Partial concord and the noun phrase structure*

Dmitry Privoznov
(MIT)

1 Introduction

This paper is devoted to the phenomenon of partial concord. In some languages noun phrases may contain one or more hosts for the concord features (Case, Number and Gender/Class, capitalized here and below) that are separate from the head noun, e.g. a cardinal numeral or a determiner. Here and below I will call a host like this the locus of a feature (the head that introduces the feature into the noun phrase structure). Partial concord is a situation when the overt realization of a feature on its locus determines the overt realization of this feature on other adnominal modifiers (optional elements, including possessors, adjectives etc.). The nature of this conditioning can be summarized by the Partial Concord Generalization (section 2): elements c-commanding a feature locus always realize its feature, while elements c-commanded by a feature locus only realize its feature if the locus itself does not.

The paper argues that two well known morpho-syntactic phenomena, which have been previously treated in different ways, both fall under the Partial Concord Generalization and constitute a single general phenomenon: partial concord. They are the lack of Number marking in noun phrases with cardinal numerals in Estonian and some other languages (section 3) and the strong vs. weak distinction in adjectival paradigms in German and Icelandic (section 4). The former phenomenon can be captured as partial concord in Number and the latter phenomenon can be captured as partial concord in Case.

The paper proposes a theory that derives the Partial Concord Generalization (section 5) and two cross-linguistic parameters that determine whether a language has full concord, partial concord or no concord in a given feature (section 6).

2 The Partial Concord Generalization

The phenomenon of nominal concord can be described as one and the same feature being overtly marked (overtly realized) on multiple modifiers within the noun phrase. Cross-linguistically concord features include Case, Number and Gender (or Agreement Class). Typically, if a language has one of these features represented within a noun phrase, there are two options. Either this feature is marked on all the noun phrase modifiers (full concord) or it is only marked once (no concord). For instance, although both Turkish and Russian noun phrases clearly bear Number, the Russian noun phrase shows full concord in it, while the Turkish one only marks Number once. In this paper I will adopt the view advanced by Bayırlı (2017), according to which the mechanism of concord is universally available for all languages, but there are certain language

*My deepest gratitude goes to David Pesetsky, Adam Albright, Jonathan Bobaljik and Isa Kerem Bayırlı for the existence of this paper. I would also like to thank Sabine Iatridou, Donca Steriade, Tanya Bondarenko, Roni Katzir, Verena Hehl, Rafael Abramovitz, Justin Colley and Itai Bassi for fruitful discussions under various circumstances. Thanks to the participants of MIT Workshop of Spring 2018. Special thanks to Verena Hehl, Mati Pentus and other speakers who shared their linguistic intuitions with me. All mistakes and errors are my own. All the data that do not come from a cited grammar were collected through one-on-one elicitations or by questionnaire.

specific properties, namely, extra phase boundaries within the noun phrase, which may restrict its application in a particular language. Simply speaking, Turkish lacks Number concord because Turkish noun phrases contain an extra phase boundary.

The core observation of the paper is that apart from full concord and no concord some languages also show partial concord. Partial concord in a feature F happens if the noun phrase contains an element distinct from the head noun (e.g. the Num head or the D head) such that the modifiers that c-command this element always realize F; while the modifiers that are c-commanded by this element only realize F if the element itself does not. In what follows I am going to assume that this element introduces F into the noun phrase structure and call this element the locus of F. The first half of the paper argues that two well known morpho-syntactic phenomena which have been previously analyzed in different ways in fact follow the same pattern: partial concord.

The first phenomenon is partial Number concord in Estonian. Estonian noun phrases usually show full concord in Number (1a). But if the noun phrase contains a cardinal numeral, the modifiers that follow it are singular. That is, they lack Number morphology, like *ilus-as* in (1b). Meanwhile the modifiers that precede the numeral are marked plural, like *ilus-at-es* in (1c).

(1) a. nen-de-s **ilus-at-es** linn-ad-es
this-PL-LOC beautiful-PL-LOC city-PL-LOC

b. nen-de-s nelj-as **ilus-as** linn-as
this-PL-LOC four-LOC beautiful-LOC city-LOC

c. nen-de-s **ilus-at-es** nelj-as linn-as
this-PL-LOC beautiful-PL-LOC four-LOC city-LOC
'in these (four) beautiful cities'

The most prominent account of (1) has been proposed by Norris (2014). He postulates two recursively embedded NumPs with plural and singular features above and below the numeral (where Num is the functional head that introduces Number into the noun phrase structure, originally proposed by Ritter 1991). Contra Norris, I am going to argue that this phenomenon should be categorized as partial concord in Number.

Assume that in Estonian the locus of Number is the Num head (following Ritter 1991). Assume further that this Num head is either empty (∅), as in (1a), or occupied by the cardinal numeral, if the noun phrase contains a cardinal numeral, like (1b-c). Estonian partial concord in Number then can be described in a very straightforward way. If the Num head does not realize its Number (by being ∅), as in (1a), all the subsequent modifiers do; if the Num head realizes its Number (by being a cardinal numeral), as in (1b-c), no subsequent modifier does. Meanwhile the modifiers that c-command the Num head always realize Number. There are at least several languages that seem to show the same pattern: Syrian Arabic (Semitic, Cowell 1964), Bagvalal (Avar-Andic, Kibrik et al. 2001), to a certain extent Buryat (Mongolic, Sanzheev 1962) and Hausa (Chadic, Smirnova 1982).

The second phenomenon is strong vs. weak distinction in German adjectival paradigms. German adjectives usually show concord with the head noun in Case, Number and Gender. But the realization of concord on the adjectives is conditioned by the realization of concord on the determiner. Namely, if the determiner takes a ∅ suffix, as in (2), one observes a full paradigm of suffixes on all the subsequent adjectives (*gut-es* vs. *gut-em*, the so-called strong declension). If, however, the determiner takes a non-∅ suffix, as in (3), the paradigm of suffixes observed

on the same adjectives in the context of the same noun is impoverished (*gut-en* vs. *gut-en*, the so-called weak declension). In the latter case the adjectives only take two defaults: *-e* vs. *-en*.

(2) a. viel.∅ **gut-es** **rot-es** Wein
much good-GEN red-GEN wine
'(of) much good wine (genitive)'

b. viel.∅ **gut-em** **rot-em** Wein
much good-DAT red-DAT wine
'(with) much good wine (dative)'

(3) a. dies-**es** **gut-en** **rot-en** Wein
this-GEN good-W[1] red-W wine
'(of) this good wine (genitive)'

b. dies-**em** **gut-en** **rot-en** Wein
this-DAT good-W red-W wine
'(with) this good wine (dative)'

The strong declension, like in (2), has been previously identified with definiteness spreading in languages like Danish or Romanian (Milner & Milner 1972, Leu 2001, Schoorlemmer 2009, Katzir 2011 and Katzir & Siloni 2014). In what follows I am not going to pursue this line of analysis. In fact, I will propose some arguments against using this approach for German. Instead I will argue that what we observe in (2-3) should be categorized as partial concord in Case.

Assume that in German the locus of Case is the determiner (see Lyutikova & Pereltsvaig 2015 and Lyutikova 2016 for the same proposal for Turkic languages). German partial concord in Case then follows exactly the same pattern as Estonian partial concord in Number. If the determiner doesn't realize its Case, as in (2), all the subsequent modifiers do; if the determiner realizes its Case, as in (3), no subsequent modifier does. It seems that Icelandic might show the same pattern.

Based on the German and Estonian cases one may derive the following basic generalization:

(4) **Partial Concord Generalization.** Suppose some head H within a noun phrase bears (i.e. introduces) some feature F (H is the locus of F). Then:
   a. The elements c-commanding H always realize F.
   b. As for the elements c-commanded by H:
      If H itself realizes F, they do not.
      If H itself does not realize F, they do.

In Estonian the head H is the Num head and the feature F is Number. In German the head H is the determiner and the feature F is Case. Estonian shows partial concord in Number and German shows partial concord in Case.

If these observations are correct and if there is indeed such a phenomenon as partial concord, it raises two major questions for the general theory. First, how does partial concord work? What minimal assumptions about the mechanism of concord do we need in order to derive and explain the generalization in (4)? Second, how should partial concord be incorporated into the concord typology? What cross-linguistic parameters determine whether a language has full concord, partial concord or no concord in a given feature?

The second half of the paper is an attempt to address these two questions.

For the first question, the paper proposes a mechanism of concord that derives the Partial Concord Generalization. It is based on feature projection, a top-to-bottom theory of spell out (Schlenker 1999) and the mechanism of feature realization and deletion from Distributed Morphology (Halle & Marantz 1993).

[1] W for weak (impoverished) declension, for the term see Kunkel-Razum & Münzberg (2009) among others; for the gloss see Katzir & Siloni (2014).

For the second question, the paper proposes two cross-linguistic parameters. The first parameter comes from Bayırlı (2017) and is responsible for the choice between partial concord and no concord. This parameter rests on the presence vs. absence of extra phase boundaries within the noun phrase. The second parameter is responsible for the choice between partial concord and full concord. This parameter arises from differing feature distribution across the nominal spine in different languages (cf. Giorgi & Pianesi 1997, Chomsky 2005, Martinović 2015 and others for the clausal spine). In short, each of the concord features may either be born on the head noun or on some functional head on the nominal spine. In the former case the theory predicts full concord. In the latter case the theory predicts partial concord (if there is no phase boundary between the functional head and the head noun) or no concord (if there is a phase boundary between the functional head and the head noun).

Sections 3 and 4 discuss the Estonian and German cases separately and argue that these are indeed instances of partial concord. Section 5 puts forward a theory of concord that derives the Partial Concord Generalization. Section 6 is dedicated to the typology of concord and the two proposed cross-linguistic parameters. Section 7 discusses further problems and predications of the theory.

3 The Estonian pattern

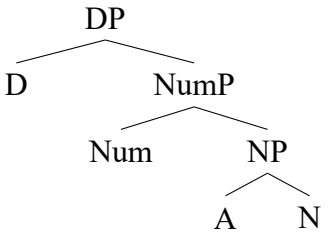
The data for Estonian come from Norris (2014), two grammars (Erelt et al. 1993 and Tauli 1973, 1983) and judgments from one speaker.[2]

3.1 On the Estonian noun phrase

This paper concerns three types of elements in Estonian. These are nouns (N), e.g. *linn* 'city', adjectives (A), e.g. *ilus* 'beautiful' and cardinal numerals, e.g. *neli* 'four'. The order of these elements is the following: D (> A) > Num (> A) > N.

In what follows I am going to adopt Ritter's (1991) NumP projection and assume that in Estonian cardinal numerals occupy the Num head:

(5) Estonian DP:



Obviously, (5) is not the full structure for Estonian noun phrases. They might also include PossP. They definitely include D, as has been argued by Norris (2014). Although in Estonian the D head might always be ∅, since Estonian lacks articles.

[2]The speaker was presented with noun and preposition phrases. They were asked to judge them on the scale from 1 (I could never use it in any Estonian sentence (in speech or writing)) to 5 (I could use it in some Estonian sentence (in speech or writing)). In this paper I mark a DP as grammatical, if the score was ≥3.5; as ungrammatical (*), if the score was ≤2.5; and on-the-threshold of grammaticality (?) otherwise. I am very grateful to Mati Pentus for his judgments and comments.

3.2 Estonian concord generalizations

There are three core generalizations about Estonian concord that are important to this paper.

(6) **Estonian: Generalization 1**.
If there is no numeral, modifiers agree with the head noun in Number:

a. **ilus-as** linn-as
beautiful-LOC city-LOC
'in a beautiful city'

b. **ilus-at-es** linn-ad-es
beautiful-PL-LOC city-PL-LOC
'in beautiful cities'

(7) **Estonian: Generalization 2**.
In the context of a cardinal numeral the noun is singular (i.e. Numberless):
nelj-as ilus-as **linn-as**
four-LOC beautiful-LOC city-LOC
'in four beautiful cities'

In the context of nominative Case assignment, the noun under the numeral takes partitive Case. Otherwise the noun and the numeral agree in Case, see (7). The issue of the partitive Case assignment is not going to be addressed in this paper. For a possible analysis see Norris (2014).[3]

(8) **Estonian: Generalization 3**.[4]
Modifiers that precede a cardinal numeral are marked plural.
Modifiers that follow a cardinal numeral are singular (i.e. numberless).

(9) a. nee-d **ilus-ad** neli linn-a
this-PL.NOM beautiful-PL.NOM four city-PAR

b. nee-d neli **ilus-at** linn-a
this-PL.NOM four beautiful-PAR city-PAR
'these four beautiful cities'

(10) a. nen-de-s **ilus-at-es** nelj-as linn-as
this-PL-LOC beautiful-PL-LOC four-LOC city-LOC

b. nen-de-s nelj-as **ilus-as** linn-as
this-PL-LOC four-LOC beautiful-LOC city-LOC
'in these four beautiful cities'

Crucially, the third generalization is broader than partitive Case assignment. In particular, it applies both in (9) and (10), even though in (10) all the noun phrase modifiers agree in Case: locative. Still the modifiers that follow the numeral are Numberless, while the elements that precede the numeral are marked plural.

3.3 Towards the analysis

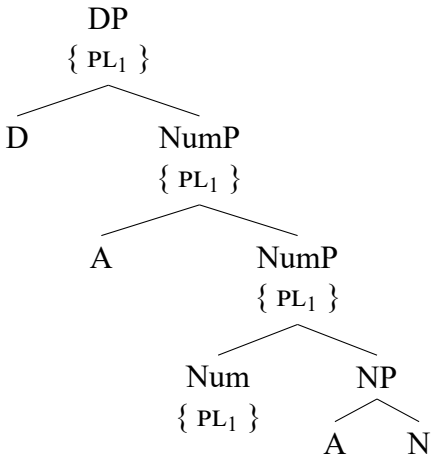
The analysis that I am going to propose for Estonian is based on three assumptions.

[3] The Number generalization is not entailed by the partitive marking. First, partitive is compatible with plural: *ilus-aid* 'beautiful-PL.PAR'. Second, in (7) the numeral and the noun agree in Case, but the noun is still singular.

First, it assumes that in Estonian the locus of Number is the Num head (adopting Ritter 1991). Second, it assumes that the Num head is either ∅ or occupied by a cardinal numeral. Third, it assumes that a cardinal numeral by itself can realize the PL feature of the Num head that it occupies.

The proposed DP structure for Estonian looks like (11).

(11) Estonian DP (repeated):



Given these assumptions, Estonian conforms to the Partial Concord Generalization. The locus of Number is the Num head. The elements c-commanding the Num head always realize Number. If the Num head realizes its Number (by being a cardinal numeral), the elements c-commanded by it do not; if the Num head does not realize its Number (by being ∅), the elements c-commanded by it do.

The proposed novel mechanism of concord (to be explicated in more detail in section 5) works roughly as follows. First, in syntax Num projects its PL feature onto the whole DP. As the result, the DP bears PL. Second, at PF the DP is spelled out in a top-to-bottom fashion (Schlenker 1999) with each element trying to realize as many features of the whole DP as possible, including the PL feature. Hence we observe concord.

The elements c-commanding the Num head will always see and realize the PL feature. If the Num head itself realizes it, the PL feature is deleted and becomes invisible for further realization. If not, the PL stays visible and is realized by all the lower modifiers.

It should be noted that partial Number concord is not at all unique to Estonian. The same phenomenon can be observed, for example, in Syrian Arabic (Semitic, Cowell 1964), Bagvalal (Avar-Andic, Kibrik et al. 2001), to a certain extent Buryat (Mongolic, Sanzheev 1962) and Hausa (Chadic, Smirnova 1982). If one assumes that the Num head may be occupied by an adjective, Lebanese Arabic follows the same pattern (see Pesetsky 2013:45ff).

3.4 A digression

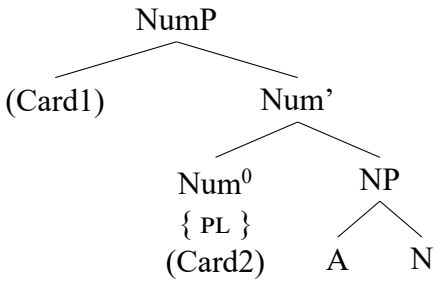
Estonian cardinal numerals may also (marginally) bear plural morphology, see Erelt et al. (1993) and Norris (2014):

(12) a. kaks püksi
two pant.PAR

b. kahe-d püksi-d
two-PL.NOM pant-PL.NOM
'two pairs of pants' (Norris 2014)

For these cases I will follow the original proposal by Danon (2012) for Hebrew and its implementation for Estonian by Norris (2014). The basic idea is that singular marked cardinal numerals occupy the Num head, while plural marked ones are base generated in Spec,NumP:

(13) Along the lines of Danon (2012) and Norris (2014):



Importantly, the PL feature is introduced by the Num head, not by Spec,NumP. Consequently, the numerals in Spec,NumP are not the loci of the PL feature and thus do not fall under the Partial Concord Generalization. In this case the Num head itself is ∅. As the result, both the elements that c-command it (including the numeral) and the elements c-commanded by it realize the PL feature (for more discussion see Norris 2014:85ff).

4 The German pattern

The data for German come from the Duden Grammar (Kunkel-Razum & Münzberg 2009) and judgments from two speakers.[5]

4.1 On the German noun phrase

This paper concerns three types of elements in German. These are nouns (N), e.g. *Sache* 'thing', adjectives (A), e.g. *gut* 'good' and determiners. This study focuses on a sample of German determiners including articles (*d-* 'the', *ein-* 'a', ∅ 'some/several'), demonstratives (*dies-* 'this'), no-determiner (*kein-* 'no'), possessive pronouns (*mein-* 'my' etc.), *welch-* 'which', *jed-* 'every', *viel*[6] 'much' (Kunkel-Razum & Münzberg 2009:249ff).[7]

In German all adjectives precede the noun:

[5]The procedure for collecting the German data was the same, as for Estonian. In this paper I mark a DP as grammatical, if the average score between the speakers was ≥3.5; as ungrammatical (*), if the average score was ≤2.5; and on-the-threshold of grammaticality (?) otherwise. In ≈80% of cases the difference between the speakers' judgments was no higher than 2 points.

[6]Importantly, I am considering the *undeclinable* version of *viel*, corresponding to the English *much*, which is only compatible with mass nouns (Kunkel-Razum & Münzberg 2009:326).

[7]By *ein-* I mean the indefinite determiner 'a'. The ∅ 'some/several' is only compatible with singular mass or plural count nouns and has the meaning of an indefinite.

(14) eine gute Sache | * eine Sache gute
a good thing | a thing good
'a good thing'

All the determiners in the sample precede the adjectives:

(15) meine liebe Schwester | * liebe meine Schwester
my dear sister | dear my sister
'my dear sister'

All the determiners in the sample are in complementary distribution with each other regardless of mutual order, as is illustrated by (16). There are certain exceptions[8], but incompatibility seems to be the general rule.

(16) a. * diese keine Tasse | * keine diese Tasse
this no cup | no this cup
E.g. 'none of these cups'

b. * keine meine Schwester | * meine keine Schwester
no my sister | my no sister
E.g. 'no sister of mine'

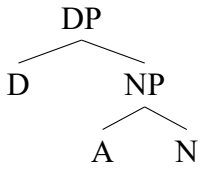
c. ? die meine Schwester | * meine die Schwester
this my sister | my this sister
E.g. 'this sister of mine'

d. * jede meine Tasse | * meine jede Tasse
every my cup | my every cup
E.g. 'every cup of mine'

Since all the determiners in the sample precede the adjectives and are in complementary distribution, I will assume that they all occupy the same position. Furthermore, I will assume that this position is the functional D head, originally proposed by Szabolcsi (1984) and Abney (1987) and currently assumed by most theories of noun phrase structure (Grashchenkov 2006, Pesetsky 2013, Norris 2014, Lyutikova 2016 and others).

Thus, I posit the syntactic structure in (17).

(17) German DP:



Before we proceed, (17) requires two further clarifications.

First, it is assumed here that German possessive pronouns are in D, just like in English. This might not be an innocent assumption, since it has been argued that in different languages possessive pronouns may occupy different positions within the noun phrase (see e.g. Lyutikova 2016).

[8] The exceptions are the following combinations: *die keine* and *eine jede*. Their meaning is unclear and requires further investigation. Also the determiner *ein-* 'a' can be interpreted as a numeral 'one', in which case it can follow other determiners (cf. English *the one cup that you bought* ≈ 'the single cup that you bought').

For example, Russian possessive pronouns are freely compatible with and follow other D-like elements, including quantifiers and demonstratives (*každaya vaša čaška* 'every your cup' and *eta vaša čaška* 'this your cup' are perfectly fine). But since German possessive pronouns are only marginally compatible with other determiners, putting them in D seems to be an innocent assumption for the present purposes.

Secondly, obviously, (17) might not be the full DP structure for German. It might include other functional projections, like PossP or NumP. But since those seem to be irrelevant for the present discussion, they are going to be ignored here.

4.2 German concord generalizations

In German both adjectives and determiners show concord with the head noun in Case, Number and Gender. There is some cross-categorical syncretism which will not be addressed in this paper. It crosscuts all the paradigms for determiners, adjectives, nouns and pronouns and consists of two subcases. First, all the genders collapse in plural. Second, in all the contexts except the masculine singular the accusative form looks the same as the nominative form.

For the present purposes I will adopt two brute force morphological rules to deal with this:

(18) a. Gender features are deleted in the context of the PL feature.

b. The ACC feature is replaced with the NOM feature in all the contexts except M.SG.

Now we can proceed to the three core generalizations about German concord that are important to this paper.

(19) **German: Generalization 1**.
The paradigm of suffixes observed on a given determiner is lexically specified.

German determiners divide into three declension classes. The first class includes determiners *d-* 'the', *dies-* 'this', *welch-* 'which' and *jed-* 'every', which take a full paradigm of suffixes given in (20a). The second class includes determiners *ein-* 'a', *kein-* 'no' and possessive pronouns, which take a subparadigm of suffixes given in (20b). These do not take suffixes *-er* and *-es* in nominative singular. The third class includes determiners ∅ 'some' and *viel* 'much', which do not take any suffixes or, in other words, are undeclinable, see (20c).

(20) Paradigms for German D (Kunkel-Razum & Münzberg 2009:259ff):

a. D_a = *d-* 'the', *dies-* 'this', *welch-* 'which', *jed-* 'every'.

	SG			PL
	M	N	F	
NOM	-er	-es	-e	-e
GEN	-es		-er	-er
DAT	-em		-er	-en
ACC	-en	=NOM		

b. D_b = *ein-* 'a', *kein-* 'no', *mein-* 'my' (and possessive pronouns).

	SG			PL
	M	N	F	
NOM	-∅		-e	-e
GEN	-es		-er	-er
DAT	-em		-er	-en
ACC	-en	=NOM		

c. D_c = ∅ 'some', *viel* 'much'[9].

	SG			PL
	M	N	F	
NOM				
GEN		-∅		
DAT				
ACC	-∅	=NOM		

These three do not form natural semantic classes. In particular definite possessive pronouns are grouped with the indefinite determiners *ein-* 'a' and *kein-* 'no' (20b). Nor do they seem to form natural phonological classes. One might suspect that of the determiners in (20b), all ending in *-ein*. But this class also includes other possessive pronouns, like *ihr-* 'your (pl)' or *unser-* 'our', which do not end in *-ein*.

From that I conclude that the set of suffixes that a given determiner may take is lexically specified. Henceforth I am going to use the diacritics: D_a (takes all the suffixes), D_b (does not take *-er* or *-es*) and D_c (does not take any suffixes).

The second generalization concerns cases when the determiner, due to its lexical class, happens to take a non-∅ suffix:

(21) **German: Generalization 2**.
If D takes a non-∅ suffix, *all the subsequent adjectives* show weak declension.

Weak declension means that the adjectives take suffix *-e* in nominative singular and *-en* elsewhere. Importantly, after an inflected determiner no strong declension is possible on any subsequent adjective. All the adjectives share the same default suffix:

(22) a. mit **d-er** gut-en(*-er) rot-en(*-er) Sauce
with the-F.SG.DAT good-W(-F.SG.DAT) red-W(-F.SG.DAT) sauce
'with the good red sauce'

b. mit **d-em** gut-en(*-em) rot-en(?-em) Wein
with the-M.SG.DAT good-W(-M.SG.DAT) red-W(-M.SG.DAT) wine
'with the good red wine'

c. **d-er** gut-e(*-er) rot-e(*-er) Wein
the-M.SG.NOM good-W(-M.SG.NOM) red-W(-M.SG.NOM) wine
'the good red wine'

The third generalization concerns cases when the determiner, due to its lexical class, happens not to take a suffix (or, in other words, to take a ∅ suffix):

(23) **German: Generalization 3**.
If D takes a ∅ suffix, *all the subsequent adjectives* show strong declension.

[9]The determiner *viel* is a special case. In singular it is not inflected, means 'much' and is incompatible with other determiners. In plural it is inflected, means 'multiple/numerous' and is compatible with *d-* 'the'. This paper comes from the assumption that there is a determiner *viel* 'much' and an adjective *viel* 'multiple/numerous'. Like English *much*, the undeclinable determiner *viel* is only compatible with singular mass nouns.

Strong declension means that the adjectives take the same suffix as the determiner would have taken, if it had the full paradigm:

(24) a. mit ∅ gut-er(-*en) rot-er(*-en) Sauce
with some good-F.SG.DAT(-W) red-F.SG.DAT(-W) sauce
'with the good red sauce'

b. mit **viel.**∅ gut-er(*-en) rot-er(*-en) Sauce
with much good-F.SG.DAT(-W) red-F.SG.DAT(-W) sauce
'with much good red sauce'

c. **mein.**∅ frisch-er(*-e) rot-er(*-e) Wein
my good-M.SG.NOM(-W) red-M.SG.NOM(-W) wine
'my good red wine'

d. **mein.**∅ groß-es(*-e) alt-es(*-e) Buch
my big-N.SG.NOM(-W) old-N.SG.NOM(-W) book
'my big old book'

Importantly, after a non-inflected determiner no weak declension is possible on any subsequent adjective. All the adjectives share the same suffix. The only exception to this generalization is suffix *-em*, which follows the special rule in (25).

(25) If two adjectives in a row take *-em*, the second one is realized as *-en*.

This rule seems to be optional for some speakers and obligatory for the others. Thus, there is some disagreement about the form of the second adjective in (26).

(26) mit **viel**.∅ gut-em rot[%]-em(-en) Wein
with much good-M.SG.DAT red-M.SG.DAT(-W) wine
'with much good red wine'

Crucially, though, the rule in (25) does not apply to any other suffix in the paradigm. In particular, in (24d) we observe *groß-es alt-es*, not **groß-es alt-e*. In what follows I am not going to address or derive the rule in (25).

To recapitulate, if the determiner happens to take a non-∅ suffix, all the subsequent adjectives show weak declension. If the determiner happens to take a ∅ suffix, all the subsequent adjectives show strong declension.

This phenomenon has been previously identified with the so-called definiteness spreading in languages like Danish or Romanian. The proposed accounts of definiteness spreading work along the following lines. The concord features are assumed to be base generated on some high functional head, say, D. As to what happens next, existing analyses diverge. Either the next highest element moves to D and takes and realizes its features, like in Milner & Milner (1972), Leu (2001) and Schoorlemmer (2009). Or D licenses morphology on the DP elements by a special licensing mechanism, like in Katzir (2011) and Katzir & Siloni (2014). Or the DP elements realize the features of D in a top-to-bottom fashion, like in Schlenker (1999).

However, there are three potential arguments against identifying strong vs. weak distinction in German with definiteness spreading in Danish and Romanian.

First, in Danish and Romanian there is a clearly semantically defined feature that triggers the spreading (+definite). In German there is no such thing. Any determiner, provided that it happens to take a ∅ suffix, triggers strong declension on the subsequent adjectives, including definite *mein-* and indefinite *viel*.

Second, in Danish and Romanian definiteness spreading only applies to the first DP element (see Dobrovie-Sorin & Giurgea 2013 for Romanian). But in German all the adjectives share the same suffix.[10]

Third, in Danish and Romanian definiteness spreading is only triggered by a ∅ determiner. This is a reasonable argument for the movement based approach. If and only if the D head is ∅, the next highest element moves to it and takes and realizes its features. This logic works well for Danish and Romanian. But it does not seem to make much sense for German. Because in German any determiner with a ∅ suffix, even if the determiner itself is not ∅, triggers strong declension.

For these reasons I am not going to identify strong vs. weak distinction in German with definiteness spreading in Danish and Romanian. Henceforth I will leave definiteness spreading aside and will only focus on strong vs. weak distinction.

4.3 Towards the analysis

The analysis that I am going to propose for German is based on three assumptions.

First, it assumes that in German the locus of Case is the D head (see Lyutikova & Pereltsvaig 2015 and Lyutikova 2016 for the same proposal for Turkic languages). Second, it assumes that strong declension suffixes realize Case (in the context of a particular Number and Gender) and weak declension suffixes realize Number. Third, it assumes a weaker version of Caha's (2009) Case Containment Hierarchy for Case features, similar to Christopoulos & Zompí (2019), according to which the accusative Case feature is contained within the genitive and the dative Case features.

Take a look at the two declensions again:

(27) a. Strong.

	sg			pl
	m	n	f	
nom	-er	-es	-e	-e
gen	-es		-er	-er
dat	-em		-er	-en
acc	-en	=NOM		

b. Weak.

	sg			pl
	m	n	f	
nom	-e			-en
gen	-en			
dat				
acc	-en	=NOM		

Notice that most suffixes in the strong paradigm are realizing a particular Case feature in the context of a Number+Gender combination (they are portmanteau markers). Notice also that weak declension only distinguishes between singular and plural (if nominative) and between nominative and oblique (if singular). It seems that, if we observe weak declension on a given modifier, this means that this modifier is trying to realize an impoverished set of features. Hence the portmanteau suffixes in this case become unavailable and the modifier defaults to *-e* vs. *-en*.

In what follows I am going to assume that the impoverishment that leads to the weak declension is impoverishment in Case. This requires a weak Case Containment Hierarchy (plus a special cross-categorical rule for the accusative):

[10] This argument might not be particularly strong. In Modern Greek definiteness spreading affects all the DP elements.

(28) Full Case feature specification (Case Containment).

"nom" = { NOM }
"acc" = { ACC }
"gen" = { ACC, GEN }
"dat" = { ACC, DAT }

(29) A special rule for the accusative (cross-categorical syncretism): { ACC } → { NOM } / __ N or F or PL[11]

The portmanteau suffixes of the strong declension realize one of the Case features:

(30) The suffixes for Case (strong declension).

a. For "nominative":
-er ↔ NOM / __ M, SG
-es ↔ NOM / __ N, SG
-e ↔ NOM / __ PL

b. For "genitive":
-es ↔ GEN / __ M, SG or N, SG
-er ↔ GEN / __ F, SG or PL

c. For "dative":
-em ↔ DAT / __ M, SG or N, SG
-er ↔ DAT / __ F, SG

The default suffixes of the weak declension realize the Number feature:

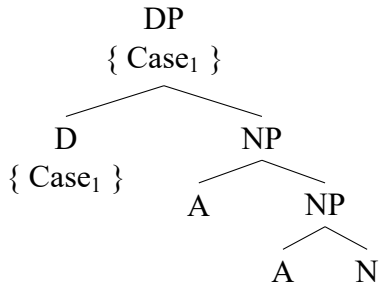
(31) The suffixes for Number (weak declension).

a. *-en* ↔ SG / __ ACC
-e ↔ SG

b. *-en* ↔ PL

The proposed DP structure for German looks like (32).

(32) German DP (repeated):



Given these assumptions, German conforms to the Partial Concord Generalization. The locus of Case is the D head. If D realizes its Case, no subsequent modifier does; if D does not realize its Case, all the subsequent modifiers do.

[11] This rule should delete the ACC value, if it is unaccompanied with any other Case feature, in all contexts except M.SG. After that the unmarked NOM value is inserted. This might be similar to certain impoverishment rules that insert an unmarked feature value, argued for by Harbour (2003).

The novel mechanism of concord outlined above for Estonian, will work for German as well, without any additional assumptions. First, in syntax D projects its Case onto the whole DP. As the result, the DP bears the Case of its D. Second, at PF the DP is spelled out in a top-to-bottom fashion (Schlenker 1999) with each element trying to realize as many features of the whole DP as possible, including Case. Hence we observe concord.

If the determiner in D, due to its lexical class, can take the suffix that realizes any of its Case features, this suffix is inserted in D. The realized Case feature is deleted from the feature set of the DP and becomes invisible for further realization. Hence the subsequent adjectives do not see or realize Case again. Hence we observe weak declension.

(33) Impoverished Case (after D, if the D takes one of the strong suffixes).

~~NOM~~	(=nom)
ACC	(=acc)
ACC, ~~GEN~~	(=gen)
ACC, ~~DAT~~	(=dat)

If the determiner in D, due to its lexical class, cannot take the suffix that realizes any of its Case features, no suffix is inserted in D. No Case feature has been realized, hence no Case feature is deleted from the feature set of the DP. All Case features stay visible for further realization. Hence the subsequent adjectives see and realize Case. Hence we observe strong declension.

Importantly, this logic applies to the determiner in D only. Remember that, although a strongly inflected determiner triggers weak declension on the subsequent adjectives, a strongly inflected adjective does not: *groß-es alt-es* vs. **groß-es alt-e*. That is why the Partial Concord Generalization, as well as the proposed mechanism of concord both crucially rely on the notion of the feature locus.[12]

5 The analysis

5.1 The Partial Concord Generalization

If the above observations are correct, both Estonian and German partial concord conform to the Partial Concord Generalization given in (4) and repeated in (34).

(34) **Partial Concord Generalization.** Suppose some head H within a noun phrase bears (i.e. introduces) some feature F (H is the locus of F). Then:
   a. The elements c-commanding H always realize F.
   b. As for the elements c-commanded by H:
      If H itself realizes F, they do not.
      If H itself does not realize F, they do.

In Estonian the head H is the Num head and the feature F is Number. In German the head H is the D head and the feature F is Case.

If partial concord exists, it raises two major questions for the general theory. First, what minimal assumptions about the mechanism of concord do we need in order to explain the Partial Concord Generalization? Second, what cross-linguistic parameters determine whether a

[12] This is also a point of difference between the proposed analysis and Schlenker (1999).

language has full concord, partial concord or no concord in a given feature. The rest of the paper is an attempt to address these two questions.

This section puts forward a theory of concord that derives the Partial Concord Generalization. It is based on two syntactic and two morphological assumptions.

5.2 Two assumptions about syntax

The syntactic part of the proposal is that in German D projects its Case and in Estonian Num projects its Number onto the whole DP.

Before explicating this claim in more detail, it should be noted that here and below I am assuming that concord features are always valued within a noun phrase. That is, they are always privative. The reason for that is the following.

Given the definition of feature locus used above, it seems natural to assume that a feature is always valued on its locus. For example, in Estonian Number is always valued on the Num head. How then does it end up being realized on other modifiers within the noun phrase? One option would be feature valuation by Agree (Chomsky 2000, 2001). This would mean that all the other noun phrase modifiers bear unvalued instances of Number. In the course of the derivation they look for and agree with the closest Num head. Notice, however, that Number may potentially be realized both on the elements c-commanding the Num head and on the elements c-commanded by it. Since the classical Agree proceeds in one direction (Upwards or Downwards), this makes feature valuation by Agree problematic in this case.[13]

Instead I am going to assume that concord features are always valued within a noun phrase and are only present on their loci. That is, each lexical item within a noun phrase bears some set of valued features, which may or may not be empty. For instance, German D 'the$_{\text{GEN}}$' *des* bears the set of features {GEN}, D 'the$_{\text{DAT}}$' *dem* bears the set of features {DAT}, German N 'sauce' *Sauce*$_{F,SG}$ bears the set of features {F, SG}, German A 'good' *gut* and 'red' *rot* bear the empty set of features.

Lack of feature valuation may be controversial within the minimalist framework. But it is not novel. There are several mechanisms of concord that have been proposed in the literature, which do not crucially rely on the classical Chomskian Agree. For example, Feature Checking (Mallen 1997), Feature Assignment (Pesetsky 2013, Bayırlı 2017) or Feature Percolation (Norris 2014).

Having made this provisional note, I can now turn back to the syntactic part of the proposal. It consists of two basic assumptions.

The first assumption is feature projection. Take the German pattern. So far I have been assuming that in German Case is born on the D head. As for Number and Gender, it seems reasonable to assume that they are born on the N head itself. What about the features of the DP as a whole? Intuitively, the DP as a whole should bear both the Case of its D and the Number and Gender of its N. In particular, finite verbs seem to agree in Number with the DP as a whole and assign the Case to (or check the Case of) the DP as a whole. This means that D should project its Case and N should project its Number and Gender onto the whole DP. This assumption is stated in a more general way in (35).

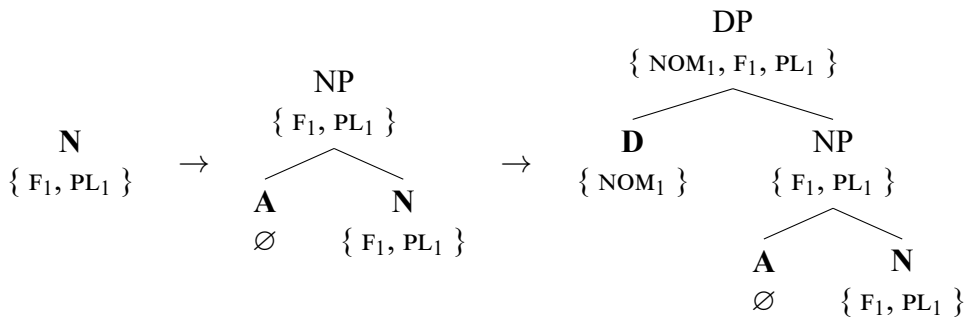
(35) **Syntactic Assumption 1**. The features of the set { X , Y } are the union of the features of X and the features of Y.

[13] Although see Norris (2014) for a particular implementation.

This is a natural extension of the idea of Merge to features. Assume that the derivation proceeds by recursive application of Merge (Chomsky 2000, 2001). Where Merge creates the unions of sets: Merge(X,Y) = { X, Y }. The present assumption is that the features of the set { X, Y } are the union of the features of X and the features of Y.

Take a sample derivation of the German noun phrase *die guten Sachen* 'the (**D**) good (**A**) things (**N**)' given in (36). The noun 'things' bears the set of features {F_1, SG_1}, the adjective 'good' bears the empty set of features. Hence the NP 'good things' bears the set of features {F_1, SG_1}. The determiner 'the' bears the set of features {NOM_1}. Hence the DP 'the good things' bears the set of features {NOM_1, F_1, SG_1}.

(36) A sample derivation, the German DP 'the (**D**) good (**A**) things (**N**)':



Feature projection is famously used in Head Phrase Structure Grammar, where it is called Feature Unification[14], see Pollard & Sag (1994), Ortmann (2000), Bender, Sag & Wasow (2003), Wechsler & Zlatić (2003), Grimshaw (1991/2005) etc. The same idea seems to underline the mechanisms of Feature Sharing (Frampton & Gutmann 2000, Pesetsky & Torrego 2004) and Feature Percolation (Norris 2014).

The second syntactic assumption is immediately called for given the first one. It is obvious that feature projection should be local. A DP bears the features of its elements, but not the features of the embedded DPs. In particular, a finite verb agrees with its subject, but not with its subject's possessor. Norris (2014) provides yet another strong argument against unbounded feature projection, exemplified by (37).

(37) a. see andme-te hulk
this.SG.NOM data-PL.GEN amount.SG.NOM

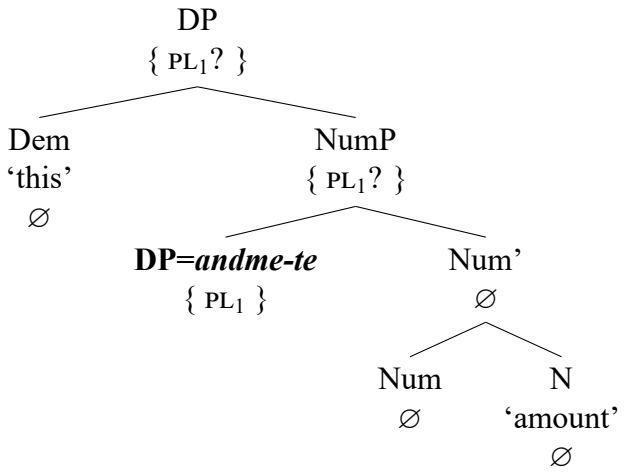
b. * nee-d andme-te hulk
this-PL.NOM data-PL.GEN amount.SG.NOM

'this amount of data' (Norris 2014:122)

In (37) we observe a complex noun phrase. The matrix DP ('this amount of data') is singular. The embedded DP (the possessor 'data') is plural. The assumed structure for (37) is given in (38), following Norris (2014).

[14] Although Feature Unification is usually stated somewhat differently from (35).

(38) Adopting Norris (2014), but omitting Case feature and D:



Within the matrix DP the possessor DP ('data') can be considered the locus of a plural feature. But if its plural feature were visible to the matrix DP elements, by the Partial Concord Generalization the c-commanding demonstrative 'this' would have been plural. But it is clearly not: (37b). In general it seems that elements within the matrix DP do not realize the features of any embedded DPs.[15] Conversely, the elements of embedded DPs do not seem to realize the features of the matrix one.

This is incorporated into the present theory by imposing a locality restriction on feature projection. Feature projection may not cross a DP boundary. Stated in a more general way, feature projection may not cross a phase boundary (assuming that DP is always a phrase). This might be due to the fact that the lower phases are spelled out before the higher ones (in the spirit of Bobaljik 2000) and the features of a spelled out phase do not project, see (39).

(39) **Syntactic Assumption 2**. Feature projection is local.
If a phase (DP_2) dominates another phase (DP_1), then
a. DP_1 is spelled out before DP_2. (cf. Bobaljik 2000)
b. The features of a spelled out phase do not project.

To sum up, each feature locus (which can be technically defined as a head that bears a non-empty set of valued features) projects its features onto the whole DP. This process is local and may not cross a phase boundary.

5.3 Two assumptions about morphology

The morphological part of the proposal requires that at PF the DP is spelled out in a top-to-bottom fashion (Schlenker 1999) with each element trying to realize *all the features of the whole DP*. The same intuition has been expressed by Pesetsky (2013) and Norris (2014).[16] An additional assumption is that if a node manages to realize a feature that it has brought into the derivation, the feature is deleted and becomes invisible for further realization.

[15] Possessor agreement is an obvious counterexample to this. But possessor agreement may involve a syntactic mechanism, which is distinct from concord (see Norris 2014 for an extended discussion).

[16] Norris writes: "Concord is not a relationship between concording elements and the head noun, but a relation of membership: concording elements express certain features of the phrases that include them" (Norris 2014:132).

The first half of the proposal is that a DP is spelled out in a top-to-bottom fashion: from higher to lower nodes, determined by c-command. This idea derives from Schlenker (1999).

Remember the Partial Concord Generalization. It has a notable asymmetry built into it. Namely, the elements c-commanding a feature locus always realize its feature no matter what. But the elements c-commanded by a feature locus are sensitive to the overt realization of the locus. They need to know whether the locus realized its feature overtly or not.

The data presented above allow for an alternative formulation of this asymmetry, based on linear order. Namely, the elements *preceding* a feature locus always realize its feature no matter what. But the elements *following* a feature locus are sensitive to the overt realization of the locus.

Consequently, there are two possible analyses. First, the c-command based approach: the order of spell out within a DP (within a phase) is determined by c-command. Second, the linearization based approach: the order of spell out within a DP (within a phase) is determined by the linear order. Where the linear order is in turn determined by an independent linearization mechanism.

The linearization based approach predicts that modifiers following the head noun will never show concord with this noun, unless they introduce the concord features themselves. Although the presented data do not contradict this prediction, cross-linguistically this does not seem to be true. In French most adjectives must follow the head noun, but they still show concord. In Russian certain adjective phrases may follow the head noun, but they still show concord in this case. Either this rules out the linearization based approach, or we should show that in all these cases the surface ordering is derived by some kind of movement that bleeds the spell out mechanism.[17]

Due to the problems with the linearization based approach, I am going to assume the c-command based approach, as summarized in (40).

(40) **Morphological Assumption 1**. The order of spell out within a phase.[18]
Within a phase (within a DP) the order of spell out is determined by c-command: from higher to lower nodes.

Obviously, at the bottom of the tree there is no c-command. Take, for instance, [$_{NP}$A N]. For these cases I will have to make an auxiliary assumption: the head whose category is projected is spelled out last. That is, between A and N in [$_{NP}$A N] the A is spelled out before the N.[19]

The second half of the proposal is that at PF each node within a DP is trying to realize all the features of this DP. If a feature is realized y its locus, it is deleted and becomes invisible for further realization. This idea is based on deletion after realization in Distributed Morphology (Halle & Marantz 1993).

Stated in a more technical way, for each element within a DP PF picks the exponent that realizes more features of the whole DP, than any other exponent (in accordance with the Subset

[17]For Russian it may be extraposition of the adjective phrase. For French it may be head movement of the noun itself to some higher position within the DP, along the lines of Cinque (2006) and Culberston & Adger (2014).

[18]This seems to contradict Bobaljik's (2000) cyclic vocabulary insertion. There might be, however, a way of reconciling this contradiction. Suppose that in Bobaljik's cases, unlike the ones discussed in this paper, there is always a phase boundary between the lower and the higher morph. Then one can explain this along the following lines. Within a phase the spell out proceeds top to bottom. But the lower phases are going to be spelled out before the higher ones.

[19]Perhaps in this cases projection comes into play: N is spelled out last, because it projects its category.

Principle). If a feature locus realizes its feature, the features is deleted from the feature set of the whole DP:

(41) **Morphological Assumption 2**.
For each terminal node W dominated by a phase XP:
a. Pick the exponent realizing more features of XP (F_{XP}) and of W (F_W), than any other exponent.
b. After W is spelled out delete from F_{XP} those features that (i) have been originally introduced by W and (ii) have been realized.

Take, for instance, the German DP 'the good things' from (36). It is predicted to be spelled out as in (42). First, the determiner 'the' bears the set of features $\{\text{NOM}_1\}$. While spelling it out, PF will try to realize as many features of the whole DP as possible. Those features are $\{\text{NOM}_1, \text{F}_1, \text{PL}_1\}$. Suppose that the best candidate is *d-ie*, realizing $\{\text{NOM}_1, \text{PL}_1\}$. After 'the' is spelled out as *d-ie*, all the features that (a) have been introduced by 'the' and (b) have been realized – these include NOM_1 – are going to be deleted from F_{DP}. Hence all the subsequent adjectives will only see $\{\text{F}_1, \text{PL}_1\}$ and we will observe weak declension.

(42) a. **Determiner** 'the'. $F_D = \{ \text{NOM}_1 \}$. $F_{DP} = \{ \text{NOM}_1, \text{F}_1, \text{PL}_1 \}$.
i. The best candidate is *d-ie*, realizing $\text{NOM}_1, \text{PL}_1$.
ii. Delete from F_{DP} those features of D that have been realized: NOM_1.

Remaining:	Realized:
$F_{DP} = \{ \text{F}_1, \text{PL}_1 \}$	DP = *d-ie* $\{ \text{NOM}_1 \}$

b. **Adjective** 'good'. $F_A = \varnothing$, $F_{DP} = \{ \text{F}_1, \text{PL}_1 \}$.
i. The best candidate is *gut-en*, realizing PL_1.
ii. Delete from F_{DP} those features of A that have been realized: $\varnothing$.

Remaining:	Realized:
$F_{DP} = \{ \text{F}_1, \text{PL}_1 \}$	DP = *d-ie*+*gut-en* $\{ \text{NOM}_1 \}$

c. **Noun** 'things'. $F_N = \{ \text{F}_1, \text{PL}_1 \}$, $F_{DP} = \{ \text{F}_1, \text{PL}_1 \}$.
i. The best candidate is *Sach-en* realizing PL_1.
ii. Delete from F_{DP} those features of N that have been realized: PL_1.

Realized:
DP = *d-ie*+*gut-en*+*Sach-en* $\{ \text{NOM}_1, \text{PL}_1 \}$

To sum up, in syntax each feature locus projects its features onto the whole DP. This process is local and does not cross phase boundaries. At PF the DP is spelled out from top to bottom with each element trying to realize as many features of the whole DP as possible. If a feature locus realizes its feature, this feature is deleted from the feature set of the DP and becomes invisible for further realization.

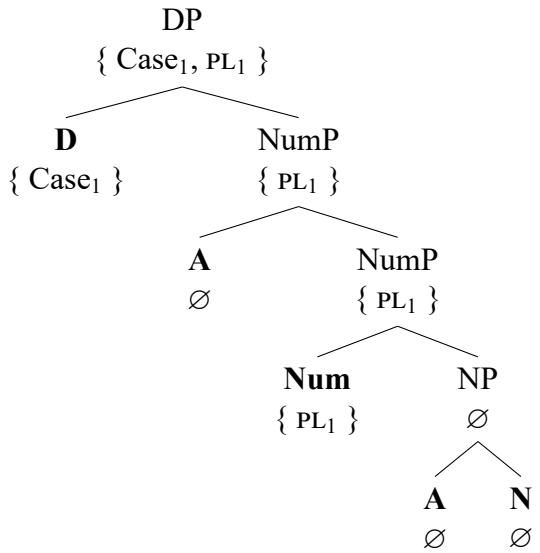
5.4 The German and Estonian cases

5.4.1 Estonian

The main assumption that we need to make for Estonian is that in Estonian the Num head bears { Number } and adjectives and nouns bear ∅. In addition we need to assume that cardinals bear and realize {PL} and occupy the Num head (Ritter 1991).

The proposed structure for a plural Estonian NumP looks like (43). The Num head bears the PL feature. The adjectives may either be merged above or below Num.

(43) Estonian NumP:



If the Num head is realized as a cardinal numeral, the PL feature is deleted and becomes invisible for further realization. Hence we observe plural marking only above the Num head. If it is realized as ∅, all the noun phrase modifiers realize PL.

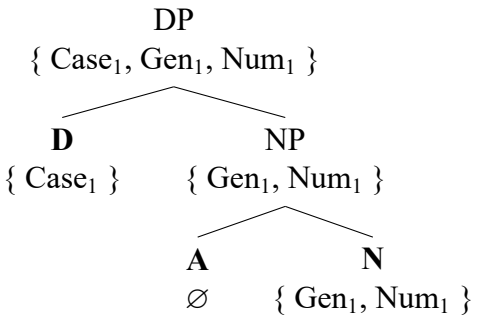
5.4.2 German

The main assumption that we need to make for German is that in German determiners bear { Case }, nouns bear { Gender, Number } and adjectives bear ∅.

In addition we need two more stipulations: weak Case Containment and German specific portmanteau suffix paradigm (see above).

The proposed structure for a German DP looks like (44). D bears Case.

(44) German DP:



If the determiner in D, due to its lexical class, can take the suffix that realizes its Case feature, this suffix is inserted in D. The realized Case feature is deleted from the feature set of the DP. Hence the subsequent adjectives will not see the realized Case and we will observe weak declension.

If the determiner in D, due to its lexical class, cannot take the suffix that realizes its Case, no suffix is inserted in D. Hence no Case feature is deleted from the feature set of the DP. Hence all Case features stay visible for further realization. Hence the subsequent adjectives will see and realize the full set of features. Hence we will observe strong declension.

6 On the typology of concord

6.1 Beyond partial concord

In the previous section I have proposed a mechanism of concord that successfully derives partial concord. It is obvious, however, that not all languages have partial concord in all concord features. For instance, German shows full concord in Number, even though it does seem to show partial concord in Case.

To that end the paper proposes two cross-linguistic parameters that determine whether a language has full concord, partial concord or no concord in a given feature.

The first parameter comes from Bayırlı (2017) and is responsible for the choice between partial concord and no concord. The idea is that each feature locus may be marked as spelling out its complement in a given language. If it is, the theory predicts no concord in its feature. If it is not, the theory predicts partial concord in its feature.

The second parameter is responsible for the choice between partial concord and full concord. This parameter determines for each concord feature whether it has a locus distinct from the head noun or it is born on the head noun itself. In the former case the theory predicts partial concord. In the latter case the theory predicts full concord.

6.2 Bayırlı's parameter

Let us begin with the distinction between partial concord and no concord, derived by the spell out parameter from Bayırlı (2017). Bayırlı makes and provides extensive support for two important cross-linguistic generalizations.

The first generalization comes down to a universal hierarchy of the concord features given in (45).

(45) Bayırlı (2017:14):
There is a hierarchy: Case > Number > Gender/Class such that
a. the presence of concord for some feature in language L implies
b. the presence of concord in L for every feature lower on the hierarchy.

That is, if a language shows concord in Case, it shows concord in Number and Gender; and if a language shows concord in Number, it shows concord in Gender. Conversely, if a language shows no concord in Gender, it shows no concord in Number or Case.

The second generalization is stable cross-linguistic correlation between absence of concord and presence of extra phase boundaries within the noun phrase:

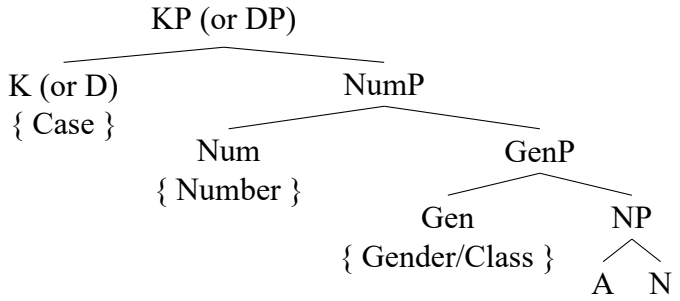
(46) If a language shows no concord in F, the locus of F introduces a phase boundary.

This generalization is supported by conditions on adjective extraction (Bayırlı 2017:72ff), positioning of the question particle (Bayırlı 2017:89ff) and affix suspension (Bayırlı 2017:154ff). If an affix that realizes a feature F can be suspended, there is no concord in F.

In order to account for (45) and the stable cross-linguistic correlation between concord and additional phase boundaries Bayırlı proposes a universal hierarchy of the feature loci given in (47). The locus of Case c-commands the locus of Number; and the locus of Number c-commands the locus of Gender/Class.

Each of these loci may be marked as spelling out its complement in a given language. If it is, the theory predicts no concord in its feature on the adjectives within the NP. If it is not, it assigns its feature to the complement by the Feature Assignment rule from Pesetsky (2013).

(47) Universal DP structure: the loci of the three features.



This logic is easily incorporated into the present system. First, we need to assume the universal hierarchy of feature loci from (47). Second, we need to assume that each locus may be marked as spelling out its complement in a given language.

For example, if the Num head is phasal and therefore spells out GenP, then the adjectives within the NP will only see and realize the features of GenP, which is the closest dominating phase, which do not include Number or Case. If the Num head does not spell out GenP, the adjectives within the NP will realize the features of at least NumP, which include Number.

That is, if the adjectives show (partial) concord in Number, this means that their spell out domain includes at least NumP. Hence their spell out domain includes at least GenP. Hence they are predicted to show (partial) concord in Gender/Class. Conversely, if the adjectives show no concord in Number, this means that their spell out domain is smaller than NumP. Hence their spell out domain is smaller than DP. Hence they are predicted to show no concord in Case.

These assumptions successfully derive both the concord feature hierarchy (45) and the cross-linguistic correlation between absence of concord and presence of extra phase boundaries (46).

So far I have only been focusing on the modifiers that merge below all of the feature loci (within the NP). Interestingly, both original Bayırlı's (2017) theory and its present version make non-trivial predictions about modifiers that merge above one or more of the feature loci. These modifiers are predicted to always realize the features of all the loci that they c-command. Unless one of the loci introduces an extra phase boundary.

As of now I know of no counterexamples to this prediction. Nor do I know of any examples that would support it. Needless to say that this issue requires further investigation.

6.3 The novel parameter

Let us now turn to the distinction between partial concord and full concord. The present system allows for two way of deriving full concord.

The first option is for the feature locus to always be ∅. In this case both the modifiers that c-command it and the modifiers that are c-commanded by it are predicted to always realize its feature. Hence we observe full concord. This situation might seem odd, but it is not implausible. After all, invariant ∅ heads have been proposed before. For example, some article-less languages may still have the D head, but their D head may always be ∅ (see Lyutikova 2016 for an extended discussion and other possibilities).

The second option, however, gives rise to more predictions. Suppose that the concord features are distributed over the nominal spine differently in different languages, in the spirit of the variation in feature distribution over the clausal spine, like in Giorgi & Pianesi (1997), Chomsky (2005), Martinović (2015) and others. Any given concord feature may either be born on a separate functional head or on the head noun itself. In the latter case all the modifiers within the noun phrase will c-command this feature's locus (which is technically the head noun). Hence all the modifiers within the noun phrase will be predicted to realize the feature in question. Hence we will observe full concord.

Perhaps the strongest argument for this being a possibility comes from Gender concord.

Cross-linguistically there are two kinds of Gender/Class systems: semantic vs. idiosyncratic (see Corbett 2013). In semantic systems, Gender/Class is assigned to nouns based on some meaningful semantic classification (e.g. human vs. animal vs. object etc.). In idiosyncratic systems Gender/Class seems to be an idiomatic property of the noun itself. For example, in Russian *prividenije* is neuter, while *prizrak* is masculine, even though both nouns mean 'ghost'.

It seems natural to assume that in idiosyncratic systems Gender/Class comes into the derivation with the head noun itself. Meanwhile in semantic systems Gender/Class comes with a separate functional head that introduces some kind of presupposition (e.g. $[\![\text{Gen}_{\text{HUMAN}}]\!] = \lambda P.\ \lambda x:$ x is a human. P(x)).

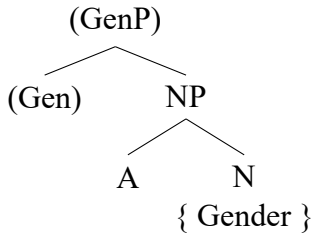
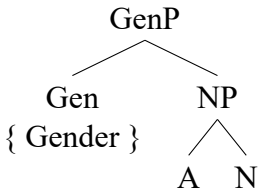
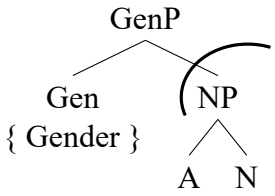
Then the present theory would predict that languages with idiosyncratic Gender will always show full concord in Gender. This prediction is borne out. Bayırlı (2017:15) makes this exact cross-linguistic generalization, based on a substantial sample of languages.

The ultimate enumeration of the language types with respect to Gender concord is given in Table 1. If Gender is idiosyncratic, it is born on the head noun. Then the theory predicts full concord in Gender (see the first column in Table 1). If Gender is semantic, it is born on a separate functional head. If this head does not spell out its complement, the theory predicts partial concord in Gender (see the second column in Table 1). Finally, if this head does spell out its complement, the theory predicts no concord in Gender (see the third column in Table 1). Partial concord in Gender is hard to find, but it might be attested in Russian under certain conditions, see section 7.

In principle, the same logic may be extended to Number and Case.

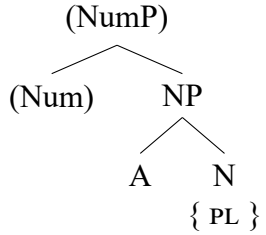
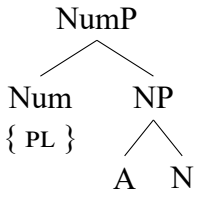
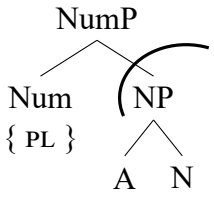
If Number is "idiosyncratic", it is born on the head noun. Then the theory predicts full concord in Number, as in Russian (see the first column in Table 2). If Number is "semantic", it is born on a separate functional head. If this head does not spell out its complement, the theory predicts partial concord in Number, like in Estonian (see the second column in Table 2). Finally, if this head does spell out its complement, the theory predicts no concord in Number, like in Turkish (see the third column in Table 2). Interestingly, German shows full concord in Number.

Table 1: Potential loci for Gender (Bayırlı 2017)

		
Idiosyncratic Gender	Semantic Gender	Semantic Gender
	NP is not a phase	NP is a phase
Full Gender concord	Partial Gender concord	No Gender concord

This means either that in German the Num head is always ∅, or that in German Number is born on the head noun.

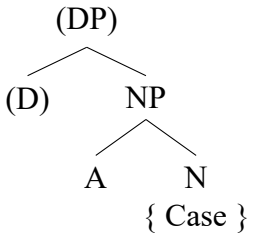
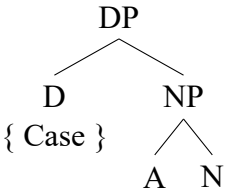
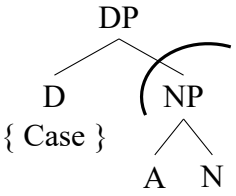
Table 2: Potential loci for Number

		
"Idiosyncratic" Number	"Semantic" Number	"Semantic" Number
	NP is not a phase	NP is a phase
Full Number concord	Partial Number concord	No Number concord
(Russian)	(Estonian)	(Turkish)

The same reasoning applies to Case. If Case is "idiosyncratic", it is born on the head noun. The theory then predicts full concord in Case, as in Russian (see the first column in Table 3). If Case is "semantic", it is born on a separate functional head. If this head does not spell out its complement, the theory predicts partial concord in Case, like in German (see the second column in Table 3). Finally, if this head does spell out its complement, the theory predicts no concord in Case, like in Turkish (see the third column in Table 3). Interestingly, Estonian shows full concord in Case. This means either that in Estonian Case is born on the head noun, or that in Estonian the D head is always ∅ (after all, Estonian lacks articles).

Obviously, this system presupposes that the idiosyncratic vs. semantic distinction applies to Number and Case. What this distinction correlates with apart from Number and Case concord remains an open question. See section 7 for some discussion about Number.

Table 3: Potential loci for Case

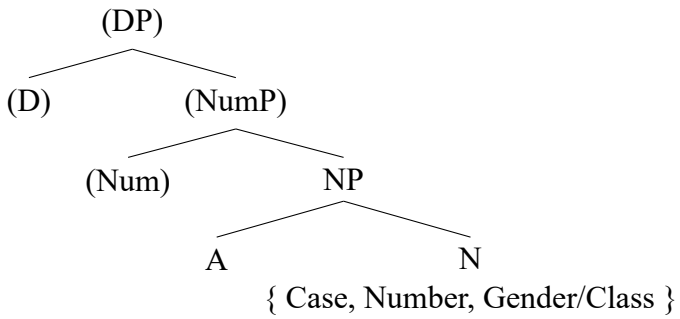
		
“Idiosyncratic” Case	“Semantic” Case	“Semantic” Case
	NP is not a phase	NP is a phase
Full Case concord	Partial Case concord	No Case concord
(Russian)	(German)	(Turkish)

Given the new proposed variation in feature distribution across the nominal spine, Bayırlı’s feature hierarchy from 45 needs to be restated in a slightly weaker way:

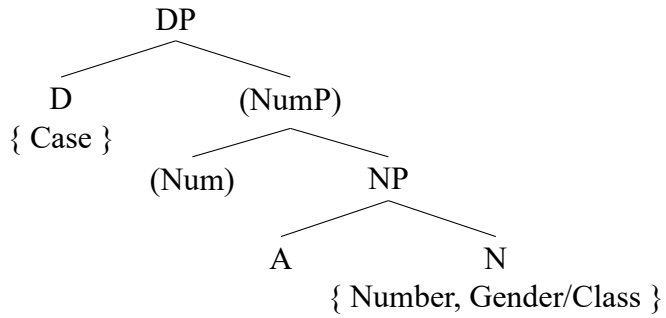
(48) There is a hierarchy: Case > Number > Gender, such that
  a. If within a single noun phrase
    i. Two heads H1 and H2 bear features F1 and F2 respectively,
    ii. And F1 is higher on the hierarchy than F2,
  b. Then H1 must c-command H2. (cf. Giorgi & Pianesi 1997)

The concord features are either born on the head noun, or “spread over” multiple functional heads. In either scenario the feature hierarchy is preserved. Some possibilities are listed in (49). In (49a) all the concord features are born on the head noun. This language is predicted to show full concord in Case, Number and Gender. Russian might be an example of that. In (49b) Case is born on a separate functional head and Number and Gender are born on the head noun. This language is predicted to show partial concord in Case and full concord in Number and Gender. German might be an example of that. In (49c) Case and Number are born on separate functional heads and Gender is born on the head noun. This language is predicted to show partial concord in Case and Number and full concord in Gender.

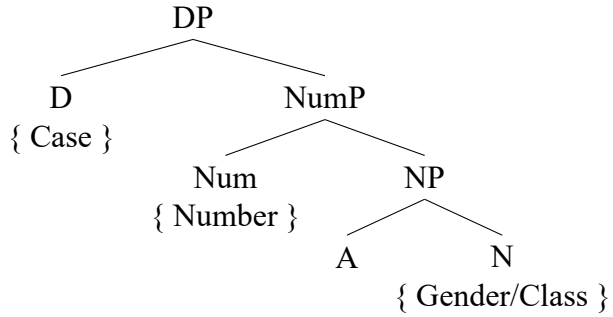
(49) a.



b.



c.



7 Problems and predictions

7.1 On "idiosyncratic" Number

What does the idiosyncratic vs. semantic distinction for Number correlate with apart from Number concord?

One option is the presence of pluralia tantum nouns (see Pesetsky & Torrego 2004 and Bayırlı 2017). Pluralia tantum nouns are nouns that require plural morphology. It may be that they only exist in languages with "idiosyncratic" Number. This would predict that languages with pluralia tantum nouns will always show full concord in Number. This prediction is not borne out. Estonian blatantly contradicts it: it has pluralia tantum nouns (e.g. *püksid* 'pants'), but shows partial concord in Number.

The theory is not lost, however. It has been pointed out at least as early as by Zaliznyak (1967:57-61) that there are two types of pluralia tantum nouns cross-linguistically, both of which are attested in e.g. Russian.

The first type includes nouns like *sani* 'sledges', *nožnicy* 'scissors' or *štany* 'pants'. They require plural morphology, see the contrast in (50a). But in this case the plural morphology seems to bear some semantic sense. They denote groups of objects. They are count nouns, i.e. they can be modified by a numeral, see (50b). In other words, these nouns seem to be pluralia tantum for a sensible semantic reason. Zaliznyak (1967) calls these nouns "pseudo" tantum.

(50) Count pluralia tantum. "Pseudo"-tantum.

a. za mo-imi san'-ami Russian
behind my-PL.INSTR sledge-PL.INSTR

* za mo-jej/im san'-oj/om
behind my-SG.INSTR sledge-SG.INSTR

1. ‘behind my sledge’
2. ‘behind my sledges’

b. za mo-imi dv-um’a san’-ami
behind my-PL.INSTR two-PL.INSTR sledge-PL.INSTR
‘behind my two sledges’

The first type includes nouns *černila* ‘inks’, *slivki* ‘creams’ or *š’i* ‘shchi (soup)’. They require plural morphology, see the contrast in (51a). But in their case the plural morphology seems to bear no semantic sense. They do not denote groups of objects, rather substances (Zaliznyak 1967:60). They are mass nouns, i.e. they cannot be modified by a numeral, see (51b). The noun phrase in (51b) can only be interpreted in a coerced way: ‘two types of ink’. In other words, these nouns seem to be pluralia tantum for no sensible semantic reason. Zaliznyak (1967) calls these nouns “true” tantum.

(51) Mass pluralia tantum. “True”-tantum.

a. mo-imi černil-ami Russian
my-PL.INSTR ink-PL.INSTR
* mo-jej/im černil-oj/om
my-SG.INSTR ink-SG.INSTR
‘with my ink’

b. (#) mo-imi dv-um’a černil-ami
my-PL.INSTR two-PL.LOC ink-PL.INSTR
May be coerced to mean ‘with my two types ink’.

It may be that “true” pluralia tantum nouns only exist in languages with idiosyncratic Number. While “pseudo” pluralia tantum may exist in languages with semantic Number as well. This would predict that languages with “true” pluralia tantum nouns will always show full concord in Number. Among the languages presented in this paper this prediction is borne out. Both Russian and German have “true” pluralia tantum nouns (e.g. *černila* ‘inks’ in Russian and *Kosten* ‘costs’ in German) and show full concord in Number. Meanwhile Estonian, to my knowledge, only has “pseudo” pluralia tantum nouns (e.g. *püksid* ‘pants’) and shows partial concord in Number.

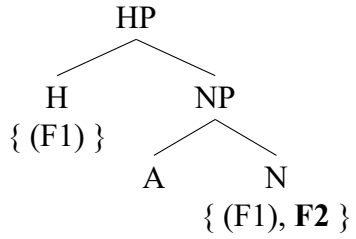
Building on Bayırlı’s (2017:121) and Klockmann (2017:316), we may assume that “pseudo” pluralia tantum nouns have to be licensed by a PL feature within the same phase. This would predict that languages with “pseudo” pluralia tantum nouns (but no “true” ones) will have partial concord in Number, e.g. Estonian. Meanwhile language with no pluralia tantum nouns will be predicted to have no concord in Number. The latter prediction has been shown to be true on a large sample of languages by Bayırlı (2017:119ff).

7.2 A further prediction

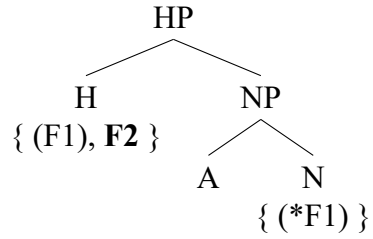
The updated version of Bayırlı’s feature hierarchy in 48 makes an interesting prediction schematized in (52). Suppose that F1 is Case and F2 is Gender. Then (52) entails that if the N head is Gender-less (52b), it must also be Case-less.

(52) Given that F1 > F2:

a.



b.



This prediction sheds new light on a well known phenomenon in Russian Gender concord called *obš'ij rod* 'Common Gender' (see e.g. Isachenko 1960:70ff, Zaliznyak 1967:85, Shvedova et al. 1980:464, Pesetsky 2013:35ff).

In Russian certain nouns (e.g. *vrač* 'doctor' and *plaksa* 'crybaby') belong to so-called *obš'ij rod* 'Common Gender'. This means that they may trigger either feminine or masculine agreement, see, for example, (53) for *vrač* 'doctor'. But one of the Gender agreement patterns is "idiosyncratic" (masculine for *vrač* 'doctor'), i.e. it is semantically ambiguous: (53a) may denote either a male or a female doctor. Meanwhile the other Gender agreement pattern is "semantic" (feminine for *vrač* 'doctor'), i.e. semantically unambiguous: (53b) can only denote a female doctor. Furthermore (53a) may trigger either feminine or masculine agreement on a finite verb (depending on the sex of the doctor). Meanwhile (53b) can only trigger feminine agreement on the finite verb.

(53) a. et-ot vaš vrač Russian
this-M.SG your.M.SG doctor.SG
'this doctor of yours (female or male)'

b. et-a vaš-a vrač
this-F.SG your-F.SG doctor.SG
'this doctor of yours (female)'

Building on Pesetsky (2013), we may assume that a Common Gender N, like *vrač* 'doctor', allows for two syntactic structures. Either it comes into the derivation with an idiosyncratic Gender, like every other N in Russian. Then they are agreed with "idiosyncratically". Or it comes into the derivation Gender-less. In this case Gender is introduced by a separate functional head Gen (cf. Ж in Pesetsky 2013). Then it is agreed with "semantically".

Interestingly, "semantic" Gender agreement pattern does not seem to be possible in oblique Cases, e.g. in the instrumental Case:

(54) a. * et-oj vaš-ej vrač-om Russian
this-F.SG.INSTR your-F.SG.INSTR doctor-SG.INSTR

b. et-im vaš-ym vrač-om
this-M.SG.INSTR your-M.SG.INSTR doctor-SG.INSTR
'this your doctor (female or male)'

If we assume that in Russian nominative corresponds to the lack of Case, then this generalization follows automatically. A Common Gender N may only come to the derivation Gender-less if it is also Case-less, see (52). Since N in Russian may only be Case-less in nominative contexts (otherwise it has to bear Case), in oblique contexts a Common Gender N has to bear

its idiosyncratic Gender, because otherwise Gender (on Gen) will c-command Case (on N), in a contradiction to the feature hierarchy in (48).[20]

Another well known phenomenon in Russian that seems to follow the same pattern is Number concord with paucal numerals (see e.g. Peškovskij 1928:438-440, Zaliznyak 1967:46ff and Pesetsky 2013 among many others).

In the context of a paucal numeral (2≥ Num 5) the NP has to be singular (the so-called *sčotnaja forma* 'count form', see Zaliznyak 1967:46) in the context of nominative Case assignment. Meanwhile, the NP has to be plural in oblique Cases.

Building on Pesetsky (2013), we may assume that under a pacual numeral the N head may actually be Number-less. The numeral itself introduces Number (in Pesetsky's analysis the numeral is base-generated as a sister to N bearing the PL feature and moves to the Num head). Given Bayırlı's feature hierarchy, however, this can only be possible, if the N head is also Caseless, aka in the context of nominative Case assignment. In oblique Cases Russian will have to resort to its general structure with N bearing both Number and Case and the paucal numeral not bearing Number.

8 Conclusion

In this paper I believe to have shown that apart from full concord or no concord some languages also show so-called partial concord. Partial concord is a phenomenon when the overt realization of a concord feature on its locus (the functional head that introduces it into the noun phrase structure) determines its overt realization on other noun phrase modifiers in the following way:

(55) **Partial Concord Generalization.** Suppose some head H within a noun phrase introduces some feature F (call H the locus of F). Then:

a. Elements c-commanding H realize F.

b. As for elements c-commanded by H:
If H itself realizes F, they do not realize F.
If H itself does not realize F, they realize F.

Two known morphosyntactic phenomena can be analyzed as instances of partial concord: strong vs. weak distinction in German adjectival paradigms (partial concord in Case) and Estonian Number concord in noun phrases with cardinal numerals (partial concord in Number), also the lack of Number concord in the context of a numeral in Syrian Arabic, Bagvalal, Buryat and Hausa.

The paper proposes a theory of concord that derives the Partial Concord Generalization in (55) and two cross-linguistic parameters that determine whether a language has full concord, partial concord or no concord in a given feature. The proposed theory makes non-trivial predictions about the correlation between Number concord and the presence of pluralia tantum nouns. It also sheds new light on well known Gender and Number concord mismatches in Russian (so-called 'Common Gender' and so-called 'count form' phenomena).

[20] The situation might be more complicated, however. Common Gender nouns belonging to the *-a* declension class do seem to allow for both Gender agreement patterns in oblique cases.

Glosses

Gloss	Interpretation	Gloss	Interpretation
ACC	accusative case	NOM	nominative case
DAT	dative case	PAR	partitive case
F, N, M	gender (feminine, masculine, neuter)	PL, SG	number (plural, singular)
FUT, PST	tense (future, past)	W	weak declension (*-e* vs. *-en*)
GEN	genitive case	1, 2, 3	person
LOC	locative case		

References

Abney, S. (1987) The English Noun Phrase in Its Sentential Aspect; PhD Dissertation; Cambridge: MIT Press

Babby, L. (1985) Noun Phrase Internal Case Agreement in Russian; In: *Russian Linguistics 9*; 1-15

Baker, M. (2008) The Syntax of Agreement and Concord; Cambridge: Cambridge University Press

Bayırlı, I. (2017) The Universality of Concord; PhD Dissertation; Cambridge: MIT Press

Bender, E., Sag, I., Wasow, T. (2003) Syntactic Theory: a formal introduction, Second Edition; CSLI Publications

Bobaljik, J. (2000) The Ins and Outs of Contextual Allomorphy; In: *University of Maryland Working Papers in Linguistics*, ed. by Grohmann K.K. and Struijke C.; volume 10; 35-71

Bobaljik, J. (2008) Where's phi? Agreement as a Postsyntactic Operation; In: *Phi theory: Phi-features across modules and interfaces*; ed. by Harbour, D. Adger, D. and Béjar, S.; Oxford: Oxford University Press; 295–328

Bošković, Ž. (2008) What will you have, DP or NP? In: *Proceedings of NELS 37*

Caha, P. (2009) The nanosyntax of case; PhD dissertation; University of Tromsø.

Chomsky, N. (1993) Minimalist Program for Linguistic Theory; In: *The View From Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, ed. by Hale, K. and Keyser, S.J.; Cambridge: MIT Press

Chomsky, N. (2000) Minimalist Inquiries; In: *Step by step*, ed. by Martin, R., Michaels, D. and Uriagereka, J.; Cambridge: MIT Press; 89-155

Chomsky, N. (2001) Derivation by Phase; In: *Ken Hale: A life in language*, ed. by Kenstowicz, M.; Cambridge: MIT Press; 1-52

Chomsky, N. (2005) On Phases; MIT

Christopoulos, C., Zompi, S. (2019) Strong Case Containment is too strong: Two arguments from defaults; NELS50@MIT, handout.

Cooper, R. (1983) Quantification and syntactic theory; Dordrecht: Reidel

Corbett, G. (2013) Systems of Gender Assignment; In: *The World Atlas of Language Structures Online*; ed. by Dryer, M., Haspelmath, M.; Leipzig; Max Planck Institute for Evolutionary Anthropology (Available online at http://wals.info/chapter/32, Accessed on 11/14/2016)

Cowell, M. (1964) A Reference Grammar of Syrian Arabic; Georgetown; Georgetown University Press

Culberston, J., Adger, D. (2014) Language Learners Privilege Structured Meaning over Surface Frequency; In: *Proceedings of the Natural Academy of Sciences 111 (16)*; 5842-5847

Danon, G. (2011) Agreement and DP-internal feature distribution; In: *Syntax 14(4)*; 297–317

Danon, G. (2012) Two structures for numeral-noun constructions; In: *Lingua 122*; 1282-1307

Dobrovie-Sorin, C., Giurgea, I. (eds.) (2013) A Reference Grammar of Romanian, Volume 1: The noun phrase; Amsterdam: John Benjamins

Erelt, M., Kasik, R., Metslang, H., Rajandi, H., Ross, K., Saari, H., Tael, K., Vare, S. (1993) Eesti Keele Grammatika II: Süntaks; Lisa: Kiri (Estonian Grammar II: Syntax); Tallinn; Estonia: Eest Teaduste Akadeemia Keele ja Kirjanduse Instituut

Fox, D., Pesetsky, D. (2005) Cyclic Linearization of Syntactic Structure; In: *Theoretical Linguistics 31*; Walter de Gruyter; 1-45

Frampton, J., Gutmann, S. (2000) Agreement is feature sharing; ms.; Boston: Northeastern University; url: <http://mathserver.neu.edu/ ling/pdf/agrisfs.pdf>

Giorgi, A., Pianesi, F. (1997) Tense and Aspect: From Semantics to Morphosyntax; New York; Oxford University Press

Grashchenkov, P. (2006) Sintaksis i tipologija genitivnoj gruppy (The syntax and typology of the genitive noun phrase); kfn dissertation; Moscow; MSU

Grimshaw, J. (1991/2005) Words and Structure; CSLI Publications

Halle, M., Marantz, A. (1993) Distributed Morphology and the Pieces of Inflection; In: *The View from Building 20*, ed. by Hale, K., Keyser, S. J.; Cambridge: MIT Press; 111-176

Harbour, D. (2003) The Kiowa case for feature insertion; In: *Natural Language & Linguistic Theory 21*; Kluwer Academic Publishers; 543-578.

Heim, I. (2005) Features on bound pronouns; ms.; MIT; Cambridge, MA

Heim, I., Kratzer, A. (1998) Semantics in generative grammar; Oxford: Blackwell

Katzir, R. (2011) Morphosemantic mismatches, structural economy, and licensing; In: *Linguistic Inquiry 42*: 45-82

Katzir, R., Siloni, T. (2014) Agreement and Definiteness in Germanic DPs; In: *Advances in the Syntax of DP's. Structure, Agreement, and Case*, ed. by Grosu, A., Bondaruk, A., Dalmi, G.; 267–293

Kayne, R. (1994) The Antisymmetry of Syntax; *Linguistic Inquiry* Monograph; Cambridge: MIT Press

Kibrik, A. (1977) O Sootnoshenii Ponyatiya Sintaksicheskogo Upravleniya s Ponyatiyami Soglasovanijya, Upravleniya i Primikanyia (On the Relation between Syntactic Government and the Notions of Morphological Agreement, Government and Adjunction); In: *Problemy Teoreticheskoy i Eksperimentalnoy Lingvistiki*; Moscow

Kibrik, A., Kazenin, K., Lyutikova, E., Tatevosov, S. (eds.) (2001) Bagvalinskij jazyk: Grammatika, teksty, slovari (Bagvalal: Grammar, Texts and Dictionaries); Moscow: IMLI RAN NASLEDIE

Klockmann, H. (2017) The Design of Semi-lexicality: Evidence from Case and Agreement in the Nominal Domain; PhD Dissertation; Utrecht: LOT

Koopman, H. (2006) Agreement configurations: in defense of "Spec Head"; In: *Agreement systems*, ed. by Boeckx, C.; Amsterdam; Benjamins; 159–199

Kornfilt, J. (1985) Case Marking, Agreement and Empty Categories in Turkish; PhD dissertation; Harvard; Cambridge

Kratzer, A. (2009) Making a Pronoun: Fake Indexicals as Windows into the Properties of Pronouns; In: *Linguistic Inquiry* Volume 40, Issue 2; 187-237

Kunkel-Razum, K., Münzberg, F. (2009) Duden: Die Grammatik (Duden: The Grammar); Mannheim: Bibliographisches Institut AG

Leu, T. (2001) A Sketchy Note On the Particle-Modifier Relation: Swiss-German which Sheds Light on Greek Determiner Spreading; In: *GG@G 2*; 55-70

Lyutikova, E. (2016) Sintaksis Imennoj Gruppy v Bezartiklevix Jazykax (Syntax of the Noun Phrase in Articleless Languages); Doctor Habilis dissertation; Moscow: MSU

Lyutikova, E., Pereltsvaig, A. (2015) Noun Phrase Structure in Articleless Languages: Universality and Variation; In: *Voprosy Jazykoznanija*; Moscow: Nauka; 52-69

Mallen, E. (1997) A minimalist approach to concord in noun phrases; In: *Theoretical Linguistics 23(23)*; 49–77

Martinović, M. (2015) Feature Geometry and Head Splitting: Evidence from the Morphosyntax of the Wolof Clausal Periphery; PhD. Dissertation; Chicago: University of Chicago

Milner, J., Milner, J.-C. (1972) La morphologie du groupe nominal en allemand (The morphology of the noun phrase in German); In: *DRLAV 2*; Universit'e de Paris VIII

Müller, G. (2007) Extended Exponence by Enrichment: Argument Encoding in German, Archi, and Timucua; In: *UPenn Working Papers in Linguistics* 13; 253–266

Norris, M. (2011) Towards an analysis of concord (in icelandic); In: *West Coast Conference on Formal Linguistics (WCCFL) 29*; 205–213

Norris, M. (2014) A Theory of Nominal Concord; PhD Dissertation; UCSC

Ortmann, A. (2000) Where plural refuses to agree: feature unification and morphological economy; In: *Acta Linguistica Hungarica 47 (1-4)*; 249–288

Peškovskij, A. (1928) Russkij sintaksis v naučcnom osveščcenii (Russian Syntax from a Scientific Point of View); Moscow

Pesetsky, D. (2013) Russian Case Morphology and the Syntactic Categories; *Linguistic Inquiry* Monograph; Cambridge: MIT Press

Pesetsky, D., Torrego, E. (2004) The Syntax of Valuation and the Interpretability of Features; In: *Phrasal and Clausal Architecture: Syntactic Derivation and Interpretation*, ed. by Karimi, S., Samiian, V., Wilkins, W.; Amsterdam: Benjamins

Pollard, C. J., Sag, I. (1994) Head-driven Phrase Structure Grammar; Chicago: CSLI/University of Chicago Press

Preminger, O. (2014) Agreement and Its Failures; *Linguistic Inquiry* Monograph; Cambridge: MIT Press

Richards , N. (2013) Lardil "case stacking" and the timing of case assignment; In: *Syntax 16*; 42 – 76

Ritter, E. (1991) Two functional categories in noun phrases: Evidence from Modern Hebrew; In: *Perspectives on phrase structure: Heads and licensing*; ed. by Rothstein, S. D.; Diego; Academic Press

Sanzheev, G. (1962) Grammatika Buryatskogo Jazyka: Fonetika i Morfologija (Buryat Grammar: Phonetics and Morphology); Izdatel'stvo Vostochnoj Literatury; Moscow

Schlenker, P. (1999) La Flexion de l'Adjectif en Allemand: La Morphologie de Haut en Bas (Adjectival inflection in German: the morphology of top-to-bottom); In: *Recherches Linguistiques de Vincennes* 28

Schoorlemmer, E. (2009) Agreement, Dominance and Doubling. The Morphosyntax of DP; PhD dissertation; Leiden: Leiden University

Smirnova, M. (1982) The Hausa Language: A Descriptive Grammar; *Languages of Asia and Africa 5*; London: Routledge and Kegal Paul

Sumbatova, N. (2010) Klassnoje Soglasovanije i Sintaksicheskije Svojstva Svjazok v Darginskom Jazyke (Class Agreement and the Syntactic Properties of Copulas in Dargwa); In: *Acta Linguistica Petropolitana* VI, ed. by Kazansky, N.; Saint-Petersburg: Nauka; 212-236

Szabolcsi, A. (1984) The possessor that ran away home; In: *The Linguistic Review*; Vol. 3, No. 1; 69-102

Tatevosov, S., Pazelskaya, A., Sulejmanov, D. (eds.) (2017) Elementy Tatarskogo Jazyka v Tipologicheskom Osveshchenii: Misharsky Dialekt (Elements of Tatar in a Typological Perspective: Mishar Dialect); Moscow; Buki Vedi

Tauli, V. (1973) Standard Estonian Grammar. Volume 1: Phonology, Morphology, Word formation; Studia Uralica et Altaica Upsaliensia, 8; Uppsala: Almqvist & Wiksell

Tauli, V. (1983) Standard Estonian Grammar. Volume 2: Syntax; Studia Uralica et Altaica Upsaliensia, 14; Uppsala: Almqvist & Wiksell

Wechsler, S., Zlatić, L. (2003) The Many Faces of Agreement; CSLI Publications

Zaliznyak, A. (1967) Russkoje imennoje slovoizmenenije (Russian Nominal Declension); Moscow; Nauka

Zlatić, L. (1997) The structure of the Serbian noun phrase; PhD Dissertation; University of Texas; Austin