capture the similarity between the adjectival inflection and the pronominal endings by saying that when the pronominal ending attaches to the adjective, its initial vowel lengthens. The lengthening of *e* in Czech is automatically accompanied by raising, and so *e* lengthens to *í* in Czech.<sup>24</sup> The descriptive generalization which relates the adjectival inflection to the pronominal inflection is given below:

(59) Adjectival inflection: stem + length + pronominal ending

If this way of looking at the adjectival inflection is correct, then the syncretism between the prepositional and the instrumental becomes an instance of a phonological conflation. I repeat the relevant cells below.

(60) *Adjectival and pronominal declension*

	bigger, n.sg.		it
PREP	větš- <b>ím</b>	←	j- <b>em</b>
INS	větš- <b>ím</b>	←	j- <b>ím</b>

What we see here is that the prepositional and the instrumental case markers are underlyingly distinct, *-em* and *-ím* respectively. The adjectival lengthen-

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from one Slavic language to another, see e.g. Halle and Matushansky (2006) for a synchronic account of comparable Russian facts.

<sup>24</sup>Illustration from the verbal paradigm: *kle-l* ‘swear, past part.’ *klí-t* ‘swear, inf.’ See ftn.18 for the general setup.

ing, which is orthogonal to case (because it applies in all of them), produces a conflation by applying vacuously to *-ím*, and turning *-em* into a homophonous morpheme.<sup>25</sup>

This explanation predicts that the prepositional and instrumental show syncretism only when the prepositional is long, and do not show syncretism otherwise. This prediction can be tested, because possessive pronouns take the same pronominal agreement inflection as adjectives, but they do not give rise to lengthening:

(61) Possessives: base + pronominal ending

The neuter singular inflection of a possessive is shown below, note the lack of the PREP – DAT syncretism:

(62) *Adjectival and pronominal declension*

	our, n.sg.		it
NOM	naš- <b>e</b>	←	(j- <b>e</b> ) ono
ACC	naš- <b>e</b>	←	j- <b>e</b>
GEN	naš- <b>eho</b>	←	j- <b>eho</b>
PREP	naš- <b>em</b>	←	j- <b>em</b>
DAT	naš- <b>emu</b>	←	j- <b>emu</b>
INS	naš- <b>ím</b>	←	j- <b>ím</b>

The relevance of these facts stands out better when we compare them with the plural. Here we find a syncretism of GEN – PREP PL.

(63) *Non-accidental syncretism of genitive and prepositional in Czech*

<sup>25</sup>Note that the same process causes a complete loss of case distinctions in the feminine declension:

(i) *Adjectival and pronominal declension*

	bigger, f.sg.		she, strong
NOM	větš- <b>í</b>	←	(j- <b>e</b> ) ona
ACC	větš- <b>í</b>	←	j- <b>í</b>
GEN	větš- <b>í</b>	←	j- <b>í</b>
PREP	větš- <b>í</b>	←	j- <b>í</b>
DAT	větš- <b>í</b>	←	j- <b>í</b>
INS	větš- <b>í</b>	←	j- <b>í</b>

The facts are as expected under the proposed analysis where the adjective adds length to short vowels.

bigger, pl. n.	
NOM	větš-í
ACC	větš-í
GEN	VĚTŠ-ÍCH
PREP	VĚTŠ-ÍCH
DAT	větš-ím
INS	větš-ími

Is this a syncretism or a phonological conflation? The relevant fact is that the syncretism is preserved with pronouns where, as I argue, the case inflection shows its true face:

(64) *Non-accidental syncretism of genitive and prepositional in Czech*

bigger, pl. n.		they, pl. n.	
NOM	větš-í	←	(j-e) on-a
ACC	větš-í	←	j-e
GEN	VĚTŠ-ÍCH	←	<b>j-ich</b>
PREP	VĚTŠ-ÍCH	←	<b>j-ich</b>
DAT	větš-ím	←	<b>j-im</b>
INS	větš-ími	←	<b>j-imi</b>

This means that we are looking at a genuine syncretism. The PREP – INS syncretism, however, is an artifact of the adjectival lengthening.<sup>26</sup>

<sup>26</sup>Note on the side that the statement (59), repeated below as (i), sheds also light on the ACC – INS syncretism with feminine adjectives.

- (i) Adjectival inflection: stem + length + pronominal ending

The paradigm below shows that the ‘hard’ adjectival paradigm arises by lengthening (where applicable) of the ‘hard’ pronominal declension:

(ii) *The length of the hard adjectival inflection explained*

good, f.sg.		that, pl. m.	
NOM	dobr-á	←	t-a
ACC	dobr-ou	←	t-u
GEN	dobr-é	←	t-é
PREP	dobr-é	←	t-é
DAT	dobr-é	←	t-é
INS	dobr-ou	←	t-ou

Our previous statement still holds, namely we get ACC – INS syncretism because the accusative in the adjectival paradigm is long. But now we also understand why the accusative is long; it is because the underlying *u* is under the “spell” of (i).

### The Czech dative revisited

To complete the investigation in a systematic way, I now give more examples of the dative – instrumental syncretisms. There is only one pair (repeated in (65)), which is attested only for two items (the numeral ‘two,’ and the quantifier ‘both’), and illustrated by the numeral ‘two.’ The reason for this is that the DAT – INS syncretism was characteristic for the older dual. The dual has disappeared together with the syncretism, but it has left a trace in the numeral and the quantifier.

(65) *Syncretism of dative and instrumental in Czech*

	two, m.
NOM	dv-a
ACC	dv-a
GEN	dv-ou
PREP	dv-ou
DAT	DV-ĚMA
INS	DV-ĚMA

The dative – instrumental connection is also required to accommodate multiple-case syncretisms, an example of which is in (66).

(66) *Structural vs. oblique*

	five, Cz
NOM	pět
ACC	pět
GEN	PĚT-I
PREP	PĚT-I
DAT	PĚT-I
INS	PĚT-I

However, I add that the syncretism in the numeral paradigm above can be due to intervening factors, because the patterns of case assignment inside such numerical phrases are notoriously complex (see, e.g. Franks 1995). Thus, the most solid evidence for the syncretism of the dative and the instrumental is provided by the paradigm in (65), which, however, is exemplified by only two items.

### Conclusions

I have investigated syncretism in Czech from the perspective of the Universal Contiguity. The reason for the relatively detailed study was the fact that Czech is one of the most permissive languages in terms of the wide variety of attested homophonies. The wide range of syncretisms in Czech has been

noted also in Plank (1991), who argues against a strict version of the linear constraint on the basis of Czech and other languages (which are, however, more restricted in terms of the permitted patterns).

While it is clear that the surface patterns of Czech are not compatible with the Universal Contiguity, a closer look reveals that first of all, there is an asymmetry between those syncretisms that are allowed by the hypothesis, and those that are not. The ones which are allowed are attested for multiple exponents, the ones which are not allowed by the hypothesis are mostly unique; the only exception to this is the ACC – INS syncretism.

Further, I have provided evidence that most of the disallowed syncretism represent a surface conflation of distinct morpho-syntactic patterns (this is the case of NOM – INS, ACC – INS, and PREP – INS). In two cases where we were forced to posit accidental homophony (NOM – GEN, ACC – PREP), the account receives a good grounding in the overall system of the declension. I sum up below:

(67)

	syncretism	extension	status
a.	NOM – ACC	widely spread	non-accidental
b.	NOM – GEN	paradigm ‘street’ sg.	accidental homophony
c.	NOM – INS	soft C-final m. anim. Ns	phonological conflation
d.	ACC – GEN	m. anim. sg., pronouns	non-accidental
e.	ACC – PREP	paradigm ‘street’ sg.	accidental homophony
f.	ACC – INS	f.sg. As, ‘sir’ pl.	phonological conflation
g.	GEN – PREP	As in pl., Num ‘two,’ some Ns in sg.	non-accidental
h.	PREP – DAT	nouns in sg.	non-accidental
i.	PREP – INS	m./n. As in sg.	phonological conflation
j.	DAT – INS	Num ‘two,’ required for the conflation of all obliques	non-accidental

I draw here a general conclusion that a detailed analysis of data is required at every step to distinguish what is relevant and what is not. A language like Czech appears initially “chaotic:” recall that on the surface, three of the six cases show almost all logically possible syncretisms (4 out of 5). Plank 1991:p.187 suggests in this context that the Czech “deviations from linearity surely can no longer be called minimal.” However, if the arguments given here go through, Czech in fact provides good support for the Universal Contiguity. Thus, it is only through a careful analysis of smaller patterns that we can ultimately support or disprove the big picture.

## 8.3.4 Ukrainian

Leaving Czech as a representative of West Slavic, we move on to look at a second East Slavic language besides Russian, namely Ukrainian. My description here is based on Medushevsky and Zyatkovska (1963). I start by looking at the Universal Contiguity compatible paradigms, then I list offending syncretisms, and see how strong they are. Then we leave Slavic and move on to Germanic, Old English in particular.

In the first table, I show that NOM – ACC, ACC – GEN, and GEN – PREP are well attested.<sup>27</sup>

(68) *Ukrainian*

	region,sg.	big,pl.	knowledge,sg.	us	cashier,sg.	cashier,pl.
NOM	kraj-∅	vel'k-i	znann-já	mi	kasír-∅	kasír-i
ACC	kraj-∅	vel'k-i	znann-já	nas	kasír-a	kasír-iv
GEN	kráj-u	vel'k-ich	znann-já	nas	kasír-a	kasír-iv
PREP	kraj-ú	vel'k-ich	znann-í	nas	kasír-ovi	kasír-ach
DAT	kráj-evi	vel'k-im	znann-jú	nam	kasír-ovi	kasír-am
INS	kráj-em	vel'k-mi	znann-jám	námi	kasír-om	kasír-amí

The first three columns show that for NOM – ACC. The last four columns show ACC – GEN. Finally, the adjective ‘big’ and the pronoun ‘us’ show GEN – PREP. This last syncretism can also be found in the first column, although here it is spurious: there is a difference in stress.

Moving on to the table below, but staying with GEN – PREP, we see that it is also attested with the noun ‘mother,’ where it extends to the dative.

(69) *Ukrainian*

	mother,sg.	hand,sg.	me	big,m.sg	100,m.in./f./n.
NOM	mát-i	ruk-á	ja	vel'k-ij	st-o
ACC	mát-ir	rúk-u	mené	vel'k-ij	st-o
GEN	mát-er-i	ruk-í	mené	vel'k-ogo	st-a
PREP	mát-er-i	ruc-í	mení	vel'k-omu	st-a
DAT	mát-er-i	ruc-í	mení	vel'k-omu	st-a
INS	mát-ir-ju	ruk-óju	mnóju	vel'k-im	st-a

The next three columns independently establish the systematic nature of PREP – DAT. There is only one paradigm where the instrumental shows any syncretism (I will qualify this slightly below), and it is shown in the last column.

There are two possibly offensive syncretisms, but their status is somewhat unclear. The first one comes from the declension class II, which in some cases

<sup>27</sup>Accute accents mark the position of stress in words which have more than one syllable.

comprises up to 3 variants of an ending. The distribution of these variants is partly conditioned by semantic factors such as the count/mass distinction, animacy and others, but there seems to be some uncertainty about the choice and language variation. This leads to a situation where we can find an offending syncretism in one version of a given paradigm, but not in another version. For instance, another grammar of Ukrainian, Pugh and Press (1999), gives (on p.78) a different version of the paradigm ‘region’ than we have seen above, see (70).

(70) *Ukrainian*

	region,sg.	region,sg.
NOM	kraj-∅	kraj-∅
ACC	kraj-∅	kraj-∅
GEN	kráj-u	kráj-u
PREP	kráj-i	kraj-ú
DAT	kráj-u	kráj-evi
INS	kráj-em	kráj-em

I will not have much to say here, since it is first unclear what sort of situation we are looking at, and second, I am not in a position yet to tackle issues of variation. In any case, it is clear that the counterexample, if real, is isolated.

The second offending syncretism arises again only in a variant of a paradigm. Consider the following pair:

(71) *Ukrainian soft stem adjectives*

	endless,m.sg	endless,m.sg
NOM	bezkráj-ij	bezkráj-ij
ACC	bezkráj-ij	bezkráj-ij
GEN	bezkráj-ogo	bezkráj-ogo
PREP	bezkráj-omu	bezkráj-im
DAT	bezkráj-omu	bezkráj-omu
INS	bezkráj-im	bezkráj-im

Pugh and Press (1999:p.148) tell us that the paradigm on the right (with the offending syncretism) is a “less frequently found alternative” to the paradigm on the left, which is compatible with the Universal Contiguity.

There are two remarks I would like to make. Recall first that the syncretism of prepositional and instrumental across a distinct dative was also found in comparable Czech and Slovene paradigms. For Czech and Slovene, I have argued that the homophony represents a phonological conflation of two underlyingly distinct patterns. A similar point can be made for Ukrainian. Observe first that the syncretism disappears after hard consonants:

(72) *Ukrainian hard stem adjectives*

	big,m.sg	big,m.sg
NOM	vel'k-ij	vel'k-ij
ACC	vel'k-ij	vel'k-ij
GEN	vel'k-ogo	vel'k-ogo
PREP	vel'k-omu	vel'k-im
DAT	vel'k-omu	vel'k-omu
INS	vel'k-im	vel'k-im

The facts of the hard and soft paradigms are consistent with the underlying forms being different: *-im* for the instrumental, and *-im* for the prepositional. The lexical contrast disappears in the soft paradigm, where a phonological process turns *ɪ* into *i*, because *ɪ* does not appear after soft consonants. This suggestion leads to an understanding of why there is syncretism in the soft paradigms (71), but not in the hard paradigms (72).

The second remark stems from a comparative point of view. From that perspective, it is clear that the ending of the prepositional *-omu* is a special feature of Ukrainian, an innovation over the inherited forms that still survive in the paradigms shown in (71) and (72) on the right. There are two questions that the innovation raises, and I think that the present model can provide nice answers to both.

The first question is why the change took place. Under the present model, the motivation can be sought in the violation of Universal Contiguity, encountered in (71). As highlighted above, one possible analysis involves a phonological process which leads to a conflation of distinct forms. However, if such a phonological process is no longer productive, or very rare, a direct storage of two allomorphs of the instrumental would be an option as well. Positing the two allomorphs, however, leads to two homophonous entries for *im* occurring in the same paradigm: the instrumental one and the prepositional one. Eliminating the entry for prepositional would then simply remove this situation, plausibly undesirable.

That still leaves us wondering why it was the entry for the prepositional – rather than the instrumental – which was removed, and why the prepositional was replaced by the dative, from all other possibilities. A possible answer to these two questions relies on a consequence of the Superset Principle: the entry for a more complex case can automatically kick in for a simpler case.

From that, it follows that if the entry for instrumental was removed, there would be no other entry to spell it out, because there is no entry “big enough.” On the other hand, if the entry for prepositional is removed, the entry which spells out the immediately bigger case kicks in. Hence, it is simpler to remove the prepositional than the instrumental, because then we make sure that all cases still receive a spell out.

Second, from the perspective of the Universal Contiguity, both genitive



and dative are possible candidates to replace the prepositional. The Superset Principle, however, gives an even more accurate prediction: since a “bigger” case automatically spells out a “smaller” case, we predict that removing the entry for the prepositional automatically leads to its replacement by the “bigger” dative.

To conclude. Syncretism in Ukrainian provides support for the Universal Contiguity. There are only two problematic paradigms, both variants of paradigms which comply with the hypothesis.

Apart from this, the present model also provides an accurate understanding of the change we witness in Ukrainian, where the prepositional in the adjectival declension has been replaced by the dative: we understand both the motivations (remove the prepositional because it violates the Universal Contiguity), and the results (dative automatically fills in the vacated slot).

### 8.3.5 Summing up Slavic

I sum up the results in the form of a table. The table shows that syncretism in all of the investigated Slavic languages obeys the same template, the Universal Contiguity.

(73) The table of Universal Contiguity in Slavic

Language	A possible ordering of cases with syncretisms adjacent					
Russian	Nom	Acc	Gen	Prep	Dat	Ins
Serbian	Nom	Acc	Gen	Prep	Dat	Ins
Slovene	Nom	Acc	Gen	Prep	Dat	Ins
Czech	Nom	Acc	Gen	Prep	Dat	Ins
Ukrainian	Nom	Acc	Gen	Prep	Dat	Ins
Universal Adjacency	NOM	ACC	GEN		DAT	INS

Some of the languages show no or very little exceptions, like Serbian, Russian and Ukraine. Slovene shows three offending syncretisms, and Czech appears to show no constraints whatsoever. However, I have shown that the exceptions are for the most part the result of a phonological process, which blurs the underlying distinctions. As a result, all of the languages provide good evidence for the hypothesis that syncretism is restricted by contiguity in a linear sequence, shared across languages.

The two following points were noted in addition:

- (74)
- a. Serbian is on its way to eliminate the prepositional, its function is taken over by the dative. This receives a straightforward analysis with no additions needed.
  - b. Ukrainian has removed a violation of the Universal Contiguity in a way that is predicted by the Superset Principle.

## 8.4 Germanic

After a rather extensive discussion of Slavic, let me move on to a different branch within Indo-European, namely Germanic. I will look at two of the Germanic languages with a relatively well preserved case systems: Old English and German. Looking at these languages is interesting because, as we will see, they raise problems which are of a rather different type than the ones seen in Slavic. The syncretism in Old English has been investigated in detail by Plank (1991), and the discussion in the next section draws on his work.

### 8.4.1 Syncretisms in Old English Nouns

The order which fits best for the Old English facts (according to Plank, p.177-8) is NOM – ACC – GEN – DAT – INS, the Case sequence. Let me briefly establish the predicted order, basing the enumeration on (Plank 1991:p.171-173). Note that each of the syncretisms is attested for more than one exponent.

- (75) Syncretism in Old English (non-exhaustive)
- Nom – Acc (frequent)
  - Nom – Acc – Gen (plural of  $\bar{o}$ -nouns, feminine *i*- and *u*-nouns: ending *-a*; athematic feminine nouns in  $\bar{e}a$ , nouns ‘brother, mother, daughter:’ ending  $-\emptyset$ )
  - Gen – Dat (sg. of fem. *i*-nouns: ending *-e*, *u*-nouns: ending *-a*, neuter weak nouns: ending *-an*, and more)
  - Dat – Ins (almost all paradigms)

We see some of the syncretisms illustrated below (paradigms from Baker 2003).

- (76) Illustration of forms: nouns

	thing,f.	gift,f	wk.m.	wk.n.	daughter,f.
NOM	þing	ġiefu	-a	-e	dohtor
ACC	þing	ġiefe	-an	-e	dohtor
GEN	þinges	ġiefe	-an	-an	dohtor
DAT	þinge	ġiefe	-an	-an	dehter
INS	þinge	ġiefe	-an	-an	dehter
NOM	þing	ġiefa	-an	-an	dohtor
ACC	þing	ġiefa	-an	-an	dohtor
GEN	þinga	ġiefa	-ena	-ena	dohtre
DAT	þingum	ġiefum	-um	-um	dohtrum
INS	þingum	ġiefum	-um	-um	dohtrum

First, there are some close-to-total syncretisms, which I mark on the left margin. Dative and instrumental are syncretic both in the singular and in the

plural, and are not distinguished in nouns at all.<sup>28</sup> Nominative and accusative show syncretism regularly in the plural. The structural cases go together with the genitive in the plural of ‘gift,’ and the singular of ‘daughter,’ leading to NOM/ACC > GEN. The nominal DAT/INS joins with the genitive in the declension of weak neuters, giving NOM/ACC > GEN > DAT/INS.

The ordering arrived at is consistent with the Case sequence, although the mutual order of NOM/ACC and DAT/INS is underdetermined. Pronouns, to be discussed in the next section, call for NOM > ACC, but the order of DAT and INS cannot be decided within the confines of Old English.

To complete the picture, two syncretisms in the nominal declension have to be mentioned that go against the expected pattern. Neither of them, however, seems to present a serious challenge. First, there is a rare syncretism of nominative and genitive (Plank 1991:p.178), which Plank calls “dubious and probably unattested in later West-Saxon,” and which I would treat as an isolated accident. Second, there is a syncretism of NOM – ACC – DAT (illicitly across GEN). Plank (1991:p.179) notes, however, that this syncretism is “a peculiarity of a phonologically identifiable groups of members of various classes,” or, put even strongly, “an accident of Old English phonology rather than a deep-seated trait of the morphological system” (p.180). Based on this, I conclude that this pattern arises as a result of phonological processes which are not of an immediate concern here.

### 8.4.2 Troubles with pronouns

If this was all there is to say about Old English syncretism, we could just simply add another language on the growing list of languages compatible with the Universal Contiguity. However, Old English shows a problematic syncretism of accusative and dative which excludes the genitive in 1st and 2nd person

<sup>28</sup>The sources for Old English cited in this section express uncertainty concerning the issue whether the category of instrumental should be recognized for nouns in Old English, or whether that category should be only recognized for determiners which have a specific instrumental form, shown below.

(i)	Demonstratives		
	that,m.	that,n.	
	NOM	se	þæt
	ACC	þone	þæt
	GEN	þæs	þæs
	DAT	þām	þām
	INS	þȳ,þon	þȳ,þon

The situation here is similar to the Serbian prepositional: dative and instrumental, two independent layers of structure, fall together for almost all cases.

pronouns in all numbers. The offending forms are in small caps:<sup>29</sup>

(77) *Accusative – Dative syncretism in Old English*

	I	Two of us	We	You (sg.)	You two	You (pl.)
NOM	ic	wit	wē	þū	ġit	ġē
ACC	MĒ (meċ)	UNC (uncit)	ŪS (usiċ)	þĒ (þeċ)	INC (inċit)	ĒOW (ēowiċ)
GEN	mīn	uncer	ūre (ūser)	þīn	incer	ēower
DAT	MĒ	UNC	ŪS	þĒ	INC	ĒOW

What is the reason that Old English nouns obey the Universal Contiguity, but pronouns do not? In what follows, I argue that this fact correlates with other special properties of the Old English pronominal genitives. Specifically, I claim that the genitive forms do not structurally correspond to the regular syntactic structure of a genitive, but that they are possessive adjectives. From this, their special properties follow, as well as the fact that they do not fit in the Universal Contiguity, and intervene between the accusative and the dative form.

I will now go through a relatively detailed discussion of how such a situation arises, and how it can be captured. The reason for the detailed account is that similar issues arise more widely; genitive pronouns cause troubles for the Case sequence also in German, Latin and Classical Armenian (and probably other languages).

The specific structure I put forth for the pronominal genitives in Old English (and other languages to be discussed) is in (78). The proposal is that they are derived from a “true” genitive form by the addition of an adjectivizing suffix:

## (78) Old English genitive pronouns: [ [ Genitive ] “adjectivizer” ]

In other languages than Old English, agreement morphology is also sometimes present in addition to, or apparently instead of the adjectivizer. (This latter situation can be taken to mean that the agreement morphology spells out also the adjective part of the possessive.)

There are three pieces of evidence for (78) I present here.

1. As shown in (79a,b), the pronominal genitives are suffixed by agreement markers when they modify a noun.

(79) a. ēowr-u                      hors-∅  
          you.GEN-NOM.PL. horses-NOM.PL.  
          ‘your horses’

<sup>29</sup>The table is reproduced from Flom (1930:p.69), brackets around some of the forms are added. The brackets occur around variants of the non-bracketed “main” forms, and their use is usually restricted to a particular region. Some Old English grammars (Baker 2003:p.42,45) do not mention these forms at all. I also omit the instrumental row of the paradigm for simplicity.

- b. *mīn-um*      *scip-e*  
 me.GEN-DAT ship-DAT  
 ‘my ship’ (Old English, Baker 2003:p.43)

The same holds for adjectives (80a). Ordinary nominal genitives, however, do not take agreement, (80b).

- (80) a. *mid īsen-um tōl-um*  
 with iron-DAT tools-DAT  
 ‘with iron tools’  
 b. *eorð-an(\*-um) barn-um*  
 earth-GEN-DAT children-DAT.PL  
 ‘to the children of the earth’ (Old English, Baker 2003:p.54,108<sup>30</sup>)

Thus, pronominal genitives pattern with adjectives and against nouns. This is captured by the proposal that they are not simple genitives, but include adjectival morphology.

2. In some paradigms, we can observe that the pronominal genitive form is bi-morphemic, composed of a base, and a suffix *-(e)r*. Interestingly, the base to which *-(e)r* attaches is identical to the accusative/dative form. In the table (81), the ACC/DAT part hidden inside the genitive form is put in small caps. I owe this observation to Tarald Taraldsen, p.c.

(81) *The acc/dat basis of the genitive form in Old English*

	I	Two of us	We	You (sg.)	You two	You (pl.)
NOM	<i>iċ</i>	<i>wit</i>	<i>wē</i>	<i>þū</i>	<i>ġit</i>	<i>ġē</i>
ACC	<i>mē</i>	<i>unc</i>	<i>ūs</i>	<i>þē</i>	<i>inc</i>	<i>ēow</i>
GEN	<i>mīn</i>	<b>unc-er</b>	<i>ūre</i> ( <b>ūs-er</b> )	<i>þīn</i>	<b>inc-er</b>	<b>ēow-er</b>
DAT	<i>mē</i>	<i>unc</i>	<i>ūs</i>	<i>þē</i>	<i>inc</i>	<i>ēow</i>

This decomposition provides overt evidence for the structure (82a).

- (82) a. Old English genitive pronouns: [ [ Genitive ] “adjectivizer” ]  
 b. Genitive = *unc, ūs, inc, ēow*  
 c. Adjectivizer = *-er*

Such an analysis brings (most of) the pronoun facts in line with the Universal Contiguity. Once the genitive form is factored out to be just *ēow*, as shown in (82b), there is no longer an ACC – DAT syncretism with a distinct genitive intervening. Instead, there is ACC – GEN – DAT syncretism.

For the singular forms *mīn* and *þīn*, I propose that they are portman-teaux morphemes which spell out the whole structure (82a), including the

<sup>30</sup>The dative marker following the genitive form and the star in the example (80b) were added by me. They represent an extrapolation of the information available in the sources cited.

adjectivizer. This makes these forms irrelevant for the Universal Adjacency.<sup>31</sup>

3. It can be added in support of the structure in (82a) that it seems to conform to an independently attested pattern, which I illustrate here on Czech. Recall first the declensions of two Czech pronouns, ‘we’ and ‘she,’ repeated below.

(83) *Pronouns in Czech*

	we	she
NOM	mý	on-a
ACC	NÁ-S	j-i
GEN	NÁ-S	J-í
PREP	NÁ-S	J-í
DAT	ná-m	J-í
INS	ná-ma	J-í

One of the functions of the genitive (in Czech) is to express possession in the noun phrase. In these contexts, however, the genitive of an unmodified pronoun is illicit (84a), and a possessive pronoun has to be used instead, (84b). The genitive pronouns are reserved for adverbial uses, (84c).

- (84) a. \*dítě jí / nás  
 child she.GEN we.GEN  
 ‘our / her child’
- b. je-jí / naš-e dítě (= nas-je)  
 her our child
- c. Bojíš se jí / nás.  
 you.are.afraid REFL she.GEN / us.GEN  
 ‘You are afraid of her / of us.’

The possessive pronouns in (84b) are distinct from, yet clearly based on the genitive form. The genitive *jí* ‘of her’ takes an extra prefixal morpheme, *je-*, giving *je-jí*. The same morpheme *-je* appears suffixed to the genitive form *nás*, giving *naš-e*. (The initial glide triggers palatalization of *s* to *š* and apparently disappears on the surface. The vowel of the pronoun shortens, suggesting that the length in the genitive form is probably due to some kind of word-minimality effect.)

The Czech *je* is thus parallel to the English adjectivizer *-er*: it attaches to the genitive form of the pronoun, and turns it into a possessive.<sup>32</sup>

<sup>31</sup>Alternatively, one can propose that singular and plural forms correspond to different structures. I do not follow this line for reasons of space.

<sup>32</sup>The form *je* is homophonous with the 3rd sg. copula *je* ‘is.’ This recalls the proposal of Bernstein and Tortora (2005), who argue that English forms like *its* are the nominative *it* plus the reduced 3rd person copula ‘s. The parallel is less than perfect, though, because for Bernstein and Tortora (2005), the copula is an agreeing

I show the structure below, with the split between the 3rd and 2nd person as indicated:

(85) Czech possessives: [ 2nd gen [ “adjectivizer” = *je* [ 3rd gen ] ] ]

After affixation by *je*, the genitive form starts taking additional inflection, similarly to the English possessive pronouns, and unlike other genitives in Czech or Old English. In (86a), the head noun is in the genitive. The possessive pronoun in this example decomposes into the genitive of the pronoun, *nas*, the possessive marker *je*, and the agreement marker *ho*. In (86b), the possessive ‘her’ decomposes into the same set of markers: the prefixed possessive marker *je*, the genitive of the pronoun, *jí*, and the agreement suffix *-ho*.

- (86) a. naš-e-ho          dítě-t-e      (= nas-je-ho)  
           our-POSS-GEN child-GEN  
           ‘of our child’
- b. je-jí-ho                dítě-t-e  
           POSS-she.GEN-GEN child-GEN  
           ‘of her child’

Assuming these arguments go through, the system of the English pronoun *ġē* ‘you, pl.’ is more accurately represented by the set of paradigms (87), which shows a ACC – GEN – DAT syncretism, instead of the offending ACC – DAT (across GEN). I put the genitive form in brackets because it never surfaces as a free form, but it is bound to occur with the adjectivizer *-er*. An illustration of the possessive paradigms is provided in the next two columns.

(87) The paradigmatic structure of *ġē* ‘you, pl.’

	You (pl.)	your, m.sg	your, m.pl	...
NOM	ġē	ēow-er-∅	ēow-r-e	...
ACC	ēow	ēow-er-ne	ēow-r-e	...
GEN	(ēow)	ēow-r-es	ēow-er-ra	...
DAT	ēow	ēow-r-um	ēow-r-um	...

This possessive analysis of the “genitive” *ēow-er* (and its kin) explains the following two facts: first, why it is the case that the pronouns do not fit into the Universal Contiguity (and the rest of the English system), and second, why they take agreement markers, unlike other genitives. The analysis is supported by the morphological decomposition (*ēow-er*), as well as the fact that such or similar structures are needed independently for other languages, like Czech.

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element, as the authors propose that *your* is *you* + the copula *’re*. In Czech, we get “non-agreeing” 3rd.sg *je* ‘is’ all along. Relevant here might be the discussion in den Dikken (1999) and den Dikken (2006) on anti-agreement in DPs.

### 8.4.3 Possessors of SELF

What the analysis does not explain is why in Old English adverbial contexts, the genitive form is still accompanied by the (assumed) possessive marker, see (88). ('Help' takes genitive in Old English.) In Czech, recall, the possessive *j(e)* is missing in such contexts.<sup>33</sup>

- (88) God *ūre*     *helpe*  
       god us.GEN help  
       'God help us.' (Old English, Baker 2003:p.181)

It is possible to account for this fact by proposing that in Old English, but not in Czech, the genitive of a personal pronoun corresponds to a structure in which the possessive pronoun modifies a silent noun, SELF (see den Dikken 2006, Medová and Taraldsen 2007 for similar proposals reached on independent grounds).

- (89) Adverbial pronominal genitives in OE: [ *ūre* [ N=SELF ] ]

There is a number of questions which arise. Why does Old English differ from Czech and does not allow the genitive pronouns to surface on its own? Why doesn't the form *ūre* bear an additional agreement marker, indicating the fact that it modifies a silent noun? A full-fledged account of this requires more research. What I do in this section is provide evidence that Old English is not unique in making use of such structures. In other words, I want to show that (89) is a viable analysis, which makes sense both internally to Old English, and from a cross-linguistic perspective.

I start by showing that structures such as (89) are independently justified for languages such as German, drawing on the discussion in Johnston (1996). Consider the following table:

(90) *German 1st.sg. paradigm*

	my, masc.	my, neut.	my, fem.	my, pl.	I
NOM	mein	mein	meine	meine	ich
ACC	meinen	mein	meine	meine	mich
GEN	meines	meines	meiner	meiner	meiner
DAT	meinem	meinem	meiner	meinen	mir

The first four columns show the declension of the agreeing possessive determiner *mein* 'my.' The last column shows the case forms of the 1st.sg. personal pronoun 'I.' Of relevance is the homophony between the genitive form of the personal pronoun, and the genitive pl./fem.sg. form of the possessive determiner, indicated by shading.

<sup>33</sup>I am grateful to my Old English "informant" Agnieszka Pysz for discussing this aspect of Old English with me.



This homophony is widespread in German pronominal system. Consider the following table:<sup>34</sup>

(91) Pronoun genitives and possessives in German

	acc	gen	dat	gen. f. sg. / gen. pl. of a possessive determiner
1	mich	meiner	mir	mein-er
sg 2	dich	deiner	dir	dein-er
3m	ihn	seiner	ihm	sein-er
3f	sie	ihrer	ihr	ihr-er

The first three columns show the partial declensions of singular personal pronouns. In the “gen” column, we see the genitive forms of such pronouns. This form is identical to the form in the rightmost column, which shows the genitive pl./fem.sg. form of a possessive determiner (my, your, etc.).

The homophony becomes clear if German employs a structure like (92) when expressing the genitive of a personal pronoun. (An additional assumption that we need is that SELF triggers either feminine singular, or plural agreement in German.) The structure of Old English pronominal genitives thus finds cross-linguistic parallels, which increases the plausibility of such an account.<sup>35</sup>

(92) German pronominal genitives [ *mein-er* [ SELF-GEN.F./PL. ] ]

The structure of the German pronominal paradigm is then as depicted below. There is no self-standing genitive form of the pronoun (but the structure may be embedded inside the possessive), and its function is taken over by the possessive. This is indicated by the arrow.<sup>36</sup>

(93) *The invasion of the possessive into the genitive*

<sup>34</sup>The genitive forms of the German pronouns are considered archaic, and additional forms come into play in colloquial German. I ignore this here.

<sup>35</sup>Forms which also invite an explanation in terms of the structure (92) are the English “intransitive possessives” *your-s*, *her-s*, *our-s* and *their-s*, as in (ia). In particular, one would like to draw here a parallel between examples such as (ia) and examples like (ib). The parallel analysis of the two *s*-es becomes possible if the structure of (ia) is as shown in (ic).

- (i) a. a friend of your-s  
 b. a friend of John’s  
 c. a friend of [your SELF]’s

<sup>36</sup>Similar is the situation in Latin, to be discussed later in the chapter.

	my, masc.	my, neut.	my, fem.	my, pl.	I
NOM	mein	mein	meine	meine	ich
ACC	meinen	mein	meine	meine	mich
GEN	meines	meines	meiner	meiner	⇒ —
DAT	meinem	meinem	meiner	meinen	mir

Looking further into German (and still following Johnston), we realize that the situation is a bit more complex than highlighted so far. In particular, the 1st/2nd person plural pronouns, see (94), are still similar to the possessive determiner, but they (apparently) lack the genitive agreement marker *-er*.<sup>37</sup>

(94) Pronoun genitives and possessives in German

	acc	gen	dat	gen. fem. sg. / gen. pl. of a possessive determiner
1	uns	unser	uns	unser-er
pl 2	euch	euer	euch	eur-er
3	sie	ihrer	ihnen	ihr-er

The paradigms of the 1st/2nd plural pronouns above are interesting, because they have the same abstract structure as the problematic Old English paradigms:

(95) Pronoun genitives and possessives in Old English

	acc	gen	dat	gen. pl. of a possessive determiner
2pl	ēow	ēower	ēow	ēower-ra

Thus, (94) and (95) should receive the same explanation. There are two possible analyses of the German pattern, and as far as I can see, both may be applicable in Old English. The first one is due to Johnston (1996), and it says that all German genitive pronouns are the same, i.e., they are in fact underlyingly identical to the genitive possessives *uns-er-er*, and *eu-r-er*. Under such an approach, the surface difference come from the proposal that the final genitive ending *-er* (due to agreement with the silent head noun) is not pronounced for phonological reasons.

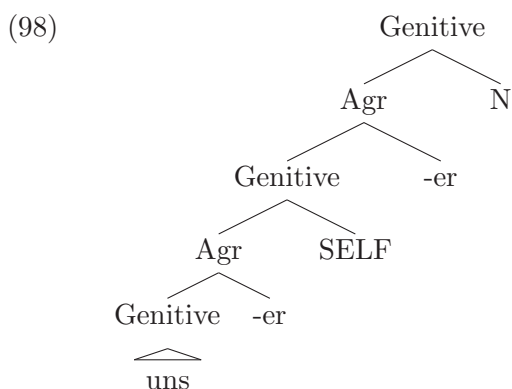
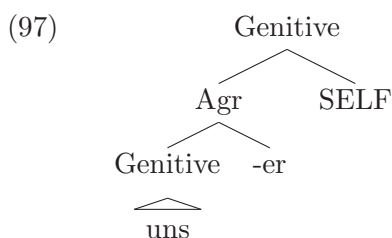
This approach stems from the generalization that all the genitive personal pronouns are bi-syllabic. To capture that generalization, we can propose that there is an active templatic requirement in German, such that the genitive forms of personal pronouns *have to* be bi-syllabic. This leads to the effect that the agreement inflection is dropped just in case the base is bi-syllabic to begin with: *eu.er*, *un.ser*. This is depicted below:

(96) *The invasion of the possessive into the genitive*

<sup>37</sup>Alternatively, they do have it, and the possessive *uns-er-er* has it twice.

	my, masc.	my, neut.	my, fem.	my, pl.	I
Nom.	unser	unser	unsere	unsere	wir
Acc.	unseren	unser	unsere	unsere	uns
Gen.	unseres	unseres	unserer	unserer	[unserer] <sup>2σ</sup>
Dat.	unserem	unserem	unserer	unseren	uns

Alternatively, we can start with a recursion of the basic proposal, and say that *-er* in *uns-er* in fact is the same genitive agreement as in *mein-er*. In such case, the structure of the genitive ‘uns-er’ is in (97), and the structure of the possessive *uns-er-er* ‘our, gen.pl.’ would be as in (98):



The proposal (97) says that there is the genitive pronoun *uns*, which (for reasons to be understood) cannot surface on its own, but it has to modify the noun SELF. The noun SELF itself is in the genitive, which leads to the occurrence of *-er* on *uns*. This derives the genitive *uns-er*, in parallel to *mein-er* ‘I, GEN.’ Now *uns-er* can act as a genitive pronoun, but it is in fact a concealed possessive of the noun SELF.

When this “derived” genitive pronoun is further used to express possession of an additional head noun (the N node in the tree (98)), and the head noun is in the genitive, *uns-er* picks up additional agreement and becomes *uns-er-er*.

To conclude. I have shown morphological evidence from German that languages may choose to express the genitive form of a personal pronoun by a structure where that pronoun is a possessor of a silent SELF, reflected by an agreement morpheme on the possessive. The availability of such a structure is crucial to explain the fact that English genitive pronouns, while

morphologically possessive, act as true genitives in adverbial contexts.

As far as the facts of Old English go, there are two pieces of evidence which support this analysis: (i) pronominal genitives are adjective-like (they can be suffixed by agreement markers); (ii) the pronominal genitives morphologically contain a form which itself looks like a case-marked pronoun, the “true” genitive. This analysis has the effect of rendering irrelevant the problematic ACC-DAT syncretism which we have started from. In fact, to the extent that the morphological composition is transparent (*ēow-er*), the genitive pronoun hidden inside the possessive is in fact identical to the ACC/DAT form (*ēow*), which is what we predict.

I will now turn to syncretism in German, drawing on Johnston (1996).

#### 8.4.4 German

German has four cases, nominative, accusative, genitive and dative. The declension system in German splits into two sub-systems. First, there is a sub-system which includes pronouns, definite determiners and strong adjectival inflection. This sub-system makes most of the distinctions which are relevant for the differentiation of case in German. The second sub-system includes nouns, and weak adjectives, and it is characterized by minimal overt distinctions in case marking.<sup>38</sup>

As far as I can see, there are two possible extreme approaches to the split in German nominal inflection, which I give below.

- (99) Two possible approaches
- a. Case in German is realized on all members of the NP\*. The fact that inflection on nouns and weak adjectives is impoverished is irrelevant.
  - b. Case is spelled out only on one category of the NP\*, i.e. either on the determiner, or on all adjectives (strong inflection). The inflection on nouns and weak adjectives is impoverished because they do not participate in the spell out of case (most of the time).

The first option corresponds to the traditional approach, and a contiguity focussed description of German syncretism is presented in Johnston (1996).<sup>39</sup> The alternative approach is represented, for instance, by certain analyses in Leu (2008). While these are the two extremes, they are not necessarily incompatible; for instance, it is possible to say that only a subset of the case features

<sup>38</sup>In addition, there is a so-called mixed declension, which combines the features of these two sub-systems. See Leu (2008) for a recent discussion, including a summary of literature and various approaches to the mixed declension issue.

<sup>39</sup>Johnston argues that under such an approach, the German syncretism is compatible with the order NOM – ACC – GEN – DAT. I repeat some of his data and conclusions here, but see his work for a more detailed presentation.

(in particular nominative and accusative) is realized on the weak adjectives, and so on.

Let me illustrate the two distinct approaches on an example, taken from Leu's work, glosses mine:

- (100) Nominative
- a. gut-**er** Wein  
good-K wine  
'good wine'
  - b. ein gut-**er** Wein  
a good-K wine  
'a good wine'
  - c. d-**er** gut-e Wein  
the-K good-weak wine  
'the good wine'
- (German, Leu 2008)

- (101) Dative
- a. gut-**em** Wein  
good-K wine  
'good wine'
  - b. ein-**em** gut-en Wein  
a-K good-weak wine  
'a good wine'
  - c. d-**em** gut-en Wein  
the-K good-weak wine  
'the good wine'
- (German, Leu 2008)

Under the traditional approach, all parts of the NP\* bear either nominative in (100), or dative in (101). This leads to the need to recognize three distinct inflection classes for adjectives, which are determined by syntactic position. Thus, the dative form of the adjective is *-em* if not preceded by a determiner (strong declension), and *-en* otherwise (weak and mixed declension). The nominative form of the adjective is *-e* if preceded by the definite article (weak declension), and *-er* otherwise (strong and mixed declension).

The alternative approach which emerges from Leu's work is that there is essentially a unique case morpheme in the noun phrase, glossed K in the examples above. This morpheme is *-er* in the nominative, and *-em* in the dative; the distribution of this morpheme in the noun phrase is determined by syntactic processes (movement).<sup>40</sup>

<sup>40</sup>In Leu's approach, what I call here case marker is called adjectival agreement, and it occupies a designated position in the projection of the adjective (and not the noun phrase, as I claim here). This reflects the fact that there is one case morpheme per adjective, rather than noun. I do not go into this here for reasons of simplicity.

The idea according to which the case marker on the adjective is crucial for spelling

The two approaches have each its own merits and drawbacks, and I discuss these two possibilities as we go. Both of them, however, agree that the morphology on determiners, strong adjectives and pronouns is the core of the German case morphology. I thus start with these categories.

The pronominal paradigms are shown below:

(102) The pronominal declension in German

	I	you	he	she	it	we	you	they
NOM	ich	du	er	sie	es	wir	ihr	sie
ACC	mich	dich	ihn	sie	es	uns	euch	sie
GEN	(meiner)	(deiner)	(seiner)	(ihrer)	(seiner)	(unser)	(euer)	(ihrer)
DAT	mir	dir	ihm	ihr	ihm	uns	euch	ihnen

As highlighted in the preceding section, the genitive forms are irrelevant, because they are in fact possessives. That is why I have put them in brackets. The possessive analysis makes unproblematic an otherwise illegal syncretism of dative and accusative in 1st and 2nd person plural, see the shaded cells. Apart from that, we get two nominative accusative syncretisms, see the pronouns ‘it’ and ‘she/they.’

The determiner paradigms are shown below:

(103) The declension of the determiner

	article	masc	neut	fem	plural
NOM	d-er	d-as	d-ie	d-ie	
ACC	d-en	d-as	d-ie	d-ie	
GEN	d-es	d-es	d-er	d-er	
DAT	d-em	d-em	d-er	d-en	

In the table above, we get a NOM/ACC syncretism (two distinct exponents), and a GEN/DAT syncretism, both in line with the case sequence we have observed in other languages.

Turning now to the declension of strong adjectives (104), we realize that it is essentially identical to the declension of the determiner.

(104) Declension of strong adjectives in German

out case in German can be supported by the fact that (certain) bare nouns cannot, for example, occur in the genitive without an accompanying adjective:

- (i) Benachteiligungen \*(andergläubi-er) Frauen  
 discriminations heterodox-GEN women  
 German, Bayer et al. 2001:ex.2

	masc	neut	fem	plural
NOM	rot-er	rot-es	rot-e	rot-e
ACC	rot-en	rot-es	rote	rot-e
GEN	<b>rot-en</b>	<b>rot-en</b>	rot-er	rot-er
DAT	rot-em	rot-em	rot-er	rot-en

A relevant difference is that the genitive form of the masculine and neuter paradigms have *-en* instead of *-es* (boldfaced), which creates a (possibly spurious) ACC/GEN syncretism in the masculine singular (shaded).

However, there are reasons to believe that the shift from *-es* to *-en* in the strong paradigm is not due to syncretism, but to something else. What I have in mind here will become clear when we look at the declension of singular nouns, shown below.

(105) Declension of singular nouns in German

	brother, M	bed, N	mother, F
NOM	Bruder	Lager	Mutter
ACC	Bruder	Lager	Mutter
GEN	<b>Bruders</b>	<b>Lagers</b>	Mutter
DAT	Bruder	Lager	Mutter

As can be observed, there is essentially no inflection on nouns, except for the *-s* suffix in the masculine and neuter genitive. The anomalous presence of the *-s* in nouns correlates with its anomalous absence in the same cells of the strong adjectival paradigms. This can be understood under the hypothesis that case in German is only spelled out once per NP\* (i.e., either on strong adjectives or on the noun). In such case, we only have one series of case affixes (as seen in the determiner declension), which docks onto the adjective in most cases, but it ends up on the head noun in the genitive M./N.<sup>41</sup>

This analysis has the advantage that it relates together the two otherwise anomalous features of the German declension system. Further, the illegal syncretism of accusative and dative to the exclusion of genitive is thus explained; there is in fact no syncretism, only asymmetric distribution of the genitive *-s* (on the noun) vs. the nominative *-r*, the accusative *-n* and dative *-m* (on the adjective).<sup>42</sup>

Under the alternative approach (everything is case-marked), we do get a contiguity problem in (104). Johnston (1996), however, observes that even on such an approach, the data need not be problematic. Thus, he notes that with

<sup>41</sup>It remains to be seen whether an analysis along these lines can be implemented only by movements compatible with Cinque (2005). This issue is orthogonal to the main point, and I leave it open.

<sup>42</sup>The strong adjectival *-en* in GEN.SG.M/N is identical to the weak declension form, which, under the one-case approach, appears as a default when there is no case (or strong agreement) to spell out, see Leu (2008).

monosyllabic nouns, the dative (optionally, and with an archaic flavor) allows for an additional *-e*:

(106) Monosyllables

	river, M	sheep, N
NOM	Strom	Schaf
ACC	Strom	Schaf
GEN	Strom(e)s	Schaf(e)s
DAT	Strom(e)	Schaf(e)

If the *-e* is included in the paradigms, there is no longer a syncretism of accusative and dative to the exclusion of the genitive. Johnston further suggests that the absence of the oblique *-e* outside of monosyllables, i.e. in the problematic paradigms (105), is related to phonology, and hence, irrelevant for syncretism.

Turning to the weak adjectival inflection, we get the following paradigms:

(107) Weak adjectival inflection

	masc	neut	fem	plural
NOM	rote	rote	rote	roten
ACC	roten	rote	rote	roten
GEN	roten	roten	roten	roten
DAT	roten	roten	roten	roten

Beyond what we have seen so far, this declension shows that the accusative can syncretize with the two oblique cases (see the shaded cells in the masculine singular and the plural). It is necessary to add, however, that under the one-case-per-NP hypothesis, the relevance of these facts is unclear, and the reasons for the variation between *-en* and *-e* (dependent on case) is not straightforwardly accounted for.

Finally, the declension of nouns in the plural is below:

(108) The declension of nouns in the plural

	plurals in <i>-er</i>	PL. in <i>-en</i>	PL. in <i>-e</i>	PL. in <i>-s</i>
NOM	Brüder	Frauen	Nächte	Autos
ACC	Brüder	Frauen	Nächte	Autos
GEN	Brüder	Frauen	Nächte	Autos
DAT	Brüdern	Frauen	Nächten	Autos

Here, only the dative has an overt ending, and thus, under the traditional hypothesis that case is spelled out on all nouns, we have some evidence for putting the GEN next to ACC, because the two are syncretic to the exclusion of the dative.

Summing up: under the traditional analysis, all parts of NP\* bear case. In such an approach, the syncretisms in German provide evidence for the ordering



NOM – ACC – GEN – DAT, with two potential problems. One, there is a DAT – ACC syncretism in pronouns, but this is irrelevant for the approach taken here. The reason is that the genitive pronouns are not part of the same paradigm, because they have a different structure: they are possessive determiners. The second potential problem shows up in the singular nominal declension, where only the genitive has an overt ending. Johnston (1996) has, however, argued that the explanation for this can be drawn from phonology: the dative has in fact an ending as well, namely *-e*, present optionally on monosyllabic nouns. The *-e*, while present, does not show up with longer stems due to phonological reasons.

This second problematic aspect of German receives a neat explanation under the one-case approach, according to which there is only a single series of markers, the genitive *-s* and the dative *-m*, with the first one attached to the noun, and the second one to the adjective. Under this approach, however, only a subset of the paradigms is relevant for syncretism, and thus, the evidence for the NOM – ACC – GEN – DAT ordering is weaker. Essentially, we are only left with syncretisms targeting NOM/ACC or GEN/DAT.

On either account, the facts are consistent with the order NOM – ACC – GEN – DAT, i.e., the Case sequence. I now leave Germanic and turn to Latin.

## 8.5 Latin

As highlighted in chapter §3.4.3, the core of the Latin syncretism singles out the pairs of NOM–ACC, GEN–DAT and DAT–INS. They are shown in the table below:

(109) Syncretism in Latin

	war, SG.	star, SG.	thing, SG.	war, PL.
NOM	bell-um	stell-a	r-ēs	bell-a
ACC	bell-um	stell-am	r-em	bell-a
GEN	bell-ī	stell-ae	r-eī	bell-ōrum
DAT	bell-ō	stell-ae	r-eī	bell-īs
INS	bell-ō	stell-ā	r-ē	bell-īs

There are three counterexamples for the hypothesis that in the order of cases given in the table, only adjacent cases show syncretism. First, there is a syncretism of nominative and genitive in a subset of nouns of the third declension, see the paradigm *turris* ‘tower’ in the table (110). Second, neuter nouns of the fourth declension have a highly deflected paradigm, see *cornū* ‘horn’ in table (110). Here, only the genitive shows a distinct ending. Finally, there is an accusative/ablative syncretism in 1st and 2nd person singular pronouns, replicated also by the reflexive pronoun. An illustration is provided in the last column of the table (110).

(110) Two offending paradigms in Latin

	tower f.	horn, n.	1st.sg
nom	turris	corn-ū	ego
acc	turrem (turrim)	corn-ū	mē
gen	turris	corn-ūs	meī
dat	turrī	corn-ū	mihi
ins	turre (turrī)	corn-ū	mē

I now tackle the counterexamples in turn. First, the syncretism of *turris* ‘tower’ is best treated as an accidental homophony of two distinct representations (see Johnston 1996:p.48-51), the reasoning follows. The paradigm ‘city’ in the table below shows that the nominative ending for the third declension nouns is *-s*, and the genitive is *-is*. This leads to the segmentation of ‘tower’ as indicated in the second column of table below, where the *i* in the nominative is a stem marker, but not the ending.

(111) The endings of the 3rd declension

	city, SG.	tower, SG.	old man, SG.
nom	urb- <b>s</b>	turr- <b>i-s</b>	sen-ek- <b>s</b> (senex)
acc	urb- <b>em</b>	turr- <b>em</b>	sen- <b>em</b>
gen	urb- <b>is</b>	turr- <b>is</b>	sen- <b>is</b>
dat	urb- <b>ī</b>	turr- <b>ī</b>	sen- <b>ī</b>
ins	urb- <b>e</b>	turr- <b>e</b>	sen- <b>e</b>

The distribution of the stem marker *i* in the paradigm ‘tower’ then runs parallel to what we observe in the paradigm of ‘old man.’ Here, the nominative stem *sen-ek-* (or *sen-eg-*) has the non-nominative shape *sen-*, just like *turr-i-* surfaces as *turr-* in cases other than nominative. To conclude, the independently justified differential segmentation of the nominative (*-i-s*) and the genitive (*-is*) makes the offending NOM–GEN homophony irrelevant to the mechanism of lexical insertion.

I now turn to the paradigm of ‘horn,’ which has a distinct genitive form, and all other forms are syncretic. The syncretism does not seem to be a product of a phonological process, and the present system thus has to treat it as a case of accidental homophony. It should be noted, however, that the evidence this paradigm provides against the hypothesis of Universal Contiguity is of limited scope, since only 4 nouns belong fully to the paradigm ‘horn,’ as noted in Allen and Greenough (1975:§91).<sup>43</sup>

<sup>43</sup>In addition to the marginal status of the paradigm, Key (1858:p.14) gives a difference in length between the NOM/ACC and GEN/DAT ending, specifically *-u* for NOM/ACC and *ū* for DAT/INS. He also marks the genitive form *cornūs* as unattested in texts, but reconstructed instead.

Finally, there is the accusative – instrumental syncretism which characterizes three pronouns: ‘I,’ ‘you, SG.’ and the all purpose reflexive ‘self.’ This seems to be part of the larger pattern (see German and Old English above) in which pronouns show syncretisms unattested for nouns.

The “intervention” of the genitive pronoun is related to the fact that the genitive form *me-ī* is formally a member of a possessive paradigm, and not of the personal pronoun paradigm. I show this in the table below, where I leave the genitive cell of the personal pronoun blank, and indicate by an arrow that the function of the genitive zone is performed by the genitive form of a possessive pronoun:

(112) The possessive nature of the genitive

	my, NEUT.	I
nom	me-um	ego
acc	me-um	mē
gen	<b>me-ī</b> ⇒	—
dat	me-ō	mihi
ins	me-ō	mē

The arrow in the cell for the genitive is not intended to denote some kind of a morphological take-over, but it is intended to convey the meaning that the genitive of a personal pronoun is expressed by a different structure, namely a possessive pronominal form. This state of affairs is not unique to Latin, as shown in the preceding section.

What is the structure of the possessive pronoun *me-ī*? Here it becomes relevant that when we strip the possessive pronoun off the agreement marker, what we are left with is the form *me*, which can be plausibly analyzed as an underlying *mē*, i.e., the same form which occurs in the accusative and instrumental.<sup>44</sup> The idea I have pursued above and I repeat here is that this *mē* is in fact the missing genitive form of the pronoun, which only surfaces with an agreement hooked on, as shown in (113):

<sup>44</sup>A similar shortening effect can be observed independently in the fifth declension. The declensions ‘day’ and ‘thing’ differ in the genitive and dative by the length of the vowel *e*. This can be described as shortening of an underlying *ē* in a C\_V context, which is the same context that obtains in the possessive forms.

(i) CēV ⇒ CeV

	thing, SG.	day, SG.
nom	r-ēs	di-ēs
acc	r-em	di-em
gen	r- <b>eī</b>	di- <b>eī</b>
dat	r- <b>eī</b>	di- <b>eī</b>
ins	r-ē	di-ē

In other words, *rēī* goes to *reī* just like *mēī* goes to *meī*.

(113) The structure of *me-um* = [*agr* [*gen* *mē-*] -um ]

If this is correct, than the paradigm of the personal pronouns is better represented as (114):

(114) Two offending paradigms in Latin

	1st.sg
nom	ego
acc	<i>mē</i>
gen	<i>mē</i>
dat	mihi
ins	<i>mē</i>

After explaining away the genitive form, what we are left with is the intervening dative. I admit that I lack understanding of the phenomenon at hand, but it strikes me that the dative form is unlike anything encountered in the Latin declension. In particular, taking *m* to be the first person, it is unclear what *-ihi* is, how it segments, and why it occurs here. I have to leave the investigation of this problem for future research.

## 8.6 Classical Armenian revisited

In chapter §7, I have introduced Classical Armenian as a language where the order of cases complies with the Universal Contiguity. In this section, I review a counterexample to the established ordering of cases. The counterexample is similar as in Old English and German: an illicit syncretism of pronouns across the genitive. I argue that this culprit tells the same story as the others: the genitive is not a genitive, it is a special possessive form.

I start by repeating the general description of the case system in Classical Armenian from ch.§7, page references are to Schmitt (1981). Classical Armenian is a language with seven cases: nominative, accusative, locative, genitive, dative, ablative and instrumental. The cases show syncretisms which comply with the order in which they have been presented, an order consistent with the Case sequence. Consider the paradigms in (115).

(115) Classical Armenian, a-stem declension (p.94)

	nation (sg.)	nation (pl.)
NOM	azg-∅	azg-k'
ACC	azg-∅	azg-s
LOC	azg-i	azg-s
GEN	azg-i	azg-a-c'
DAT	azg-i	azg-a-c'
ABL	azg-ê	azg-a-c'
INS	azg-a-w	azg-a-w-k'

In the singular, nominative and accusative show syncretism, and accusative and locative go hand in hand in the plural. This leads to NOM > ACC > LOC. Locative in turn must be adjacent to genitive and dative (on the basis of the singular syncretism), and ablative comes after these two cases, due to the syncretism in plural. This leads to the continuation LOC > GEN/DAT > ABL. Instrumental does not show any syncretisms in the paradigms. Consequently, it could be either first, or last. The reason for putting it last is that in -n-stems, it patterns with the ablative in terms of ordering, see (116). Therefore, it is more akin to ablative than nominative.

## (116) Classical Armenian, a-stem / n-stem declension p.101-102

	nation (sg.)	part (sg.)
NOM	azg-∅	mas-∅-n
ACC	azg-∅	mas-∅-n
LOC	azg- <b>i</b>	mas- <b>i</b> -n
GEN	azg- <b>i</b>	mas- <b>i</b> -n
DAT	azg- <b>i</b>	mas- <b>i</b> -n
ABL	azg-ê	mas-n-ê
INS	azg- <b>a-w</b>	mas- <b>a-m-b</b>

The problem arises when we take into account the declension of personal pronouns, see (117). The genitive row is highlighted by shading, and the problematic forms are typeset in small caps.

## (117) Personal pronouns in Classical Armenian

	1st.sg	2nd.sg.	3rd.sg.	1st.pl.	2nd.pl.	3rd.pl.
NOM	es	dow	s-a	mek'	dowk'	so-k'-a
ACC	is	k'ez	s-a	mez	jez	so-s-a
LOC	is	k'ez	s-m-a	mez	jez	so-s-a
GEN	<b>im</b>	K'O	SO-R-A	MER	JER	so-c'-a
DAT	inj	k'ez	s-m-a	mez	jez	so-c'-a
ABL	inên	k'ên	s-m-a-nê	mênj	jênj	so-c'-a(-nê)
INS	inew	k'ew	so-v-a-w	mewk'	jewk'	so-k'-a-wk'

What I am about to suggest should come as no surprise: the offending genitives are possessives.<sup>45</sup> A confirmation of this is twofold. First, the offending suffix *-r* is an Indo-European suffix *\*-ro* attested in forms which are rou-

<sup>45</sup>While this is no longer transparent on the surface (to my mind), it is claimed in the source grammar (p. 115-117 of Schmitt 1981) that the oblique personal pronouns are in general all possessive by origin. For instance, the possessive *im* 'my' is claimed to have served as a stem for all other cases, with readjustments due to phonological development.

tinely classified as possessives in other languages, like the Latin *nostr-um* ‘our, nom.sg.neut’ (p.117). Further, just like in Old English, the genitive form serves as the input for a possessive pronoun which takes on additional agreement inflection. Here again, pronominal “genitives” differ from ordinary genitives, where stacking of further affixes on top of the genitive is generally impossible.<sup>46</sup> I have nothing to add here: a similar problem as in German, the same solution applies.

## 8.7 Summing up

The result of the discussion in this chapter is shown below in the form of a table.

Language	A possible ordering of cases with syncretisms contiguous						
Ancient Greek	NOM	ACC		GEN		DAT	–
Modern Greek	NOM	ACC		GEN		–	–
Arabic	NOM	ACC		GEN		–	–
Czech	NOM	ACC		GEN	PREP	DAT	INS
Russian	NOM	ACC		GEN	PREP	DAT	INS
Serbian	NOM	ACC		GEN	(PREP)	DAT	INS
Slovene	NOM	ACC		GEN	PREP	DAT	INS
Ukrainian	NOM	ACC		GEN	PREP	DAT	INS
German	NOM	ACC		GEN		DAT	–
Old English	NOM	ACC		GEN		DAT	INS
Sanskrit	NOM	ACC	LOC	GEN	ABL	DAT	INS
Latin	NOM	ACC		GEN	LOC	DAT	INS
Classical Armenian	NOM	ACC	LOC	GEN		DAT	ABL INS
Case sequence	NOM	ACC		GEN		DAT	INS

The table includes 12 Indo-European languages (plus Arabic) with a relatively rich system of case inflection and a relatively large Number of declension classes and individual paradigms representing such declensions. Each such paradigm is singled out because it shows a peculiarity of its own, which must be learned separately. A paradigm in a language may thus be one of many, but it comes close to being a separate language of its own. From that perspective, the table represents a generalization over hundreds of partially independent systems, with an overwhelming majority of them corresponding to a single abstract template. (Further, I have argued that a vast majority of the patterns which do not fit can be explained away, with a couple of challenging examples left for future research.)

<sup>46</sup>Plank (1995) notes that Classical Armenian shows “suffixaufnahme” in ablative and instrumental. “Suffixaufnahme” refers to the replacement of the genitive inflection (appropriate for the possessor) by the ablative or instrumental inflection if the head noun bears one of the two cases. This is related, but different.

In §1, I have proposed that such a situation can be explained if case decomposes into features, and the features show cross-linguistically rigid internal organization. One system of feature organization with the right properties to encode the result is a binary syntactic tree, in which case morphemes correspond to non-trivial subtrees. This means that the scope of syntax does not stop at morphemes, but governs regularities which reach inside them (the essence of Nanosyntax).





# Chapter 9

## Open ends

This short chapter briefly mentions two empirical areas where a case hierarchy highly similar to the one proposed here underlies the statement of cross-linguistic generalizations. I will not provide any detailed analyses; the goal is to identify areas of future research which might lead either to confirmation, or modification of the functional sequence proposed here.

Finally, I also address here the question whether gaps in the functional sequence are allowed.

### 9.1 Agreement

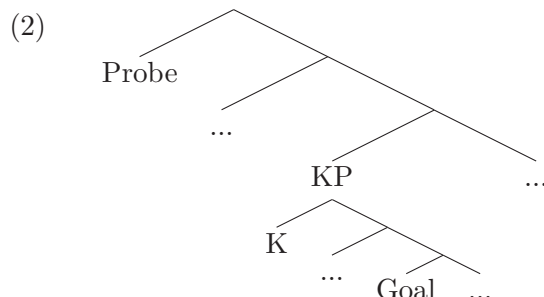
Bobaljik (to appear) (building on previous work which I do not review here) presents a hierarchy which describes accessibility for agreement, see (1).

- (1) *Agreement hierarchy* (Bobaljik to appear):  
Unmarked Case (NOM/ABS) > Dependent Case (ACC/ERG) > Oblique Case

The hierarchy is to be read as follows: if a language allows the verb to agree with an argument marked by a case X, it also allows the verb to agree with all arguments to the left of X. The hierarchy of agreement is identical to the syncretism sequence of Baerman et al. (2005); and hence, directly relevant to our concerns. The obvious question to ask is whether the Agreement hierarchy (1) can be derived from the interaction of agreement computation, and the functional sequence proposed here.

Under one possible interpretation, agreement arises as a result of a relation established between a DP\* external position and the person/number features of the noun, as in the Probe-Goal system of Chomsky (1998). (I will continue using the terms Probe and Goal, but without a commitment to a specific implementation.) In such an approach, the agreement relation between the Probe and the Goal is subject to (syntactic) locality conditions. If this is the

case, the agreement hierarchy could follow from the interaction of agreement computation and the decomposed case under the assumption that case layers intervene between the Probe and the Goal.



If this is correct, then the amount of case shells is directly relevant for the establishment of agreement.

Specifically, if a particular layer of case counts as a blocker of the Agree relation, all cases which contain that layer will likewise block the relation. In concrete terms, if the ACC layer is a blocker of agreement, as shown in (3b), then every case which contains ACC won't allow for agreement. This is exemplified for the genitive in (3c).

- (3)
- a. ok: [ Probe ... [NOMP ... [Goal ... ] ] ]
- b. \*: [ Probe ... [accP [NOMP ... [Goal ... ] ] ] ]
- c. \*: [ Probe ... [GENP [accP [NOMP ... [Goal ... ] ] ] ] ]

## 9.2 Keenan-Comrie relativization hierarchy

Keenan and Comrie (1977) present a hierarchy based on the accessibility of a particular argument to relativization. The hierarchy allows them to formulate a generalization that a given “relativization strategy” is available for a contiguous sequence of the hierarchy. The hierarchy is given below, and I call it the relativization hierarchy (a more common term is “the accessibility hierarchy,” which is quite opaque, though). Its similarity to the Case sequence is apparent, but there are also differences which I comment on below.

- (4) *Relativization hierarchy* Keenan and Comrie 1977:  
 SU > DO > IO > OBL > POSS > Object of Comparison

The hierarchy is intended to capture two main observations. First, relativization strategies that do not reflect the case of the “gap” (the argument relativized on) occur from the extreme left of the hierarchy (subjects) and either go all the way, or stop somewhere on the way to the Object of comparison. On the other hand, strategies that do reflect the case of the gap (prototypically

resumptive/relative pronouns) are most likely to occur on the right (Object of comparison) and either go all the way to the left, or stop somewhere on the way to subjects. The following observations are relevant.

First, as Keenan and Comrie point out, some ergative languages (e.g., Tongan) present a counterexample to the hierarchy. In this language, ergative subjects and oblique NPs can be relativized on using a resumptive pronoun strategy, but absolutive objects do not allow an overt pronoun. This provides evidence for stating the hierarchy in terms of case  $ABS > ERG > OBL$ , rather than in terms of grammatical function  $SUBJ > OBJ > OBL$ ; only in the statement  $ABS > ERG > OBL$  is the ergative subject adjacent to the obliques. (The same point is made briefly in Bobaljik to appear, and demonstrated for wide range of ergative languages in Polinsky 2008). Importantly, the sequence  $ABS > ERG > OBL$  is identical to the one observed for syncretism by Baerman et al. (2005) and for agreement by Bobaljik (to appear).

Below, I show the restatement of the hierarchy in terms of case (for nominative/accusative languages), translating subject onto nominative (/absolutive), direct object onto accusative, indirect object into dative, and possessor into genitive. I leave out the Object of Comparison since there is no direct match for it in the Case sequence we have been working with so far.

(5) *Relativization hierarchy*:  $NOM > ACC > DAT > OBLIQUE > GEN$

Seen this way, the hierarchy looks rather similar to the Case sequence relevant for syncretism; however, the position of the genitive in the Keenan-Comrie hierarchy is obviously different:

(6) *The Case sequence*:  $NOM > ACC > GEN > DAT > OBLIQUE$

This makes it initially unclear whether the hierarchy should be related to the functional sequence of case proposed here.

However, there is an independent reason why the genitive falls in a distinct place. Whereas subjects, objects and all sorts of obliques Keenan and Comrie tested were dependents of the verb, the genitives were possessors, i.e.,  $KP^*$ s embedded inside another  $KP^*$ . This introduces an asymmetry in the hierarchy that is orthogonal to the overall pattern, conditioned by case. Consequently, the genitive should be excluded from the hierarchy on independent grounds.<sup>1</sup>

If this reasoning is correct, then the categories which are shared between

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<sup>1</sup>To get equal testing conditions for genitives and the remaining cases, one would have to either test accessibility for relativization on the dependents of verbs only (adverbial genitives), or on dependents of nouns only (adnominal PPs). For noun dependents, such a study is impossible, since nouns usually take only a subset of dependents compared to verbs (e.g., it is impossible to conduct a cross-linguistic study concerning accessibility of nominative/absolutive dependents of nouns). For dependents of verbs, such a study is unavailable.

the relativization hierarchy and the Case sequence come in the same order; more strongly, the Relativization hierarchy is the Case sequence.

I do not suggest any implementation here, and leave the investigation for future research.

### 9.3 Gaps in the sequence

The final question I address is whether gaps in the underlying functional sequence are allowed. To see the issue on an example, consider the representation of the genitive in (7a), involving the features A, B and C. The question is whether there are syntactic structures in which C comes immediately on top of A, as in (7b).

- (7) a. The genitive zone: [ C [ B [ A [ NP\* ] ] ] ]  
 b. A structure with a gap: [ C [ A [ NP\* ] ] ]

The answer seems to be that structures such as (7b) are not attested. There are two reasons for claiming that.

First, recall that in languages such as English, the NP\* does not cross C (the genitive), but it can cross B (the accusative). Thus, the genitive (7a) is spelled out as the combination of *of* inserted under C, and the accusative (spelling out [ B [ A ] ]). The structure (7b) would then have to be spelled out as the combination of *of*, inserted under C, and the nominative (spelling out A). But there is no such structure in English or elsewhere, as far as I know.

Second, if (7b) was a legitimate syntactic structure, we would not be able to express the contiguity constraint on syncretism. The reasoning leading to this conclusion is complex, because there are various ways to set up insertion for syntactic structures with gaps. However, as far as I can tell, under no version of the insertion procedure do we end up with “the right system,” i.e., with a system that derives contiguity in a total linear order. Consider the reasoning.

Assume three features, A, B and C, which give rise to the four following representations. I designate each such structure with a number that I will be using to refer back to such a structure:

- (8) a. 1 = A  
 b. 2 = [ B A ]  
 c. 3 = [ C [ B A ] ]  
 d. 4 = [ C A ]

Now assume a version of insertion where an entry such as (9) can – among others – spell out structures such as (8d). (I.e., the entry must have a superset of features compared to the structure, no matter whether the entry has additional features in the middle.)

$$(9) \quad X \Leftrightarrow [ C [ B A ] ]$$

In such case, we get the syncretisms listed in (10).

- $$(10) \quad \begin{array}{l} \text{a.} \quad 1 - 2 \text{ (spelled out by the competitor [ B A ])} \\ \text{b.} \quad 2 - 3 \text{ (spelled out by [ C [ B A ] ] with a competitor [ C A ])} \\ \text{c.} \quad 3 - 4 \text{ (spelled out by [ C [ B A ] ] with a competitor [ B A ])} \\ \text{d.} \quad 1 - 4 \text{ (spelled out by the competitor [ C A ])} \end{array}$$

In each scenario in (10), I assume that we have the entry (9), which can spell out any of 1, 2, 3 or 4. Because this entry can go anywhere, it loses to any potential competitor. I have used two possible competitors. One competitor is [ B A ], which can spell out 2 and 1. When the entry (9) meets with such a competitor, we have a 1 – 2 and 3 – 4 syncretism.

Another entry I was assuming as a possible competitor is [ C A ], able to spell out 4 and 1. When this entry meets with (9), we get a 1 – 4 syncretism, and a complementary 2 – 3 syncretism. The syncretisms in (10) do not yield a linear order in which syncretism targets only contiguous regions.

Thus, in order to bring structures such as [ C A ] back into the game, we must drop the initial assumption, namely that entries such as (11a) can spell out structures such as 4, repeated in (11b).

$$(11) \quad \begin{array}{l} \text{a.} \quad X \Leftrightarrow [ C [ B A ] ] \\ \text{b.} \quad 4 = [ C A ] \end{array}$$

This alternative scenario is quite plausible, because we retreat to sub-constituents. Thus, since 4 is not a sub-constituent of the entry (11a), (11a) cannot spell out (11b).

The immediate consequence of the assumption that (11a) (which can spell out all of 1, 2 and 3) cannot spell out 4 is that the structures 1 – 4 can never be all spelled out by the same entry, which immediately yields a system more restrictive than Contiguity requires. Further, in order to spell out all the cases, we will always have to assume two entries, (12a) and (12b):

$$(12) \quad \begin{array}{l} \text{a.} \quad X \Leftrightarrow [ C [ B A ] ] \\ \text{b.} \quad Y \Leftrightarrow [ C A ] \end{array}$$

Note first that (12b) takes precedence over (12a) for A, since (12b) can spell out only two structures (1 and 4), while (12a) can spell out 3 structures: 1, 2 and 3. (Thus, (12b) applies in fewer cases than (12a), although there is no inclusion relation.) Alternatively, we only count unused features. When lexicalizing A, (12b) has only one extra feature (C), while (12a) has two (C and B).

From this reasoning, it follows that (12a,b) interact to yield the following syncretisms:

- (13) a. 1 – 4 (spelled out by Y with X the only competitor)  
 b. 2 – 3 (spelled out by X with Y the only competitor)

The system developed so far has too weak a generative capacity: in a system of four cases, it only allows two syncretisms.

To increase the generative capacity, we have to allow that entries such as (14) will bring additional possibilities:

$$(14) \quad Z \Leftrightarrow [ B A ]$$

The only way an entry such as (14) can bring additional possibilities is if we assume that Z ([ B A ]) wins over Y ([ C A ]) when competing for A, otherwise no improvement in the number of syncretisms is achieved.

Assuming this, we get an additional syncretism of 1 and 2 (due to the entry (14)):

- (15) a. 4 – 1 (spelled out by Y with X the only competitor)  
 b. 1 – 2 (spelled out by Z)  
 c. 2 – 3 (spelled out by X with Y the only competitor)

This yields an apparently linear system 4 – 1 – 2 – 3. The linearity, however, only holds in this restricted domain. To see that, let me repeat the syncretism sequence 4 – 1 – 2 – 3 in terms of structures:

$$(16) \quad [ C A ] - [ A ] - [ B A ] - [ C [ B A ] ]$$

As can be observed, the system has the same abstract property as the cumulative system proposed in ch. §1 of the dissertation: “structural neighbors” can be syncretic. Thus, [ C A ] can be syncretic with its “neighbor” substructure [ A ], just like [ B A ] can. Similarly, [ C [ B A ] ] can be syncretic with its “neighbor” [ B A ].

The consequence is that when we introduce an additional feature D (in order to capture systems with more than four cases), we arrive at a non-linear system. Thus, The structure [ A ] receives an additional structural neighbor, [ D A ]. Because such a neighbor can show syncretism with [ A ], [ A ] will now show one syncretism too many.

Similarly, [ B A ] will obtain an additional structural neighbor, namely [ D [ B A ] ]. Consequently, [ B A ] too will now show one syncretism too many.

The only way to rule this out would be to require that D cannot attach on top of A, or B, but only on top of C. In such case, the system would still be linear, and I show the ordering below. In the ordering, only structural neighbors can be syncretic:

$$(17) \quad [ D [ C A ] ] - [ C A ] - [ A ] - [ B A ] - [ C [ B A ] ] - [ D [ C [ B A ] ] ]$$

However, prohibiting D to attach on top of anything else than C equals to ruling out gaps in the syntactic functional sequence.<sup>2</sup>

Thus, as far as I can see, the conclusion is the following: in order to encode contiguity in a linear order, we are forced to ban gaps in the syntactic functional sequence.<sup>3</sup>

The conclusion is not intended to be fully general. There are reasons to believe that in other domains, gaps in the underlying system are possible. However, in the domain of case, such gaps must be prohibited. I leave it for future research to understand the reasons for this.

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<sup>2</sup>Note that while the system with a single gap is still linear, the structure of (17) does not resemble the structure of the facts. That is because in (17), cases show up on both sides of the unmarked case [A], which ends up in the middle. Thus, it would also be empirically wrong to conclude that there is a gap in the sequence, which cannot be detected due to the fact that a single gap does not lead to a non-linear system.

<sup>3</sup>The situation finds parallels elsewhere. For instance, I have mentioned in ch. §2 that the structure of directional spatial expressions is usually taken to involve at least two layers, a Path head attached on top of a Place head:

- (i) a. Location:  $\begin{array}{c} \text{PlaceP} \\ \wedge \\ \text{Place}^0 \quad \text{DP} \\ \wedge \\ \dots \end{array}$
- b. Direction:  $\begin{array}{c} \text{PathP} \\ \wedge \\ \text{Path}^0 \quad \text{PlaceP} \\ \quad \quad \wedge \\ \quad \quad \text{Place}^0 \quad \text{DP} \\ \quad \quad \quad \quad \wedge \\ \quad \quad \quad \quad \dots \end{array}$

However, structures of the type (ii) are not used in the literature (as far as I know):

- (ii)  $\begin{array}{c} \text{PathP} \\ \wedge \\ \text{Path} \quad \text{DP} \\ \quad \quad \wedge \\ \quad \quad \dots \end{array}$





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