THE MARKING OF MASS, COUNT AND PLURAL DENOTATIONS IN MULTI-DIMENSIONAL PARADIGMS

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Abstract

This paper investigates the morphology of nouns in pseudo-partitive constructions, noun-numeral constructions and plurals. The data discussed reveal a *ABA pattern that restricts syncretism among these categories. Specifically, in the sequence pseudo-partitive, counting form and plural, only adjacent forms can be syncretic. I argue that the constraint can be derived from a particular morphosyntactic structure, where, following Borer (2005), mass nouns have the smallest structure, count nouns (found after numerals) are derived by dividing the mass into units, and plural is derived by restricting the count denotation to pluralities. The article further investigates how the relevant forms interact with case marking, and suggests that the forms should be organized into a two-dimensional paradigm space where syncretic forms occupy contiguous regions.

1 Introduction

This article explores the morphological marking of nouns in the three constructions listed in (1).

(1) a. pseudo-partitive constructions (*a meter of fence*)
     b. nouns after numerals (*three fences*)
     c. bare plurals (*fences*)

What is interesting about these three constructions is that across various languages, the nouns show various types of syncretism (i.e., the identity of marking). In the first part of the paper, my goal is to systematize these patterns. In order to do so, I always keep the same order of the constructions as in (1), and mark differences/syncretism

by the (non-)identity of letters. For example, when there is no syncretism, this would be labelled as an ABC pattern. When the noun after numerals is the same as the plural, this represents an ABB pattern. This pattern is exemplified by Dutch, see (2).

(2) Dutch (ABB)[1]

    a.   een meter **touw-Ø**
        one meter rope
        'one meter of rope'   (pseudo-partitive)

    b.   twee **touw-en**
        two rope-PL
        'two ropes'   (counting)

    c.   Er liggen **touw-en** op de grond.
        there lie rope-PL on the ground
        'There are (some) ropes on the ground.'   (plural)

There are also languages where nouns after numerals have the same shape as nouns in the pseudo-partitive construction (and the plural is different). A language like that is Turkish, see (3).

(3) Turkish (AAB)[2]

    a.   bi(r) parça **kek-Ø**
        a piece cake
        'a piece of cake'   (pseudo-partitive)

    b.   üç **kek-Ø**
        three cake
        'three cakes'   (counting)

    c.   **kek-ler**
        cake-PL
        'cakes'   (plural)

Table (4) sums up the facts.
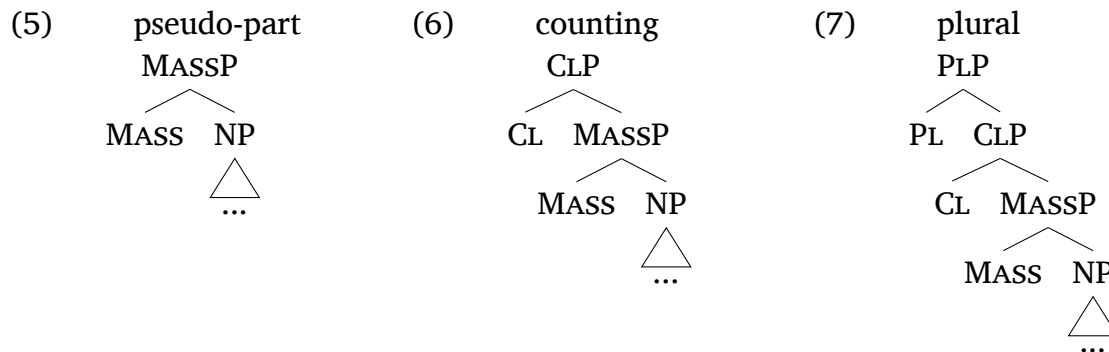
(4) Patterns of syncretism in Dutch and Turkish

	PSEUDO-PART	COUNTING	PLURAL
Dutch	-Ø	-en	-en
Turkish	-Ø	-Ø	-ler

My goal is to explain why these different syncretisms exist, and also why the third logical possibility for a two-form syncretism (namely ABA) is unattested in my sample. The explanation is based on syntactic decomposition (drawing on Borer 2005)

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[1]Many thanks to Fenna Bergsma for the examples. Here and elsewhere, the symbol -Ø indicates the absence of marking. Since -Ø indicates the absence of marking, I do not gloss it.

[2]Many thanks to Utku Türk for the examples.

and the Nanosyntax model of spellout (Starke 2018). The gist of my analysis is that nouns in pseudo-partitives are (structurally small) mass nouns (5), while nouns after numerals are structurally bigger, derived from mass nouns by a special syntactic head CL that turns the original mass denotations into a count one (6). The plural is even more complex, derived from the count noun by an additional PL head, which eliminates the atoms from the denotation of the count noun (7). Both the syncretisms in (4) and the absence of ABA can then be derived from this type of structural organization (cf. Caha 2009, Bobaljik 2012).

(5) pseudo-part (6) counting (7) plural

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      MassP               CLP               PLP
       /\                 /\                /\
   Mass   NP          CL   MassP        PL   CLP
          /\               /\               /\
         ...           Mass   NP        CL   MassP
                              /\             /\
                             ...         Mass   NP
                                                /\
                                               ...
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In the paper, I further show how this proposal accounts for the fact that in some languages, the relevant syncretism patterns depend on case marking (cf. Pesetsky 2013). For example, there are many masculine nouns in Russian that exhibit the Turkish type of AAB syncretism in the structural cases, see (8).

(8) Russian, nominative (AAB)[3]

　　a. metr　　　**zabor-a**
　　　　meter.NOM fence-GEN.SG
　　　　'a meter of fence'

　　b. dva　　　**zabor-a**
　　　　two.NOM fence-GEN.SG
　　　　'two fences'

　　c. **zabor-y**
　　　　fence-NOM.PL
　　　　'fences'

However, we find the Dutch-style ABB syncretism in the oblique cases, see (9).

(9) Russian, instrumental (ABB)

　　a. s　　metr-om　**zabor-a**
　　　　with meter-INS fence-GEN.SG
　　　　'with a meter of fence'

    b.   s   dv-umja **zabor-ami**
            with two-INS fence-INS.PL
            'with two fences'

    c.   s   **zabor-ami**
            with fence-INS.PL
            'with fences'

Table (10) sums up the facts seen in (8) and (9). The main point is that Table (10) is the "same" table as (4), but this time depicting case-conditioned intra-language variation, rather than cross-linguistic variation.[4]

(10)   Patterns of syncretism in Russian

	PSEUDO-PART	COUNTING	PLURAL
INS	-a	-ami	-ami
NOM	-a	-a	-y

The paper is organized as follows. Section 2 describes the facts. In section 3, I propose a particular structure for mass, count and plural denotations. Section 4 proposes a particular structure for case. Section 5 discusses evidence for placing case distinctions above number distinctions in the morphosyntactic structure. Section 6 provides my general assumptions about spellout. In Section 7, I show how the syncretism patterns described in Section 2 arise. Section 8 concludes.

2   What is there to be explained

This section describes the facts to be explained. Section 2.1 discusses languages with syncretism between pseudo-partitives and counting forms (AAB). Section 2.2 describes languages with syncretism between counting forms and plurals (ABB).

2.1   *Type I syncretism: pseudo-partitives and numeral phrases*

In Estonian, mass nouns in pseudo-partitive constructions are marked by the partitive singular case (11a). The same is true for nouns after numerals higher than one (11b). The plural is distinct (11c) (see, e.g., Miljan 2008, Norris 2018).[5]

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[4]The pattern I report here holds for the numerals 'two' to 'four.' Numerals 'five' and higher have a different pattern that I don't discuss here for reasons of space. For comparison, I use one of these small numerals for all languages. The numeral 'one' is also special, see the discussion surrounding (47) for some speculations.

[5]In the examples, *-i* is segmented as a suffix. This is based on the fact that the NOM.SG is *šokolaad* 'chocolte.' However, a reviewer reminds me that the whole form may also be considered a non-decomposable stem. Regardless of how this is resolved, the main point is that the noun has the same form in the pseudo-partitive and after the numeral.

(11)   Estonian, nominative (AAB)[6]

    a.   tükk   **šokolaad-i**
        piece.NOM.SG chocolate-SG.PART
        'a piece of chocolate'   (pseudo-partitive)

    b.   kaks   **šokolaad-i**
        two.NOM chocolate-SG.PART
        'two chocolates'   (counting)

    c.   Need   **šokolaadi-d**   on   odavad.
        these.PL.NOM chocolates-PL.NOM be.PRES.3 cheap.NOM.PL
        'These chocolates are cheap.'   (plural)

The identity between pseudo-partitives and nouns after numerals is found not only in NOM (as in (11)), but in all cases. (12) gives an example in the inessive (INE).

(12)   Estonian, oblique (AAB)

    a.   tüki-s   **šokolaadi-s**
        piece-INE chocolate-INE
        'in a piece of chocolate'   (pseudo-partitive)

    b.   kahe-s **šokolaadi-s**
        two-INE chocolate-INE
        'in two chocolates'   (counting)

    c.   inendes   **šokolaadi-de-s**
        these.PL.INE chocolate-PL-INE
        'in these chocolates'   (plural)

(12a) shows that nouns in pseudo-partitives are marked by the relevant oblique case. The same is true for nouns after numerals (12b). The plural is still different.

    The facts are summarized in Table (13). The table gives the traditional names of the markers that appear in the relevant contexts. Shading indicates the identity of marking. The boxes around NOM.PL and OBL.PL are there to indicate that each of them is marked differently from the other forms.

(13)   Estonian:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	PART.SG	PART.SG	NOM.PL	AAB
OBL	OBL.SG	OBL.SG	OBL.PL	AAB

In other languages, the overlap between pseudo-partitives and numeral-noun constructions is case-dependent. In Finnish (cf. Brattico 2008, 2011), we only find this

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As pointed out to me by an anonymous reviewer, pseudo-partitive constructions may also use the elative case, yielding an ABC pattern. This is consistent with the generalization that ABA is not found.

   [6]Many thanks to Merilin Miljan for the Estonian examples (11) and (12).

syncretism in structural cases. The example (14) shows the relevant phrases in the nominative. The noun has the partitive singular *-ta* both after a measure noun (14a) and after a numeral (14b). (14c) contains NOM.PL, which has a different ending (*-t*).

(14)   Finnish, nominative (AAB)[7]

     a.   pala   **suklaa-ta**
        piece.NOM chocolate-PART
        'a piece of chocolate'   (pseudo-partitive)

     b.   kaksi   **suklaa-ta**
        two.NOM chocolate-PART
        'two chocolates'   (counting)

     c.   Nämä **suklaa-t**   ovat halpoja.
        these chocolate-NOM.PL are   cheap
        'These chocolates are cheap.'   (plural)

In oblique contexts, we get an ABC pattern. Specifically, the noun in the pseudo-partitive construction keeps the partitive marker, see (15a). Contrastingly, nouns after numerals are marked by the relevant oblique case marker, see (15b). The plural noun in (15c) has a dedicated plural marker before the case marker.

(15)   Finnish, oblique (ABC)

     a.   pala-ssa   **suklaa-ta**
        piece-SG.INE chocolate-PART
        'in a piece of chocolate'   (pseudo-partitive)

     b.   kahde-ssa **suklaa-ssa**
        two-INE   chocolate-INE
        'in two chocolates'   (counting)

     c.   näissa   **sukla-i-ssa**
        these.PL.INE chocolate-PL-INE
        'in these chocolates'   (plural)

The facts are summarized in the paradigm (16). This paradigm differs from the Estonian one in how pseudo-partitives behave. In Finnish, we find an invariant PART.SG on the substance noun, yielding a difference in the bottom left corner of Table (16) (boldfaced). The corresponding noun in Estonian shows OBL.SG here.

(16)   Finnish:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	PART.SG	PART.SG	NOM.PL	AAB
OBL	**PART.SG**	OBL.SG	OBL.PL	ABC

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[7]Many thanks to Anne Häkkinen for the Finnish data in (14) and (15).

In Serbian, the noun has a case-invariant form both in the pseudo-partitive context and in the numeral-noun construction. (17) shows the structural case environment, where we find a form identical to GEN.SG both in pseudo-partitives and after numerals (17a,b). The plural is different (17c).

(17)　Serbian masculine nouns, nominative (AAB)[8]

    a.　metar **konopc-a**
       meter rope-GEN.SG
       'a meter of rope'　　　　　　　　　　　　　　(pseudo-partitive)

    b.　dva **konopc-a**
       two rope-GEN.SG
       'two ropes'　　　　　　　　　　　　　　　　(counting)

    c.　**konopc-i**
       rope-NOM.PL
       'ropes'　　　　　　　　　　　　　　　　　　(plural)

In the oblique case environment, we still find the very same GEN.SG in pseudo-partitives and after numerals (18a,b). Only the plural noun changes shape, see (18c).

(18)　Serbian masculine nouns, instrumental (AAB)

    a.　s　metr-om　　**konopc-a**
       with meter-INS.SG rope-GEN.SG
       'with a meter of rope'　　　　　　　　　　(pseudo-partitive)

    b.　s　dva **konopc-a**
       with two rope-GEN.SG
       'with two ropes'　　　　　　　　　　　　(counting)

    c.　s　　**konopc-ima**
       towards ropes-INS.PL
       'with ropes'　　　　　　　　　　　　　　(plural)

The paradigm in (19) sums up. This paradigm is similar to Estonian (13), since in all cases, the noun after numerals is the same as in the pseudo-partitive. However, there is a difference in that Estonian nouns change depending on case, which is not the case in Serbian.[9]

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[8]Many thanks to Monika Bader for her judgements on Serbian. The pattern reported here is found after numerals 'two' to 'four.' 'Five' and higher pattern differently.

[9]Despić (2013) and Veselinović (2015) note that there is an alternative way of marking the instrumental in the numerical phrase, where the noun is in the instrumental plural, see (19).

(i)　　s　dva-ma kamion-**ima**
      with two-INS truck-INS.PL
      'with two trucks' (instrumental, Hammond 2005:261)

My informant tells me that these feel archaic and she would not use them. This judgement concurs with Despić (2013), who notes that such examples are "not very productive in the modern language (this is simply not something that native speakers are used to nowadays)." I will not analyze examples

(19)   Serbian:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	GEN.SG	GEN.SG	NOM.PL	AAB
OBL	GEN.SG	GEN.SG	OBL.PL	AAB

Yet another type of pattern is found in North Saami, which has an ABC pattern in structural cases, and an AAB pattern in oblique cases. To begin with, pseudo-partitives in this language always have the substance noun in a case that reflects its role in the sentence (Nickel & Sammallahti 2011:438). In (20a), the substance noun 'beer' is in NOM.SG because it is the subject of the sentence. The numeral construction in (20b) is different because in structural cases (NOM, ACC), numerals require the GEN.SG case on the counted noun (Nickel 1990:89-90). As we can see, the noun 'beer' in (20a,b) does not show the difference in case by a suffix, but by a consonant mutation inside the stem (the so-called grade); we have *vuolla* 'beer, NOM.SG' in (20a) vs. *vuola* 'beer, GEN.SG' in (20b).[10]

(20)   North Saami, nominative (ABC, based on the SIKOR corpus)

a.   ... sus   lei ... 77 lihtera   **vuolla**
      he.LOC was   77 liter.GEN.SG beer.NOM.SG
      'He had (with him) 77 liters of beer.'   (pseudo-partitive)

b.   ... ahte guokte **vuola**   fidnen ...
      that two.ACC beer.GEN.SG I.get
      '... that I get two beers'   (counting)

c.   Ledje logi   **bohcco**   ...
      it.was ten.NOM reindeer.GEN.SG ...
      'It was ten reindeer ...'   (counting)

d.   **bohcco-t**
      reindeer-NOM.PL
      'reindeer(s)'   (plural)

The NOM.PL form is still different, adding a *-t* suffix to a base that is identical to the counting form (i.e., to the genitive singular), see (20d). (20c) is provided as a minimal pair to (20d), illustrating the point that *-t* is suffixed to the GEN.SG form, which is required on the noun in (20c) by the numeral. (The nominative of 'reindeer' is *boazu* 'reindeer, NOM.') To summarize, all three constructions are marked differently when the relevant phrases appear in the nominative environment.

In oblique cases, the pseudo-partitive and the numerical construction pattern

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like (i) here. (A system identical to the archaic Serbian is found in Russian. I analyze Russian in section 7, and the proposal can be transferred to archaic Serbian.)

[10]I am indebted to Kristine Bentzen, Johanna Johansen Ijäs, Olle Kejonen and Trond Trosterud for a helpful discussion of North Saami pseudo-partitives.

alike, see (21a,b). Specifically, both nouns have the relevant oblique singular. The plural is different, see (21c).

(21)   North Saami, oblique (AAB, based on the SIKOR corpus)

a.   Lihterbeali **vuola-s**   lea 12-13 grámma   álkohola.
     half.liter   beer-LOC.SG is 12-13 gram.GEN.SG alcohol.NOM.SG
     'In half a liter of beer, there is 12-13 grams of alcohol.'   (pseudo-partitive)

b.   dušše njeallje logi **bohcco-s**   ... lea geatki   ieš goddán
     only four   ten reindeer-LOC.SG   is wolverine self killed
     'The wolverine himself only killed four in ten reindeer.'   (counting)

c.   **bohcco-i-n**
     reindeer-PL-LOC.PL
     'in reindeer(s)'   (plural)

Table (22) summarizes.[11]

(22)   North Saami:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	NOM.SG	GEN.SG	NOM.PL	ABC
OBL	OBL.SG	OBL.SG	OBL.PL	AAB

The puzzle posed by the four languages is that in all of them, there is an overlap between the marking of nouns in pseudo-partitives and after numerals (AAB). However, the languages differ in the type of environment where this is the case. The following table sums up the environments where syncretism obtains (or fails to obtain):

(23)   The distribution of AAB patterns

	structural	oblique
Estonian / Serbian (masc.)	✓	✓
Finnish	✓	—
North Saami	—	✓

2.2   Type II syncretism: nouns after numerals and plurals

This section discusses languages where nouns after numerals pattern with plurals (ABB). As a language with a complete overlap between the counting form and the plural, consider Czech (English belongs here too). The first dataset is given in (24). The examples are as found in the nominative environment.[12]

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[11]North Saami has also dual for pronouns (though not for nouns), I come back to this in (45).

[12]As in Serbian, the relevant pattern is found after numerals 2-4.

(24)   Colloquial Czech, nominative (ABB)

    a.   metr   **provaz-u**
         meter.NOM rope-GEN
         'a meter of rope'   (pseudo-partitive)

    b.   tři   **provaz-y**
         three.NOM rope-NOM.PL
         'three ropes'   (counting)

    c.   Na stole ležely   **provaz-y.**
         on table lie.PAST rope-NOM.PL
         'There were (some) ropes lying on the table.'   (plural)

The counting form (24b) and the plural (24c) are syncretic. The pseudo-partitive in (24a) is different. The same syncretism pattern is found in the oblique cases (25).

(25)   Colloquial Czech, instrumental (ABB)

    a.   s   metr-em   **provaz-u**
         with meter-INS.SG rope-GEN
         'with a meter of rope'   (pseudo-partitive)

    b.   se   tř-ema   **provaz-ama**
         with three-INS rope-INS.PL
         'with three ropes'   (counting)

    c.   s   **provaz-ama**
         with rope-INS.PL
         'with ropes'   (plural)

Table (26) summarizes the pattern.

(26)   Czech:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	GEN.SG	NOM.PL	NOM.PL	ABB
OBL	GEN.SG	OBL.PL	OBL.PL	ABB

Let me now turn to languages where ABB alternates with other patterns depending on case. As the first example, consider South Saami (Bergsland 1946, Ylikoski 2019). To begin with, let me note that pseudo-partitive structures in this language have the substance noun marked by the elative case, see (27).[13]

(27)   luhkie lijhter-h   bensijne-ste
       ten   liter-NOM.PL petrol-ELAT

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[13]Many thanks to Jussi Ylikoski for a helpful discussion of South Saami. He directed me to the example (28) in Bergsland's grammar and provided me with the example in (27) (the ultimate source of the example is the SIKOR corpus).

'ten liters of petrol' (South Saami)

The elative remains fixed across all cases (like the Czech genitive). In (28), we can see a phrase that is taken out of a sentence where it functions as a direct object. In this phrase, the noun 'kilo' is in the accusative, and the elative on the substance noun remains unaffected. The same holds throughout the paradigm.

(28)   bielie-vijhte-de-n   tjahta-m rohke-jaavvo-ste
        half-five-ORD-GEN kilo.ACC rye-flower-ELAT
        'four and a half kilo of rye flower' (S. Saami, based on Bergsland 1946:265)

Turning now to the counting form and the plural, consider Table (29). On the very left, I give the singular paradigm of 'house.' On the very right, we see the plural paradigm of the same noun. In between these two columns, we see how the phrase 'two houses' inflects. The relevant observation is that in the nominative, the counted noun 'house' has the same form as the plural, but in the oblique cases, it has the same form as the singular. The boldface is intended to bring this out.[14]

(29)   South Saami paradigm fragment (based on Bergsland 1946:263, 264)

	house	two	houses	houses
NOM	goåtie	g̣ekt'ə	**goåtieh**	**goåtieh**
GEN	**goåtien**	g̣ekťən	**goåtien**	goåtiej
ILL	**goåtan**	g̣ekťən	**goåtan**	goåťəjďə
INE	**goåťəsn**	g̣ekťəńə	**goåťəsn**	goåťə(j)ńə
ELA	**goåťəsťə**	g̣ekťəŕə	**goåťəst'ə**	goåťəjsťə
COM	**goåťə(j)ńə**	g̣ekťəńə	**goåťə(j)ńə**	(goåtiej gújmie)

Table (30) summarizes the facts. The most relevant observation is that the counting form is the same as the plural in the nominative, but it is different from the plural in the oblique cases.[15]

(30)   South Saami:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	ELAT.SG	NOM.PL	NOM.PL	ABB
OBL	ELAT.SG	OBL.SG	OBL.PL	ABC

Finally, there are also languages where the syncretism between the counting form

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[14]When the numeral phrase is preceded by a demonstrative, the counted noun is plural in South Saami. Alexiadou (2019:141) notes this also for Turkish and Armenian. I am leaving this aside.

[15]Jussi Ylikoski (p.c.) notes that it is also possible to find examples where the substance noun in pseudo-partitives faithfully reflects the case of the larger syntactic environment, just like in North Saami. That would yield an AAB pattern in oblique cases.

and the plural only obtains in oblique cases. A system like that is found in Russian, looking at numerals 2 to 4. (31) shows the oblique case environment.

(31) Russian, oblique (ABB)[16]
    a. (k) stakan-u **sok-a**
       to glass-DAT juice-GEN.SG
       '(to) a glass of juice'   (pseudo-partitive)
    b. (k) dv-um   **stol-am**
       to two-DAT table-DAT.PL
       '(to) two tables'   (counting)
    c. (k) **stol-am**
       to table-DAT.PL
       '(to) tables'   (plural)

In this context, the counting form and the plural always pattern alike, see (31b,c). The pseudo-partitive construction in (31a) has the substance noun in the genitive singular.

In structural cases, the situation is notoriously complex (Pesetsky 2013, Xiang et al. 2011, Bailyn & Nevins 2008, Timberlake 2004, Corbett 2000, Franks 1994). The most cautious way to describe it is to say that each of the categories has a different form. I show this in (32), where we can see that the pseudo-partitive has -*u* (32a), the noun after numerals has -*a* (32b), and the plural has -*y*.

(32) Russian, nominative (ABC/AAB)[17]
    a. čaška **čaj-u**   (**čaj-a**)
       cup   tea-PART (tea-GEN.SG)
       'a cup of tea'   (pseudo-partitive)
    b. dva **stol-a**
       two table-NUMERATIVE
       'two tables'   (counting)
    c. **stol-y**
       table-NOM.PL
       'tables'   (plural)

However, for the majority of nouns in the language, this neat three way split is simplified into a two way split (as in (9)). This is due to the fact that the morphology of the pseudo-partitive and the form after numerals are often identical. This is indicated in (32a) by the form in parenthesis, which is also possible in (32a), and it is marked by the same -*a* as the counted noun in (32b).

Another cautionary point worth mentioning is that for some nouns (around five), the form after numerals has a different stress pattern than in the pseudo-partitive

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[16]The example (b) is from Pesetsky (2013:44). I thank Polina Berezovskaya for the other two examples.

[17]The example (a) is from Koptjevskaja-Tamm (2001:524), (b) is from Pesetsky (2013:41).

(even though they have the same ending). For that reason, the form after numerals is sometimes referred to as the numerative form (Timberlake 2004), a terminological convention that I follow in glossing (32b).

The Russian pattern can therefore be summarized as in (33), where the interesting thing is that the counting form exhibits the same marking as the plural in the oblique cases, but not in the structural cases.

(33)   Russian masculine nouns:

	PSEUDO-PART		COUNTED		PLURAL	PATTERN
NOM	PART	GEN.SG	GEN.SG	NUMER	NOM.PL	ABC, AAB
OBL		GEN.SG		OBL.PL		ABB

Table (33) also depicts the fact that masculine nouns often exhibit the identity between the pseudo-partitive and the counted form in the nominative, carrying a marker that is standardly referred to as the genitive singular. However, the table also contains additional forms in the nominative to indicate that for some nouns, the forms differ. This leads to the fact that while some nouns show an ABC pattern in the nominative, other nouns show an AAB pattern.

2.3   A summary

Let me now summarize the patterns. Table (34) addresses the issue of syncretism between the counting form and the plural (ABB). The syncretism is found in all cases in some languages (Czech), but it is case-dependent in others (South Saami, Russian).

(34)   The distribution of ABB patterns

	structural	oblique
Czech	✓	✓
South Saami	✓	—
Russian	—	✓

Table (35) (repeated from (23)) reminds us that analogous facts obtain for the syncretism between the counting form and the substance noun in pseudo-partitives.

(35)   The distribution of AAB patterns

	structural	oblique
Estonian / Serbian (masc.)	✓	✓
Finnish	✓	—
North Saami	—	✓

The goal of this article is to formulate an account of these facts that relies on the idea that each category (pseudo-partitives, counted nouns and plurals) has a different morphosyntactic structure, and any identity among the forms arises from the 'underspecification' of lexical items. In order to highlight the basic analytic intuition, it is useful to draw a parallel to the marking of singular and plural. When it comes to these two numbers, we are used to organizing inflectional paradigms into two columns, and we expect that each column looks different. When they look the same, the identity is analyzed as syncretism. For example, in English, depending on person, we either have the same form for singular and plural (*you*), or don't (*I* vs. *we*), as in (36).

(36)   English pronouns

	SG	PL
1ST	*I*	*we*
2ND	*you*	

(37)   Russian masculines

	COUNT	PL
NOM	*-a*	*-y*
DAT	*-am*	

My strategy is to apply the same logic to the set of facts introduced above. The gist of the idea is as shown in (37), which is a table that has the same abstract shape as (36). However, instead of to the traditional SG/PL opposition, the table compares the shape of the Russian noun after numerals and in the plural, as if the form after numerals represented a special number (like the singular in (36)). Under this approach, the identity of marking is a matter of syncretism such that the particular dative marker *-am* fails to distinguish between the two columns (just like *you* does not distinguish between the two columns in (36)).

I shall further adopt the same strategy for pseudo-partitives. Specifically, I analyze the substance noun in pseudo-partitives as belonging to a separate denotation type, which we may call a "mass number." Just like singular or plural, this "number" may also inflect for case and, potentially, show syncretism with other numbers.

It is not crucial for the analysis whether the counting form and the substance noun are treated as instances of number or some other category (say individuation). What is important, however, is that there are two orthogonal dimensions in a paradigm structure. The first dimension tracks the denotation type (MASS, COUNT, PLURAL), each corresponding to a different column. The second dimension is case, which adds rows in the table, see (38).

(38)

	number: MASS	number: COUNT	number: PL
case: NOM	...	...	...
case: ACC	...	...	...
case: ...	...	...	...

This organization of the data gives us a two-dimensional grid of grammatical categories. A complete account of the data emerges once we have a theory that allows us to encode the fact that not all the possible distinctions in this grid are formally

realized, because individual markers often express multiple cells in the grid. The tables we have been looking at thus far represent specific instances of how languages cut up the abstract paradigm space charted out in (38).

Ideally, one would also add the singular, dual and other numbers into this table as independent columns, map the syncretisms and end up with a full theory of number marking. In what follows, I only propose a theoretical implementation of the three columns listed in (38) and leave additional numbers for future research, though I briefly address this issue in Section 3.1.

With the facts and limitations laid out, the two following sections sketch my assumptions about the morphosyntactic structures that give rise to the two-dimensional grid in (38). Section 3 makes explicit my assumptions about the horizontal dimension (the structure of number). Section 4 turns to the vertical dimension (case).

3 The structure of mass/count/plural

In this section, I describe my assumptions about the morphosyntactic structure of the three numbers assumed in Table (38). These are as given in (39)-(41).

(39) pseudo-part
   MASSP
   MASS   NP
        △
        ...

(40) counting
   CLP
   CL   MASSP
      MASS   NP
           △
           ...
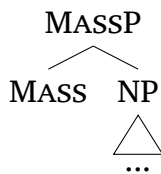
(41) plural
   PLP
   PL   CLP
      CL   MASSP
         MASS   NP
              △
              ...
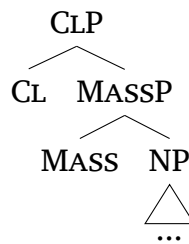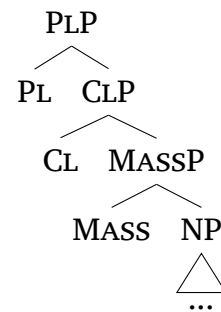
In Section 3.1, I make explicit my assumptions about the semantics of the structures. In Section 3.2, I discuss some morphological evidence in favor of this proposal.

3.1 The semantics of the structures

The first assumption I adopt is that in pseudo-partitive structures like *a liter of milk*, the measure noun (*a liter*) applies to a mass noun and divides it into units of a particular size as defined by the measure noun. In a number of current approaches (notably Borer 2005), mass nouns represent the simplest denotation type, which lacks a clearly defined atomic layer in their denotation. Therefore, I attribute to nouns in pseudo-partitives the simplest structure as depicted in (39).

Numerals, on the other hand, require their complement to be a count noun. An idea that is currently explored in a number of approaches is that count denotations arise as a result of providing the mass denotation with a layer of non-overlapping

atomic units (e.g., Borer 2005, Rothstein 2010). In (40), this operation is performed by a head that is labeled CL (for classifier). As a result of its application, we get a denotation that is count, but number neutral, corresponding to the so-called join semilattice (Link 1983). An example of such a denotation is illustrated in (42), containing three atomic elements α, β, γ and their combinations).[18]

(42)   ⟦CLP⟧ = {α, β, γ, $\alpha\beta$, $\alpha\gamma$, $\beta\gamma$, $\alpha\beta\gamma$}

When numerals apply to such a number-neutral countable denotation, they pick out members of the right cardinality (Bale et al. 2010, Martí 2020b). For instance, if the numeral *two* applies to (42), it restricts the denotation to the three elements of cardinality two, i.e., to $\alpha\beta$, $\alpha\gamma$ and $\beta\gamma$.[19]

Finally, I adopt here the idea that the plural denotation arises by restricting the countable (but number-neutral) denotation in (42) to all its non-atomic members (Harbour 2014, Martí 2020b). This is performed by the head labelled PL in (41), yielding a meaning that can be depicted as in (43).

(43)   ⟦PLP⟧ = {$\alpha\beta$, $\alpha\gamma$, $\beta\gamma$, $\alpha\beta\gamma$}

Let me now come back to the fact that in (39), the mass-denoting structure is decomposed into two components. The main motivation for this decomposition is that mass-denoting nouns in pseudo-partitives are often morphologically complex, which means that at least two structural components must be assumed. However, the specific decomposition of mass nouns in (39) is left vague.

I also leave it open how additional numbers – singular and dual – are to be placed in the hierarchy. At the request of the reviewers, let me indicate at least one possible line of analysis, starting with the dual. This number could be incorporated into the MASS-COUNT-PLURAL hierarchy by proposing an additional head that comes on top of PL. This head would contribute the semantics of the feature [+ minimal] proposed in Harbour (2014); I therefore call it MIN. Under this view, the structure of the dual would be as in (44).

(44)   *A possible structure of the dual*: [MIN [PLP]]

What MIN does is that it applies to a particular set and restricts the denotation to the minimal elements that satisfy the denotation. Specifically, when MIN applies to the plural meaning in (43), it picks out a set of pairs $\alpha\beta$, $\alpha\gamma$ and $\beta\gamma$. These pairs are minimal in the sense that they do not have a proper sub-part that is also in the denotation of the PLP. On the other hand, the triplet $\alpha\beta\gamma$ has a proper subpart that is in the denotation of PLP (e.g., $\alpha\beta$).

This proposal makes sense not only semantically, but also morphologically (see

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[18]The denotation of CLP comes close to the so-called inclusive-plural reading (see Martí 2020a and the references there). I leave it open whether the counted form should be unified with the inclusive plural or not (there are languages where the two forms are morphologically distinct, e.g., Bulgarian).

[19]See, e.g., Ionin & Matushansky (2018) for an alternative approach.

Nevins 2011). This is because deriving the dual from the plural makes the two categories adjacent in the structure, and this is something that opens the theoretical space for syncretism between the plural and the dual (a position to be formalized in Section 6). This seems to be a good move, since such syncretism is attested. For instance, North Saami nouns only distinguish singular from non-singular forms. However, pronouns and verbal agreement also have the dual category. Interestingly, the plural form of the noun may trigger dual agreement on the verb when the plural form refers to two individuals, see (45) (Kejonen 2017:16). This can be explained if the noun is syncretic for the two numbers adjacent in the hierarchy (44).

(45) **Guolleoaggu-t** le-**igga**   dasa   boahtá-n muohtabiilla-in
      fisherman-NSG be-3DU.PST DEM.ILL come-PRF snow.car-COM
      'The fishermen had come there by snow car.' (North Saami)

Let me now turn to the singular. The first thing to note is that if the MIN head applies directly to CLP (rather than to PLP), we get the singular denotation. To see that, recall from (42) that CLP is a number-neutral denotation that also includes the atoms. If MIN applies to such a denotation, it yields the set of atoms (and hence, the singular). This is because the minimal elements in the denotation (42) are the atoms (Martí 2020b). In other words, the structure [MIN [CLP]] (with the optional feature PL missing) yields the semantics of the singular 'for free.' The proposal is in (46).

(46) *A possible structure of the singular*: [MIN [CLP]]

The compositional semantics underlying this proposal is rather elegant, but it leads to potential problems in the domain of morphology. The specific problem is that if the structure of the singular were [MIN [CL [MASSP]], the singular would not be structurally adjacent to the mass denotation (the number-neutral CLP is in the way). This in turn clashes with the observation that singular markers are quite often the same as the markers that we find on mass nouns, hence we do want these two denotation types to form a natural class (be adjacent in the structure). This would be achieved if MIN could derive the singular meaning directly from the MASSP, but this is non-trivial semantically.

Alternatively, if one would be willing to postulate a silent 'singular' marker – which could be taken to spell out CL and MIN – one could keep the hierarchy as in (46). Such marker could be then seen as parallel to markers such as *a* or *one,* which Borer (2005) argues realize morphologically the heads that both divide the mass into units and count the units, see (47). If this view is adopted, the syncretism between mass nouns and the singular could be explained as a consequence of the zero marker, since what is left in (47) for morphological realization is just the MASSP. I leave this unresolved here, since this is not my main focus in this article.

(47) [$\boxed{\text{MIN [CL}}$ [MASSP]]]
      {*a, one,* $\emptyset_{sg}$}

17

3.2   *ABA constraint on mass, count and plural

The structures in (39)-(41) are motivated by the patterns of syncretism investigated here. Specifically, it has been proposed in the literature that when morphosyntactic structures exhibit containment relations such as in (39)-(41), we expect to find the so-called *ABA constraint on syncretism (e.g., Caha 2009, 2013, Bobaljik 2012).

*ABA constraints in general say that in a particular sequence of grammatical meanings, syncretism (when it occurs) only targets contiguous regions in that sequence. In our specific case, when we order the grammatical meanings according to their complexity (i.e., in the sequence MASS–COUNT–PLURAL), we predict that only adjacent regions can be syncretic.

(48)   *The scale of MASS-COUNT-PLURAL*
       Syncretism targets only contiguous regions on the following scale
       PSEUDO-PARTITIVES — COUNTING FORMS — PLURALS

The content of this constraint can be depicted as in (49).

(49)   Patterns of marking

	MASS	COUNT	PLURAL
allowed	A	B	C
allowed	A	B	B
allowed	A	A	B
allowed	A	A	A
disallowed	A	B	A

In the header of the table, we find the relevant linear sequence MASS–COUNT–PLURAL. The first row depicts the possibility that all forms are different, using A, B and C as variables over different morphological shapes.

Below the ABC pattern, we find three types of syncretism that are allowed by the constraint (48), because they target adjacent regions in the relevant sequence. These three patterns are referred to as ABB, AAB and AAA respectively. What is not allowed is a case where mass denotations are the same as plurals to the exclusion of the count denotation (MASS = PLURAL, ABA).

The data discussed in Sections 1 and 2 support the generalization (48). The examples there come from 9 different languages (Dutch, Turkish, Russian, Estonian, Finnish, Serbian, Czech, North Saami and South Saami). All of these languages show some syncretism, but crucially, all of them target categories adjacent on the scale in (48). Later on, I shall discuss one additional language where the constraint holds as well (Digor Ossetic), and it also holds in other languages that I do not discuss here for reasons of space, but I looked at in some detail (Bulgarian, Indonesian, Latvian, Lithuanian, Malagasy, Niuean).

Importantly, some of these languages exhibit an AAA pattern of marking at least

as an option (these include Czech, Indonesian, Latvian, Lithuanian, Russian and Serbian). The existence of AAA patterns in these languages demonstrates the fact that it is possible to find cases where nouns in pseudo-partitive constructions are marked the same as plurals. However, whenever that is the case, the counting form is the same as the two extreme points on the scale.

As an example, consider Serbian. The relevant forms are depicted in Table (50). The first column gives the gloss and the second column gives the citation form of the relevant item (which is NOM.SG). The three columns after that give the shape of the noun in the pseudo-partitive, after the numerals 2-4, and in the plural. I have already discussed the pattern of the noun 'rope' in (17): it has an AAB pattern. However, other items show different patterns, as depicted in the table.

(50)   Syncretism patterns in Serbian (based on Brown & Alt 2004, Hammond 2005)

	NOM.SG.	PSEUDO-PART	COUNTING	PLURAL	
new, MASC.	*nov-Ø*	nov-og(a)	nov-a	nov-i	ABC
rope, MASC.	*konopac-Ø*	konopc-a	konopc-a	konopc-i	AAB
water, FEM.	*vod-a*	vod-ē	vod-e	vod-e	ABB
salt, FEM.	*so(l)-Ø*	sol-i	sol-i	sol-i	AAA
not attested	—	A	B	A	*ABA

We can see that considered in their totality, the patterns represent almost all the logically possible patterns of marking – except the *ABA pattern. This is something that should be captured, and the proposal in (39)-(41) allows us to do exactly that.

The reason why the decomposition in (39)-(41) explains the constraint revolves around the notion of a natural class. For instance, we can see that there is a natural class that encompasses all three environments, because all of these environments share something, namely they all contain the feature MASS. The count structure and the plural structure also form a natural class: what they share is that they contain the CL head. Similarly, the mass and count structures also form a natural class, because they contain the MASS head and do not contain PL.

Such natural classes can, however, be formed only for meanings that are adjacent in the sequence MASS–COUNT–PLURAL. There is no way to define a natural class that contains MASS and PLURAL, without (at the same time) containing also COUNT. Specifically, the only thing that mass nouns and plurals share is that they both contain the feature MASS. However, this feature is also contained in the counting form, hence, there is no way to define a natural class that would only contain the mass noun and the plural. This provides the basis for deriving the *ABA constraint in a number of different frameworks (Caha 2009, Bobaljik 2012).

As a final remark, let me note that one of the most interesting properties of Serbian is that alongside AAB, ABB and AAA – it also has an ABC pattern. Want it or not, the ABC pattern requires us to postulate a special category for counted nouns.

Once we know that the Serbian grammar recognizes this category, we basically have no choice but to treat AAB, ABB and AAA as patterns that arise due to syncretism, rather than by some other means. This is relevant because once we have a way to generate AAB, ABB and AAA as patterns that arise due to syncretism, it seems advantageous to simply extend the very same account also to languages that only have a subset of the logically possible patterns (which is what I am about to do).[20]

4   Decomposing case

In this section, I highlight my assumptions about the morphosyntactic structure of case. We need to look deeper into the role of case in order to get a handle on the fact that syncretism for number is different in different cases.

The approach I shall adopt builds on the observation that syncretism in case is restricted by a *ABA constraint of a similar kind as the one I propose here for number. As argued in Johnston (1996), Bobaljik (2012) or Caha (2013), not every theory is capable of deriving the absence of an ABA pattern; e.g., classical theories based on binary or multivalent features allow for any type of syncretism to be encoded. Therefore, my goal in this section is to propose a grammatical representation of case that is capable of delivering a linear contiguity constraint, and use this proposal to explain how case and number interact.

I begin with the empirical facts; namely, I want to illustrate the fact that case syncretism is restricted by a linear contiguity constraint. In doing so, I rely on data coming from the languages investigated in Section 2 so that a fuller picture of these languages emerges. To begin with, consider the North Saami paradigms in (51). The two leftmost columns give the shape of the phrase 'two fishes.' The singular and the plural forms of the same noun follow.

(51)   North Saami (based on Nickel 1990:72, 89)

	two	fishes, COUNT	fish, SG.	fishes, PL.
NOM	guokte	guoli	guolli	guoli-t
ACC	**guokte**	guoli	guoli	guli-i-d
GEN	**guovtti**	guoli	guoli	guli-i-d
LOC	guovtti	guolis	guolis	guli-i-n
ILL	guovtti	guollái	guollái	guli-i-de
COM	guvttiin	guliin	guliin	guli-i-guin

In (52), I summarise the syncretisms found in Table (51).

(52)   a.   NOM–ACC (numerals)

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[20]Bulgarian is another language where an ABC pattern (found with masculine nouns) co-exists with other patterns (ABB for all other nouns).

b.   ACC–GEN (all nouns)
c.   NOM–ACC–GEN (counting form)
d.   GEN–LOC–ILL (numerals)

In the singular and plural, we find syncretism between ACC and GEN (52b). These two cases are always syncretic for nouns. They are nevertheless listed as two different cases because numerals other than 1 distinguish between them. This can be seen in the first column of (51): the boldfaced numeral is different in ACC and GEN. Another syncretism is found between NOM, ACC and GEN of the counting form (52c). This can be seen in the second column of (51). Two more types of syncretism are found in the paradigm of the numeral 'two.' Specifically, the shape *guokte* is both NOM and ACC (52a), and the shape *guovtti* is found in GEN, LOC and ILL (52d).

In Table (51), all these syncretisms occupy contiguous regions. Obviously, this requires a specific order of cases in the relevant paradigms. For example, any order of cases where NOM and ACC are not next to each other will not work, because then (52a) would not be a contiguous syncretism. Similarly, GEN must be next to ACC because of (52b), etc. In sum, we observe a linear adjacency effect not only on the horizontal dimension (MASS-COUNT-PLURAL), but also on the vertical dimension (NOM-ACC-GEN...), with the order of cases as given in Table (51).

The existing literature suggests that the North Saami restriction on syncretism (no skipping across a case in a given linear order) is not a quirk of the language, but rather an instance of a cross-linguistically more general constraint. Most relevantly for us, McCreight & Chvany (1991) argue that a linear-contiguity constraint also restricts syncretism in Russian. The order is NOM-ACC-GEN-LOC-DAT-INS, and I illustrate it in (53). The table is arranged in a way that makes it easy to see that changing the order of cases would lead to a non-contiguous syncretism. Therefore, the order of cases must be as given in the table.[21]

(53)   Syncretism in Russian (based on McCreight & Chvany 1991)

	window, SG.	teacher, PL.	two, MASC.	book, SG.	hundred
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
LOC	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

In the typological literature, Baerman et al. (2005:49) found in their sample of two hundred languages that if only one of NOM or ACC is syncretic with an oblique case, this is typically the accusative. They give the following paradigm fragment from Finnish to illustrate their point: there is no NOM-GEN syncretism across ACC in

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[21]Caha (2009) shows that the same order can be also observed in Serbian and Czech (also discussed in Section 2). Since these languages are closely related to Russian, I do not discuss them in detail.

Finnish, only ACC-GEN. Such a situation is typical, and its illustration from Finnish is extra relevant for us, since Finnish is one of the languages in focus here.[22]

(54) Finnish paradigm fragment (Baerman et al. 2005:50)

	lock, SG	I
NOM	lukko	minä
ACC	luko-**n**	minu-t
GEN	luko-**n**	minu-**n**

As a final illustration of the adjacency constraint, consider the marking of the so-called total direct objects in Estonian. In the singular, these appear in a form that is identical to GEN (as in Finnish). In the plural, their form is identical to NOM. In some approaches, this leads to the conclusion that Estonian has no accusative case, with objects marked either by GEN or by NOM (see, e.g., Miljan 2008). An alternative way to structure the same facts is to say that there is an accusative case, which is always syncretic either with GEN or NOM. This view is depicted in (55).

(55) Estonian paradigm fragment (Caha 2009:102)

	book, SG	book, PL
NOM	raamat	raamatud
ACC	raamatu	raamatud
GEN	raamatu	raamatute

I shall adopt here the latter view, following Norris (2018). The argument Norris gives is that the accusative and genitive singular (even though syncretic) have different grammatical behavior in pseudo-partitives, see (56). Specifically, when the measure noun is in the accusative (56a), the substance noun is in the partitive (considered here to be the accusative of the mass number). When the same form of the measure noun represents the genitive (56b), the substance noun is in the genitive singular (considered here as a category syncretic with the genitive of the mass number).

(56) a. tüki   leiba
          piece.ACC bread.PART
      b. tüki   leiva
          piece.GEN bread.GEN
          'a piece of bread'

The conclusion is that as a whole, the phrase in (56a) uniquely represents the accusative case, suggesting that this category has its place in the Estonian grammar, even though its marking is always syncretic, as in (55).

Generalizing over the languages discussed, the order of NOM-ACC-GEN emerges

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[22]Finnish has a number of additional oblique cases, I do not show them for reasons of space.

quite clearly as something that is shared among them. In order to express such commonality, Caha (2009:10) offers the statement in (57) as a hypothesis that should be in principle applicable to all languages.[23]

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

Since the order in (57b) is meant to be applicable across languages, it focusses on the function/meaning of the cases, rather than on their labels in the descriptions: NOM/ACC stand for subject/object cases (in languages with NOM/ACC case alignment), GEN stands for the possessor case, DAT stands for recipients in ditransitive constructions, INS stands for instruments and COM for accompaniment.

When we investigate how this generalization applies in individual languages, it is important to keep in mind that the generalization is primarily intended to explicitly rule out unattested syncretisms, e.g., the syncretism of NOM and DAT to the exclusion of ACC and/or GEN. As a result, when languages make additional case distinctions (for instance, both Russian and North Saami have LOC), the constraint applies vacuously and does not predict any restrictions in such situations.

With these issues clarified, let us turn to the order of the cases and see how syncretism in the languages under discussion complies with this order.[24] To begin with, all languages start with NOM-ACC-GEN. This means that among the oblique cases, GEN comes first. After GEN, Russian and Saami have LOC, which is missing in the cross-linguistic scale (57b). The constraint is therefore vacuously satisfied.

After LOC, Russian has DAT, which is expected by (57b). In the North Saami paradigm (51), we find the illative, which is used in both goal-of-motion constructions and as a recipient case. Since DAT in (57b) actually means 'recipient in ditransitive constructions,' the position of the illative in the paradigm is consistent with the cross-linguistic statement. (See Caha 2017 for an analysis of the DAT–ILL syncretism in a framework compatible with the current approach.)

After DAT, Russian has the expected INS in (53), while North Saami has the comitative in (51). Relevantly, the comitative also has the instrumental function in North Saami. From the perspective of the cross-linguistic ordering (57b), there is therefore no issue with the position of the comitative in the sequence; in fact, the Saami comitative morphology represents an expected option of an INS-COM syncretism (in terms of meaning).

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[23]For more relevant discussion, see Johnston (1996), Caha (2010, 2013), Harðarson (2016), Zompì (2017, 2019), Starke (2017), McFadden (2018), Van Baal & Don (2018), Bergsma (2019), Smith et al. (2019), Davis (2021), cf. Plank (1991). See Caha (2019) for a discussion of accidental vs. non-accidental syncretism.

[24]In my discussion, I won't talk much about Estonian and Finnish, because here the oblique cases do not show any syncretisms among each other (see (117) for a full Estonian paradigm). In such languages, any order will trivially accommodate all syncretisms (since there are none).

Russian has no comitative case in the paradigm; it uses a preposition *s* plus the instrumental. Caha (2009) takes both of these markers as relevant for the marking of the comitative. Comitative marking is thus understood to be morphologically complex in Russian and not syncretic with any of the other cases. The fact that the marking for COM contains INS is however relevant for the theoretical implementation of the syncretism scale to be discussed immediately.

To summarize, there are reasons to think that in the languages discussed here, there is a linear sequence of cases where only adjacent cases are allowed to be syncretic. There is clear evidence for a common order NOM-ACC-GEN. The obliques (despite having different names in different languages) also respect the order in (57b).

Now if we want to restrict syncretism to regions adjacent on this scale, we need to make sure that adjacent cases form a natural class, while non-adjacent cases don't. This is achieved if individual cases decompose into features organized in nesting structures similar to those in (39)-(41). The hierarchy relevant for the ordering (57b) is shown in (58) (Caha 2009).

(58)
```
            COMP
           /    \
         F_6    INSP
               /    \
             F_5    DATP
                   /    \
                 F_4    GENP
                       /    \
                     F_3    ACCP
                           /    \
                         F_2    NOMP
                               /    \
                             F_1    xNP
                                    /\
                                   ...
```

(59)
```
        OBL
       /   \
     F_3   ACC
          /   \
        F_2   NOM
             /   \
           F_1   xNP
                 /\
                ...
```
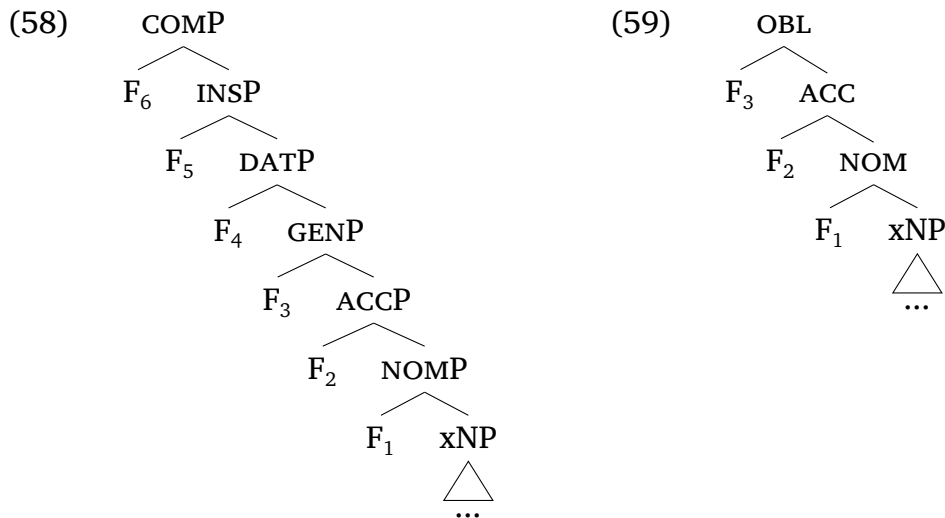
(58) is the structure of the comitative case. Other cases correspond to various sub-constituents in (58) (e.g., the INSP is the instrumental). Once this hierarchy is adopted, no two structurally non-adjacent cases form a natural class, while all adjacent cases do.

Before I combine this hierarchy with the number representations, let me briefly mention that some works on the topic of syncretism (notably Harðarson 2016, Zompì 2017) point out that even though the general outline of the theory is right, the fine-grained ordering of the oblique cases in (57b) faces empirical challenges. The specific alternative Zompì (2017:30) puts forth is that (57b) should be simplified into an ordering NOM–ACC–OBL, as in (59), where the order of individual oblique cases is undetermined (see also Smith et al. 2019:1038).

As an alternative proposal to the simplified hierarchy in (59), Starke (2017) suggests that the problematic facts may also be incorporated by enriching (rather than

curtailing) the hierarchy (58). However, for the purpose of this article, the specific structure assigned to the oblique cases is not crucial. The reason is that my main interest is to study how the MASS/COUNT/PLURAL distinctions interact with case. The languages discussed in Section 2 show usually a two-way split: we find one type of marking in the nominative, while we find another type of marking in the oblique cases. The accusative tends to vary, and sometimes it patterns with the nominative, other times with the obliques. As a result, I shall use here the simplified case hierarchy with the three layers as in (59), except that in some of the languages, I need to treat genitives as a separate case layer in between ACC and OBL, for reasons that become obvious once the facts will be in place. Where necessary, I will, therefore, also use the hierarchy NOM–ACC–GEN–OBL (cf. Davis 2021).

5   Combining case and number

The question to be addressed now is how the two categories (case and number) combine in a single representation. In this section, I discuss evidence for the proposal that case features are merged on top of number features.

The evidence comes from agglutinative languages, where case and number are each expressed by a separate morpheme. An important generalization is that in such languages, number is almost always closer to the noun than case. This has been stated by Greenberg (1963:75) as Universal 39, see (60).

(60)   *Universal 39*: Where morphemes of both number and case are present and both follow or both precede the noun base, the expression of number almost always comes between the noun base and the expression of case.

This observation can be captured if number is hierarchically closer to the noun than case. Once this hierarchy is assumed, then number will be in between noun and case when they are on the same side of the noun. This is depicted in (61) and (62).

(61)

(62)
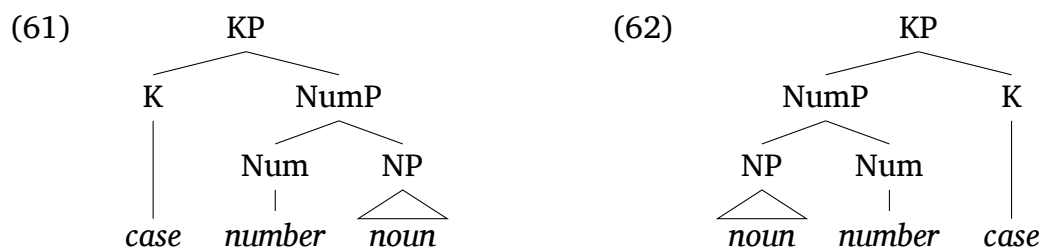
As the next step, let me combine this generally accepted hierarchy of case and number with the idea (as proposed in Section 3) that the structure of the number projection is internally complex. Under this approach, the hierarchy in (61) (where both markers precede the noun) breaks down into the three scenarios depicted in (63)-(65).

(63) mass   (64) counting   (65) plural

```
        KP                          KP                              KP
       /  \                        /  \                            /  \
   MassP    K                   ClP     K                      PlP     K
   /  \     |                  /  \     |                     /  \     |
  NP  Mass  |              MassP   Cl   |                  ClP    Pl   |
  /\   |    |              /  \    |    |                 /  \    /    |
noun  mass case          NP  Mass |    |            MassP   Cl  /     |
                         /\    \   |    |            /  \    |  /      |
                       noun    count case          NP  Mass | /       |
                                                   /\    \  |/        |
                                                 noun   plural      case
```
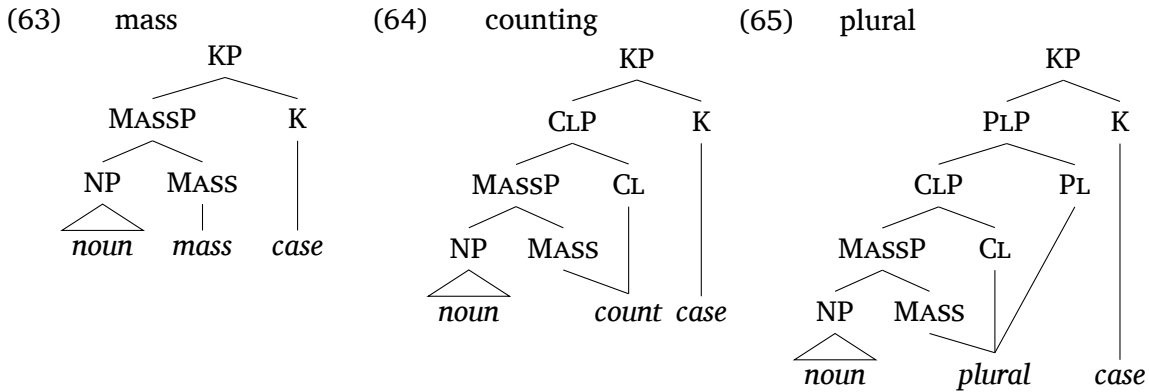
In these trees, I have replaced the all-purpose number projection 'Num' by the decomposition argued for in Section 3. I have also informally depicted here the idea (to be explored in Section 6) that individual number morphemes spell out multiple features. This is indicated by the lines going up from the actual morphemes (in italics) to the relevant features (in small caps). For example, in (65), the *plural* marker is the realization of the features MASS, CL and PL.

In prefixing languages, the hierarchy would be the same, but we would have different directionality of branching (on analogy to (61) and (62)). I skip showing this for reasons of space.

The structures in (63)-(65) will be important in explaining the patterns of syncretism introduced in Section 2. I therefore provide some independent evidence for them coming from Anatolian Digor Ossetic, a variety of Digor spoken in the Anatolian diaspora (cf. Thordarson 1989). In the following table, I give the full inflectional paradigms of the three relevant phrases, namely the pseudo-partitive, the numeral-noun construction and the plural. Case markers are in bold.

(66)   Anatolian Digor Ossetic

	MASS one bowl water	COUNT ten horses	PLURAL horses
NOM	eu khoppa don-**Ø**	dæs bæx-i	bæx-tæ-**Ø**
ACC	eu khoppa don-**Ø**	dæs bæx-i	bæx-tæ-**Ø**
GEN	eu khoppa don-**i**	dæs bæx-e -**j**	bæx-t -**i**
INE	eu khoppa don-**i**	dæs bæx-em-**i**	bæx-t -**i**
DAT	eu khoppa don-**æn**	dæs bæx-em-**æn**	bæx-t -**æn**
ABL	eu khoppa don-**æj**	dæs bæx-em-**æj**	bæx-t -**æj**
ADE	eu khoppa don-**bæl**	dæs bæx-e -**bæl**	bæx-tæ-**bæl**
ALL	eu khoppa don-**mæ**	dæs bæx-e -**mæ**	bæx-tæ-**mæ**

---

[24]Much of the data from the Anatolian variety that I present here is identical to Digor (Isaev 1966). The reason why I use the Anatolian variety is because I could not find any information on the pseudo-

Let me first compare the pseudo-partitive and the plural. The comparison reveals that they have exactly the same case endings. Where they differ is that the plural has the marker *t(æ)* in between the root and the case endings. The morpheme -*t(æ)* is clearly plural, because its absence makes the plural reading disappear. For instance, *bæx-bæl* (without the -*t(æ)*) is the adessive singular of 'horse.' (In general, the singular number has the same morphological shape as the MASS column.)

Finally, the middle column gives the inflected forms of the phrase 'ten horses.' The forms of interest are those that have the boldfaced case markers. In these forms, the case marker is the same as in the other numbers, and I therefore consider it a pure case marker that is unspecified for number. Interestingly, in these cases, we see the morpheme -*e(m)* in between the case ending and the noun. In Digor, this morpheme must appear on all nouns after numerals two and higher, and it does not appear in any other context (as far as I am aware). Therefore, it seems best analyzed as a special 'numerative' marker (cf. Belyaev 2014 and Erschler 2018 for proposing a special numerative number in Ossetic).

To summarize, the point is that in the oblique cases, we see a three-way distinction between mass/count/plural forms, where the position of the number marker in the string (in between the root and case) supports the proposal in (63)-(65).

6   Spellout

In this section, I make explicit my assumptions about spellout. While introducing these assumptions, I show how spellout works in languages where number is spelled out independently from case (Turkish, Dutch, Digor). Languages where case and number are spelled out jointly by a single morpheme are analyzed in Section 7.

To begin with, I adopt the idea that syntactic structures are built from abstract features that lack any phonetic content. The pronunciation of these structures takes place only after syntax. As for the specific implementation, I adopt the Nanosyntax model of spellout (Starke 2009, 2018, Caha et al. 2019, Vanden Wyngaerd et al. 2020), although as far as I can see, an account within Distributed Morphology (Halle & Marantz 1993) can also be formulated.

An important mechanism of the spellout procedure in Nanosyntax is phrasal spellout (Starke 2009, cf. McCawley 1968, Neeleman & Szendrői 2007). Phrasal spellout refers to a situation where a phrasal node (containing potentially a number of features) is pronounced by a single morpheme.

To see how phrasal spellout works, recall the Turkish paradigm (3). What we saw there is that Turkish nouns are unmarked in the pseudo-partitive and after numerals, while they are suffixed by -*lAr* in the plural. One way to analyze the absence of marking is to say that the root (*kek* 'cake') spells out all the relevant features in a portmanteau fashion. Its lexical entry would then be as in (67), spelling out all the number features of the counting form.

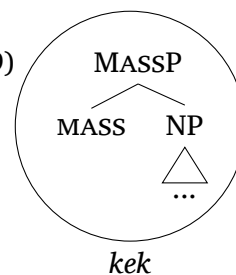partitive construction in Digor. Many thanks to Emine Şahingöz for the Anatolian data.

(67)   CLP ⟺ /kek/
       CL   MASSP
           MASS   NP
                  △
                  ...

(68)
       CLP
       CL   MASSP
           MASS   NP
                  △
                  ...
              kek

(69)
       MASSP
       MASS   NP
              △
              ...
          kek
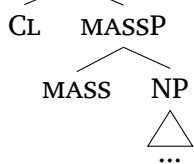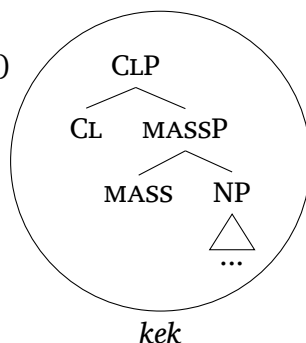
The lexical entry is a memorized link between a particular syntactic representation (the tree), a PF representation (in angled brackets) and a CF representation (not shown for simplicity). From the perspective of string generation, the entry can be read as a 'translation instruction': when syntax builds the relevant constituent (as in (68)), this constituent can be linked to (realized by) the phonology *kek* at PF. In this paper, I represent the fact that a structure is realized by a particular lexical item by placing a labelled circle around that structure.

In Nanosyntax, matching between lexical entries and syntactic structures is governed by the Superset Principle (70). The Superset Principle says that when syntax builds a particular structure, this structure can be spelled out by a particular lexical item as long as the syntactic structure is contained the lexical entry. For example, the MASSP shown in (69) can be spelled out as *kek* 'cake' because it is contained in the lexical entry of *kek*.

(70)   *The Superset Principle, Starke (2009)*:
       A lexically stored tree L matches a syntactic node S iff L contains the syntactic tree dominated by S as a subtree.

Spellout in Nanosyntax is cyclic and it applies after every merge (Starke 2018). Since Merge proceeds bottom up, so does spellout (cf. Bobaljik 2000 for a related idea within DM). This view entails that the construction of the CLP in (68) first goes through the stage (69): the MASSP is constructed first, it is "spelled out," and only then the CL head is merged to MASSP. After CL is merged to MASSP, spellout takes place again – this time at the CLP node, which is "spelled out" by *kek*. To make sense of this sequence of steps, it is helpful to think of "spellout" as "lexical lookup:" when MASSP in (69) undergoes spellout, we search the lexicon for matching items and we must find one; but we do not pronounce the structure immediately. If a matching item is later found at a higher cycle (CLP), the item matching the lower MASSP is not sent to PF: only the highest match survives. Therefore, the whole structure (68) is pronounced by a single marker, inserted at CLP. To summarize, even though spellout is cyclic, only the highest spellout survives, and lower matches are forgotten. Starke (2009) calls this Cyclic Override.

There are several important consequences of an architecture that includes cyclic spellout. The first one that I shall rely on is that insertion at higher nodes can make

28

reference to specific lexical items inserted at lower nodes (very much as in Bobaljik 2000). In Nanosyntax, a device that allows for such a reference is called a pointer (see Caha & Pantcheva 2012, Vanden Wyngaerd 2018, Caha et al. 2019, De Clercq & Vanden Wyngaerd 2019, Taraldsen 2019, Blix 2021b).

One of the places where Nanosyntax uses pointers is in idioms, as originally proposed by Starke in unpublished work. In (71), I give the lexical entry for the idiom *kick the bucket*. Pointers are indicated by edges with arrows. The lexical items pointed to are in italics.

(71)   VP   ⟺   /—/, [DIE]   (72)   PLP   ⟺   /mice/, [—]

    kick DP   PL CLP

        the   *bucket*   CL *mouse*
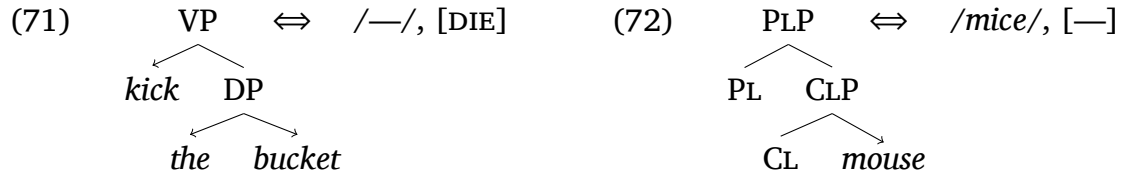
The lexical item can be read as follows: if there is a VP with one daughter spelled out as *kick* and the other daughter is a DP spelled out by *the* and *bucket* respectively, activate the concept DIE in the conceptual component. For clarity, the entry also contains the information that the phonology of the entries inserted previously is unaffected; this is marked as /—/.

Another relevant point is that also cases of root suppletion can be handled by pointers. Consider, for example, the suppletive form *mice*, which is used after numerals and as a plural. Using pointers, we can capture such suppletive roots as 'phonological idioms,' see (72). The dash in square brackets indicates that no new concept is introduced.

The lexical entry (72) matches only structures where the MASSP is spelled out as *mouse*, and where an additional CL head (or CL and PL heads) is merged on top of this constituent. The resulting CLP or PLP is spelled out as *mice*, which overrides the phonology *mouse* inserted at the lower node.

It is going to be relevant that some idioms contain lexical items that only exist within that idiom (Harley 2014). One of Harley's examples is in (73):

(73)   kit and **caboodle** = 'everything'

The relevant point is that the lexical item *caboodle* cannot be used outside of this idiom. Whenever my analysis will require the reference to a lexical item that does not exist outside of an idiom, I am going to use the term *caboodle* for it (a terminology used in Harley's work).

The final piece of the Nanosyntactic spellout technology that I will be using is the spellout algorithm (74) (Starke 2018, see also Caha et al. 2019, Wiland 2019, Vanden Wyngaerd et al. 2020, Blix 2021a). The algorithm governs the process of spellout. Its first clause (74a) implements the idea of cyclic spellout: each time a new feature F is merged, spellout must follow.

(74)   Spellout Algorithm (based on Starke 2018)

a. Merge F and spell out FP.
b. If (a) fails, move the Spec of the complement and spell out FP.
c. If (b) fails, move the complement of F and spell out FP.
d. If (c) fails, merge F with another feature in a separate workspace and spellout FP. If this succeeds, merge the phrase FP with the main derivation, projecting feature F to the top node.

The clauses (74b-d) say what happens when spellout fails (i.e., when no matching item is found). Specifically, the algorithm triggers syntactic movements in a particular order, first Spec movement (74b), and then complement movement (74c). The steps (74a)-(74c) are a widely adopted part of the algorithm in much current work in Nanosyntax. The last step in (74d) – Spec formation – is also a standard part of the spellout procedure in Nanosyntax, but here it is presented in an abbreviated format, as there are currently various alternatives being explored of how exactly Spec formation works.

In order to see how the algorithm works, let us consider the Turkish plural *kek-ler* 'cake-PL' (recall (3)). The construction of the plural proceeds in cycles, starting with the mass-denoting structure. We saw the relevant stage of the derivation in (69); here the feature MASS head has been merged to the NP node, creating MASSP. The spellout algorithm (specifically the option (74a)) says that when a new feature F is merged, we try to spell out the FP. This step is successful, since (67) matches the MASSP in (69).

After successful spellout, the feature CL is merged, producing the count structure (68). Once again, matching is successful and the CLP is spelled out as *kek* 'cake.'

In the next step, PL is merged on top of CLP, producing the PLP in (75). When we try to spell out this structure, matching fails; PLP is not contained in the lexical entry for *kek* in (67). Therefore, we must activate other options of the spellout algorithm. (74b) says that we should try to move a Spec of PL's complement. However, there is no Spec to be moved, and so (74b) is undefined. Spellout therefore proceeds to (74c), which says that we should try to move the complement of PL, and retry spellout at PLP. The relevant movement is shown in (76), producing the structure (77), where the trace of the moved CLP is removed for clarity (matching ignores traces).
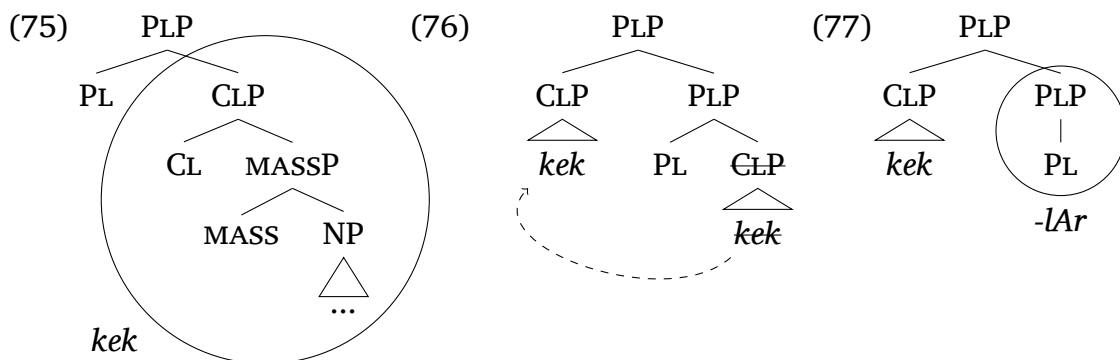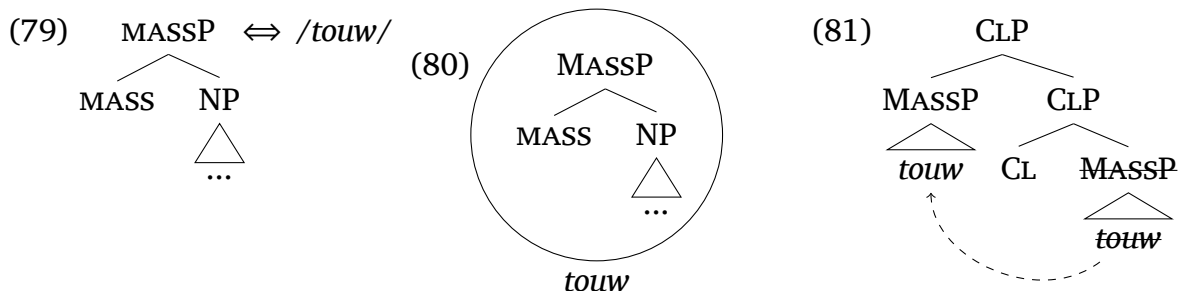

In this structure, the remnant PLP is spelled out by the plural marker *-lAr*, whose

entry is as in (78).

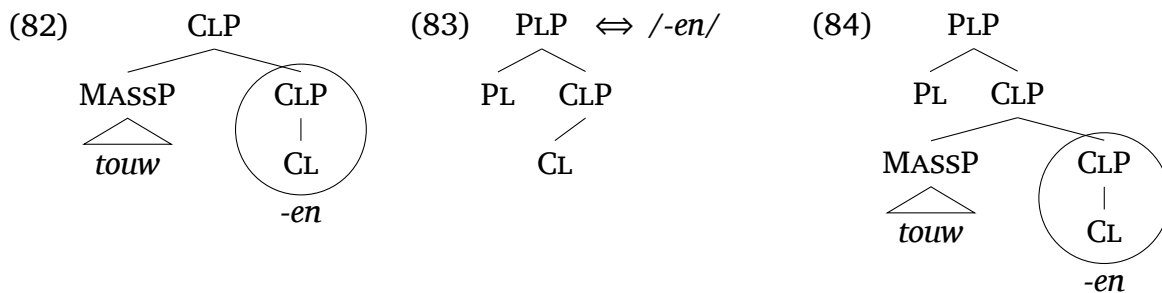(78)   PLP ⟺ /-lAr/
        ╱
    PL
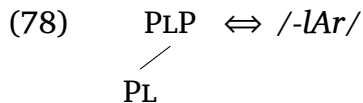
As a result, we derive the AAB pattern in Turkish using the lexical entries given in (67) and (78). These two lexical entries interact with the spellout algorithm in a way that the structures (68), (69) and (77) are produced.

Let me now show how the Dutch ABB pattern arises, using the same spellout algorithm (74), but different lexical entries. The first difference is that the root *touw* 'rope' is only of the size MASSP, as in (79). This has the effect that when MASSP is formed, *touw* 'rope' can be used to spell it out, as in (80).

(79)   MASSP ⟺ /touw/
       ╱╲
  MASS   NP
          △
          ...

(80)
       MASSP
       ╱╲
   MASS   NP
           △
           ...
       touw

(81)   CLP
          ╱╲
     MASSP   CLP
     ╱╲   ╱╲
  touw   CL   ~~MASSP~~
                 △
                 ~~touw~~

However, when CL is merged on top of MASSP, there is no match. (This is different from Turkish.) As a result, complement movement is triggered, as in (81). The structure (82) depicts the result of the movement with the trace ignored. The assumed lexical entry for the Dutch plural/count marker *-en* is in (83). Unlike the Turkish plural marker *-lAr*, *-en* spells out both CL and PL heads. This is reminiscent of Borer's (2005) proposal that the English *-s* is both a 'divider' and a 'pluralizer.'

(82)   CLP
          ╱╲
     MASSP   CLP
     △   │
   touw   CL
               -en

(83)   PLP ⟺ /-en/
       ╱╲
   PL   CLP
         ╱
        CL

(84)   PLP
          ╱╲
     PL   CLP
          ╱╲
     MASSP   CLP
     △   │
   touw   CL
               -en

The Superset Principle says that the remnant CLP in (82) can be spelled out if it is contained in a lexical entry. The lexical entry for *-en* contains a constituent that is identical to the remnant CLP, and therefore, spellout takes place, which is indicated by circling the remnant CLP in (82).

Finally, consider what happens when PL is merged on top of (82), yielding (84). There is no direct match, so we have to try Spec movement, as stated in (74). This time, there is a movable Spec, and Spec movement therefore applies as shown in

(85).

(85) PLP / (86) PLP / (87) PLP — [syntactic tree diagrams for (85), (86), (87)]

(85)
- PLP
  - MASSP
    - *touw*
  - PLP
    - PL
      - ~~MASSP~~
        - ~~touw~~
    - CLP
      - CLP
        - CL
          - *-en*

(86)
- PLP
  - MASSP
    - *touw*
  - PLP
    - PL
    - CLP
      - CL
        - *-en*

(87)
- PLP
  - MASSP
    - *touw*
  - PLP
    - PL
    - CLP
      - CL
        - *-en*
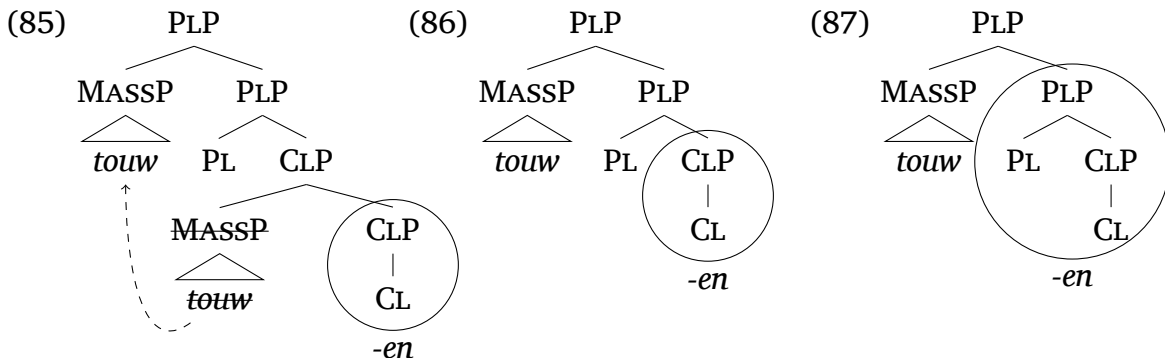
The resulting structure (with the trace ignored for clarity) is in (86). Here, *-en* matches the relevant PLP, as depicted by the circle in (87). The Dutch ABB pattern is thus derived.

Next, consider how the ABC pattern in Digor Ossetic arises. Recall from (66) that in this language, nouns in pseudo-partitives are unmarked, nouns after numerals have a special number marker *-e(m)*, and the plural marker is *-tæ*.

As in Dutch, I analyze the absence of marking in pseudo-partitives as a result of the fact that the root spells out MASSP, see (88) for the lexical entry of *don* 'water.' We do not want to make the root any larger, since the root has a number suffix both in the plural and after numerals. Since in the plural, we only see the marker *-tæ*, the suffix must spell out the features CL and PL; see (89). This is very much the same entry as that of the Dutch *-en*, recall (83). So far, there is no difference between the Dutch lexicon and the Anatolian Digor one (other than differences in the phonology). However, the two languages differ in that Anatolian Digor has a dedicated marker for the counted noun. Its lexical entry is as in (90).

(88) MASSP ⟺ /don/
- MASS
- NP
  - △
    - ...

(89) PLP ⟺ /-t(æ)/
- PL
- CLP
  - CL

(90) CLP ⟺ /-e(m)/
- CL
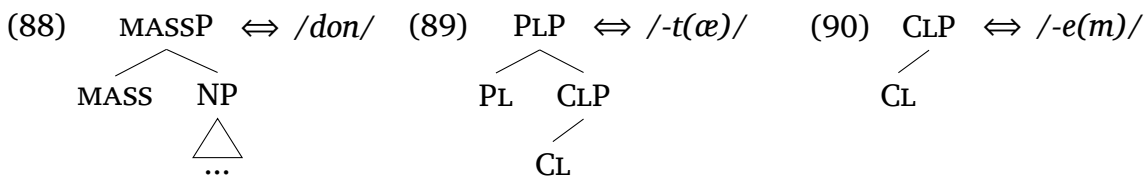
With the lexical entries in (88)-(90), the derivation follows exactly the same steps as in Dutch. In fact, if there was no *-e(m)*, the languages would show the same ABB pattern, since the plural *-t(æ)* can in fact lexicalize the counting structure (it contains CLP). The reason why this does not happen is because of the existence of *-e(m)*: in the counting form, both items match, because they both contain a CLP. This leads to a competition.

In Nanosyntax (very much like in other theories), the competition among multiple matching markers is resolved by the so-called Elsewhere Condition (Kiparsky 1973). The condition says that when two rules compete, the more specific one wins. The more specific entry in our case is the entry for *-e(m)*. The reason for that is that *-e(m)*

has fewer superfluous features. As a result, we correctly get the ABC pattern.

A system like this allows also for AAA patterns. As an example, consider the noun *sheep*. This noun allows for a mass use in universal-grinder type of sentences like *There was sheep on the floor* (Borer 2005:102). It can be also used after numerals (*three sheep*) and as a plural. We can capture this if we attribute to it a lexical entry of the size PLP, which will make it well-suited for all the relevant uses (due to the Superset Principle).

As a final remark, let me point out that when case features are added on top of number features, Turkish or Anatolian Digor will need to move the complement of case features out of their KPs, pied-piping number, as schematically depicted in (91).

(91)

(92) OBLP $\Longleftrightarrow$ */agglutinative case/*
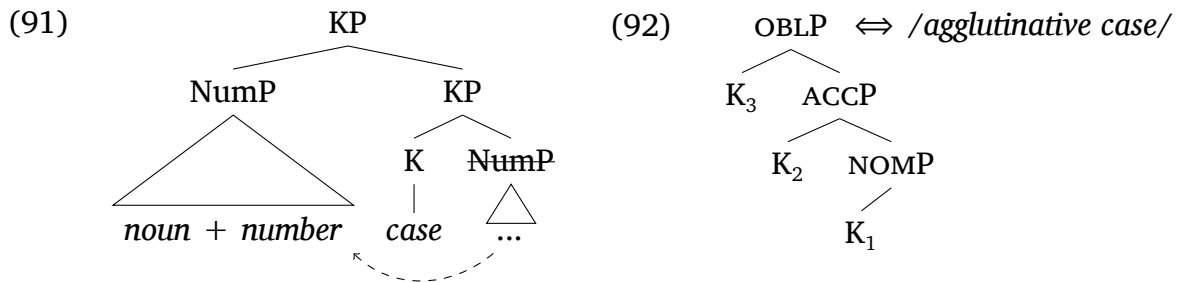
The tree in (91) represents an abstraction across multiple structures, depending on the specific number and case involved. The general point is that this movement is also spellout driven, triggered by a case suffix with the general shape as in (92). The specific case marker in (92) is an oblique case marker, spelling out all the features of the simplified oblique case structure (59). The property which distinguishes it as an agglutinative case suffix is that it does not spell out any number features.

For the upcoming discussion of Serbian, it is going to be relevant that case features can also be realized as prefixes/prepositions (Caha 2009, 2010). In the spellout algorithm, this is captured by the very last spellout option. Specifically, under (74d), there is the option that if a particular feature cannot be spelled out even after complement movement, a new derivational workspace is opened, and an attempt is made to build a complex specifier where the relevant feature is successfully spelled out. Once spellout succeeds, the complex left branch (containing the relevant feature) is merged back to the main derivation.

As an empirical example, consider Dutch. Unlike Turkish or Ossetic, Dutch has no case suffixes on nouns and it realizes the relevant grammatical meanings by means of a preposition. For example, there is no instrumental suffix in Dutch; instruments are marked by placing the preposition *met* before a DP; e.g., *met touw-en* would be 'with rope-s.'

This example can be captured by proposing the lexical item (93) for the relevant preposition. Like the agglutinative oblique case suffix in (92), it spells out all the case features. It differs from the oblique suffix in that the lowest non-terminal (ACCP in (93)) has two daughters. Such a marker cannot be inserted as a spellout of a remnant case phrase after spellout movements, because the shape of the lexically stored tree

is incompatible with movement. The geometric shape of the lexically stored tree predestines the marker *met* 'with' to be the spellout of a complex left branch, built using the clause (74d) of the spellout algorithm. The full structure is in (94).

(93)   OBLP ⟺ /met/   (94)
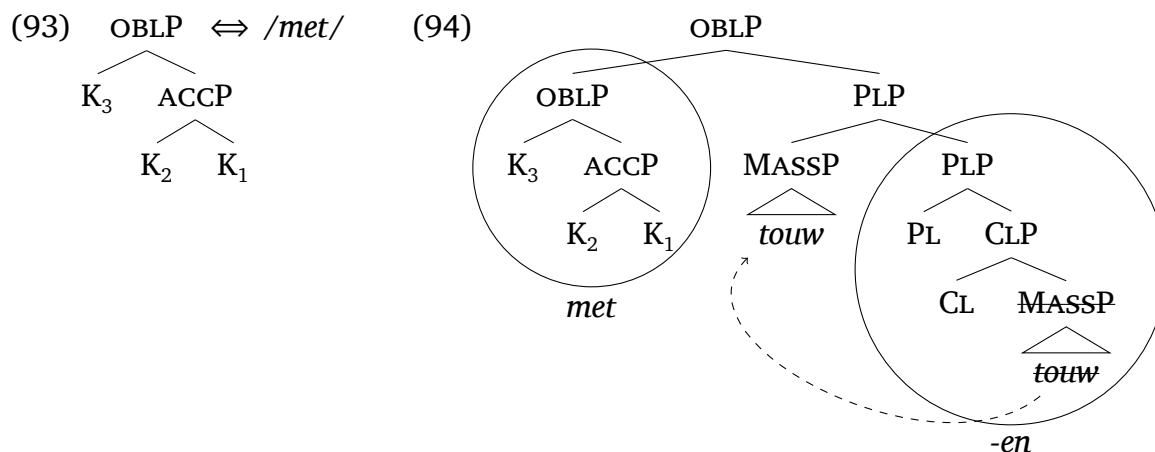
To summarize: Nanosyntax uses a cyclic spellout model, where spellout (lexical lookup) happens after every merge. When a new feature F is merged to the existing phrase marker, the FP thus formed must be spelled out. The preferred option is to find a matching item in the lexicon and continue with the derivation. However, when no matching item is found, various movements take place (Spec movement and complement movement). If none of these leads to successful lexicalization, a complex left branch containing the feature F may be constructed and merged with the phrase marker.

7   Deriving the typology

In this section, I show that the assumptions about spellout introduced above plus the structures proposed in Section 5 allow us to derive the patterns of marking described in Section 2. I will discuss the languages one by one, each in its own section. The section demonstrates that within the theory outlined above, it is possible to formulate one lexical entry per each morpheme in a paradigm such that it captures both the distribution of the marker in a paradigm as well as the contiguity restriction on the distribution of the markers.

7.1   The pattern of Serbian masculine nouns

The paradigm we need to derive is in (95), repeated from (19). The paradigm shows that masculine nouns have the same shape in pseudo-partitives and after numerals. They do not vary for case, only the plural does.

(95)   Serbian masculine nouns:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	GEN.SG -*a*	GEN.SG -*a*	NOM.PL -*i*	AAB
OBL	GEN.SG -*a*	GEN.SG -*a*	OBL.PL -*ima*	AAB

As a starting point of my analysis, let me point out that in Serbian, number and case are expressed by a single morpheme. To see that, consider the masculine noun *prozor* 'window' in Table (96). The masculine declension may make it tempting to propose a plural ending -*i*, since also -*e* in ACC could be seen as incorporating -*i*. However, the declension of neuter nouns (*m(j)esto* 'place') (where we only have -*ima* with *i*) makes such a decomposition difficult. It thus seems impossible to decompose the endings into a case marker and a separate number marker.

(96)   Serbian masculine and neuter declension, (Brown & Alt 2004:31)

	MASCULINE		NEUTER	
	window, SG	window, PL	place, SG	place, PL
NOM	prozor	prozor-i	m(j)est-o	m(j)est-a
ACC	prozor	prozor-e	m(j)est-o	m(j)est-a
GEN	prozor-a	prozōr-ā	m(j)est-a	m(j)est-ā
DAT	prozor-u	prozor-ima	m(j)est-u	m(j)est-ima
INS	prozor-om	prozor-ima	m(j)est-om	m(j)est-ima

I therefore adopt the conclusion that the lexical entries for the masculine plural suffixes are as given in (97). They spell out both the three plural features as well as the case above them. They differ in how many case features they spell out.

(97)   a.   -*ima* ⟺ [OBL [ACC [NOM [PL [CL [MASS]]]]]]
        b.   -*e*   ⟺   [ACC [NOM [PL [CL [MASS]]]]]
        c.   -*i*   ⟺   [NOM [PL [CL [MASS]]]]

These entries force (per the spellout algorithm) the successive cyclic movement of the lowermost NP without pied-piping number. The NOM.PL structure derived by the spellout algorithm is in (98). In principle, all the plural entries in (96) can spell out PLP. The suffix -*i* wins in competition, as indicated by the strikethrough over the remaining suffixes. In the oblique plural, represented by the instrumental, only -*ima* applies.

(98)

NOMP
NP — *noun*
NOMP
- K₁
- PLP
  - PL
  - CLP
    - CL
    - MASSP
      - MASS
      - NP — *noun*

-i / -e / -ima

(99)

OBLP
NP — *noun*
OBLP
- K₃
- ACCP
  - K₂
  - NOMP
    - K₁
    - PLP
      - PL
      - CLP
        - CL
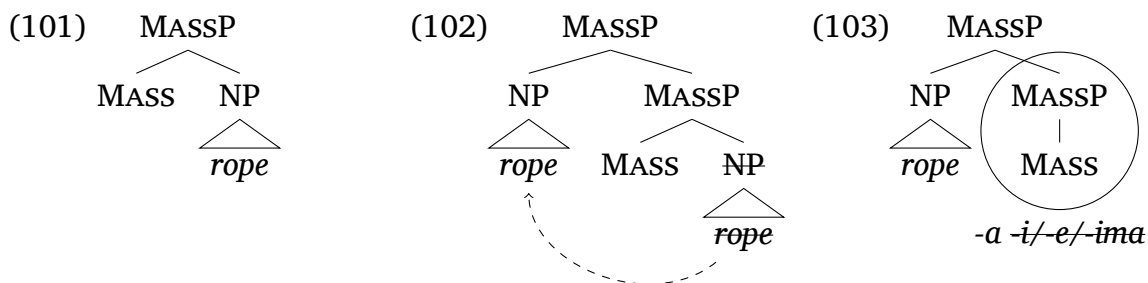   - MASSP
          - MASS
          - NP — *noun*

-ima
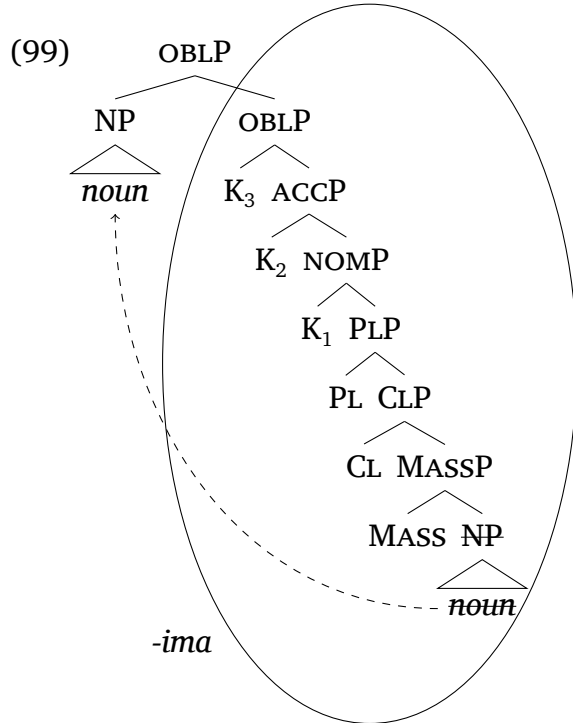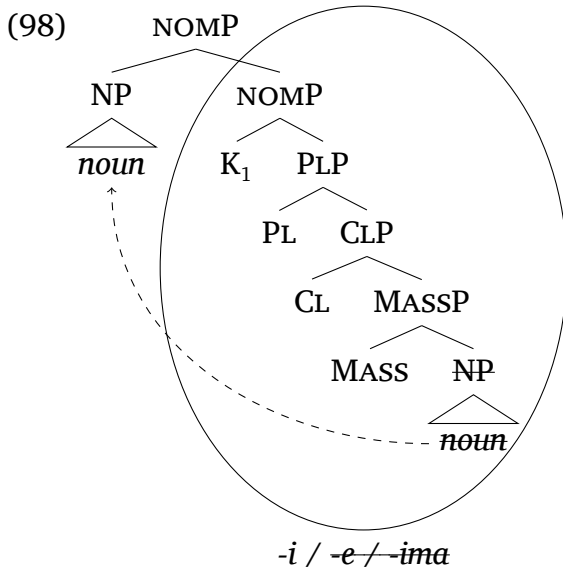
Let me now turn to the pseudo-partitives and the noun-numeral constructions, where we find an invariable *-a* on the noun, recall (95). According to the analysis I propose here, the reason for the invariability is that the ending *-a* only spells out the MASS/COUNT features, but no case. Case then has to be expressed in some other way (as in agglutinative languages). Following this idea, the lexical entry of this ending is then as given in (100a). The lexical entry of a noun like *konop(a)c* 'rope' is then as in (100b), spelling out just the NP.[25]

(100)   a.   */-a/* ⟺ [CL [MASS]]
         b.   */konop(a)c/* ⟺ NP

With the lexical entries in place, let me now show how the cyclic derivation of the mass/count structures proceeds in Serbian. We start at the point when the MASS feature is merged on top of an NP that has been spelled out by the noun *konop(a)c* 'rope' at the previous cycle, see (101). The lexical entry for *konop(a)c* 'rope' does not match the whole MASSP. Spec movement is undefined, therefore, the complement moves, see (102).

---

[25]Note that as a general strategy, I am leaving the singular number out of the discussion. Therefore, the current analysis also does not address the relationship between the *-a* marker in (100a) and the GEN.SG *-a*. As a consequence, I treat *-a* as a number marker (rather than case marker). I still gloss *-a* as GEN to reflect the descriptive tradition.

(101)

```
        MassP
        /   \
     Mass    NP
            /△\
            rope
```

(102)

```
           MassP
          /     \
        NP       MassP
       /△\       /    \
       rope   Mass    NP
                     /△\
                     rope
```
(dashed arrow from rope to rope)

(103)

```
       MassP
      /    \
    NP      MassP
   /△\       |
   rope     Mass
```
-a -i/-e/-ima

The result of the movement is shown in (103). Multiple suffixes match, but *-a* is the best match. The fact that all the plural suffixes match here is a good result, since we want to be able to model AAA patterns in the feminine gender, recall (50). The AAA pattern would arise if the plural suffixes (notably the NOM.PL suffix) had no better-fitting competitor at the MassP node.[26]

Next, let me show how the count structure arises. First, CL is merged with (103), yielding (104). There is no match for (104) in the lexicon, so Spec movement is triggered, see (105).

(104)

```
       CLP
      /   \
    CL     CLP
          /    \
        NP      MassP
       /△\       |
       rope     Mass
```
-a

(105)

```
        CLP
       /    \
     NP       CLP
    /△\      /    \
    rope    CL     MassP
                  /    \
                NP      MassP
               /△\       |
               rope     Mass
```
-a
(dashed arrow from rope to rope)

(106)

```
        CLP
       /    \
     NP       CLP
    /△\      /    \
    rope    CL     MassP
                    |
                   Mass
```
-a / -i/-e/-ima
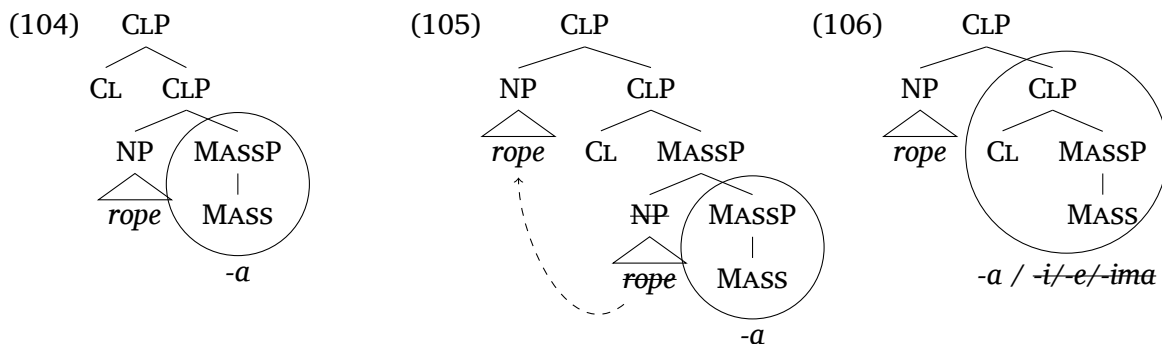
The result of the movement is shown in (106). Once again, the same markers match, and *-a* wins in competition. The fact that the plural markers match here is again a good thing, which is needed for AAA patterns and ABB patterns.

Let me now turn to the issue of case marking in Serbian pseudo-partitives and counting environments. In (107), I show what happens when we merge the nominative case feature on top of a MassP. There is no match for this structure without movement. The spellout algorithm therefore directs us to try Spec movement, with the result in (108).

---

[26]I cannot discuss gender-related allomorphy of number markers in detail for reasons of space (I am focussing here on sensitivity of number marking with respect to case). For an analysis of gender-triggered allomorphy in closely related Russian, see Caha (2021).

(107) K₁P / (108) NOMP / (109) K₁P — tree diagrams

$$(107)\quad [_{K_1P}\ K_1\ [_{MassP}\ [_{NP}\ rope\ ]\ [_{MassP}\ Mass\ \text{-}a\ ]\ ]\ ]$$

$$(108)\quad [_{NomP}\ [_{NP}\ rope\ ]\ [_{K_1P}\ K_1\ [_{MassP}\ Mass\ \text{-}a\ ]\ ]\ ]$$

$$(109)\quad [_{K_1P}\ [_{MassP}\ rope + a\ ]\ [_{K_1P}\ K_1\ ]\ ]$$
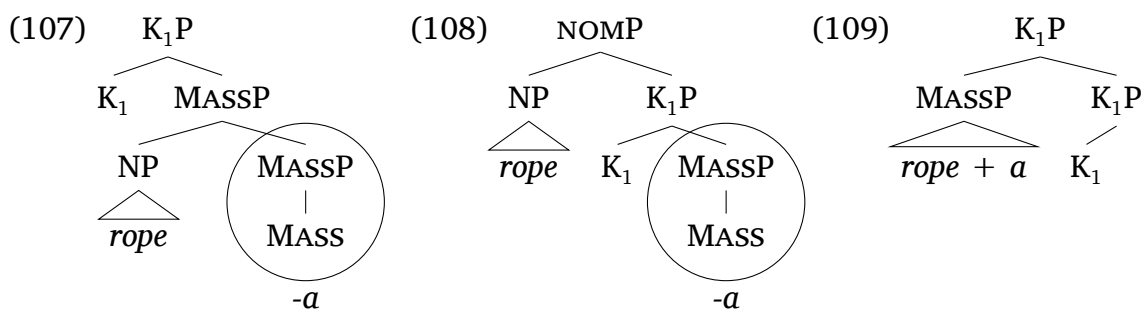
The way I set up the Serbian lexical entries, there is no match here. The lexical entry for *-a* does not contain case features, and its use is therefore out of question. The plural lexical entries can spell out case features, but they still cannot be used here. The reason is that the structure [NOM [MASS]] in (108) is not a sub-constituent of [NOM [PL [CL [MASS]]]], recall (97).

Since spellout in (108) fails, complement movement is tried, with the result in (111). This is the kind of step that succeeds in Turkish or Ossetic, recall (91). However, Serbian has no lexical entry to match this structure; spellout therefore fails again. The same happens in counting structures where case features are merged on top of CLP.

To summarize: in pseudo-partitives and in the counting construction, number features are spelled out without any problem. However, when we try to spell out case layers, suffixal spellout fails. Intuitively, this is a good result, it corresponds to the observation that nouns in pseudo-partitive constructions and after numerals fail to reflect the case of the whole phrase.

The next question we must address is what happens when a noun remains without a case suffix (recall that *-a* is analyzed as a pure number marker). This is of course a tricky question, but we do have some expectations. The first possibility is based on our previous discussion of Dutch: we expect case to be marked on the left branch as a last resort, following the clause (74d) of the spellout algorithm. Another expectation is that if spellout fails even within the left branch, the construction is going to be ungrammatical: when features cannot be externalized (linked to a PF representation via a lexical entry), the derivation crashes at the interface.

In what follows, I am going to show that these expectations are borne out. I start the empirical discussion by showing that the relevant phrases (i.e., pseudo-partitives and the relevant numerical phrases) behave like indeclinable nouns (this parallel was noted in Bošković 2006). What we shall see is that indeclinable nouns (as well as numerical phrases and pseudo-partitives) are acceptable as long as case is realized on a left branch preceding them. If no such left branch is found, ungrammaticality arises.

As an example of an indeclinable noun, Bošković uses the horse name *Meri*. This noun is fine as a direct object, see (110a). However, it cannot be used in oblique case environments. As an example of an oblique environment, Bošković uses the verb 'govern,' which in Serbian requires the instrumental on its complement. Placing the

indeclinable noun in such an environment leads to ungrammaticality, see (110b).

(110)   Serbian (Bošković 2006:528)
    a.   Uzgajač konja   je kupio   Meri.
         breeder horses.GEN is bought Meri
         'The horse breeder bought Meri.'
    b. *Džokej je ovladao   Meri.
         jockey is conquered Meri
         'The jockey conquered Meri.'

The same pattern holds for numerical phrases, see (111). Specifically, the phrase 'two horses' is fine as a direct object, but it cannot be used as a complement to the instrumental selecting verb.

(111)   Serbian (Monika Bader, p.c.)
    a.   Uzgajač konja   je kupio   dva konja.
         breeder horses.GEN is bought two horse.GEN
         'The horse breeder bought two horses.'
    b. *Džokej je ovladao   dva konja.
         jockey is conquered two horse.GEN
         'The jockey conquered two horses.'

As Bošković points out, indeclinable nouns can be sometimes saved by adding a preposition. In (112a), we see that when the preposition *sa* 'with' appears before the indeclinable noun, the sentence becomes fine. The same is true for numeral phrases, see (112b).

(112)   Serbian (a from Bošković 2006:529, b from Monika Bader, p.c)
    a.   Džokej je ovladao   s(a) Meri.
         jockey is conquered with Meri
         'The jockey conquered Meri.'
    b.   Džokej je ovladao   sa   dva konja.
         jockey is conquered with two horse.GEN
         'The jockey conquered two horses.'

In sum, what we see is that indeclinable nouns and numeral phrases pattern alike, which leads to the conclusion that nouns in numerical phrases are indeclinable. The way I interpret 'indeclinable' here is that suffixal spellout of case in these phrases fails, and it has to be realized by a preposition (as in Dutch).

Another relevant observation is that indeclinable nouns become acceptable in oblique-case environments when accompanied by a modifier with the appropriate case inflection. An example is in (113). It shows that when a modifier of the indeclinable noun has a case marker, the whole phrase is rescued.

(113) Džokej je pokušao ovladati   naš-**om**   Meri.
       jockey is tried   to-conquer our-INS.SG Meri
       'The jockey wanted to conquer our Meri.' (Bošković 2006:529)

This fact is relevant for the distribution of the pseudo-partitive, where the measure noun is marked by the relevant case, see (114).

(114) s   metr-**om** konopc-a
       with meter-INS rope-GEN.SG
       'with a meter of rope'

As a result, pseudo-partitives tolerate the lack of case on the substance noun (because they are preceded by an inflected modifier).

To conclude, the lexical entries proposed in (97) and (100) interact with the spellout procedure in a way that the correct forms are generated. An interesting consequence of the proposal is that case fails to be spelled out as a suffix on substance nouns in pseudo-partitives and on nouns after numerals. As a result, the nouns do not actually inflect for case: they have a gap in the paradigm, as depicted by the asterisk in (115). In order for such nouns to be usable, case must be expressed either by a preposition or on an adjectival left branch, as with other non-declinable nouns.

(115) Serbian masculine nouns:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	GEN.SG -*a*	GEN.SG -*a*	NOM.PL -*i*	AAB
OBL	*	*	OBL.PL -*ima*	AAB

7.2 Estonian

Let me now turn to Estonian. Recall that in Estonian (like in Serbian), the noun in the pseudo-partitive is always the same as after numerals. The difference is that in Estonian, the nouns inflect for case. Table (116) is repeated from (13).

(116) Estonian:

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	PART.SG	PART.SG	NOM.PL	AAB
OBL	OBL.SG	OBL.SG	OBL.PL	AAB

Let me begin by showing a full declension paradigm, see (117). The paradigm has the traditional layout, with SG on the left and PL on the right. This allows us to look

descriptively at the question of whether case and number are fused (as in Serbian) or not (as in Turkish).

(117)   Estonian (based on Blevins 2005:5,9)

	horse, SG.	horse, PL.
NOM	hobune	hobused
ACC	hobuse	hobused
GEN	hobuse	hobuste
PART	hobust	hobuseid
ILL	hobuse-**sse**	hobuste-**sse**
INE	hobuse-**s**	hobuste-**s**
ELA	hobuse-**st**	hobuste-**st**
ALL	hobuse-**le**	hobuste-**le**
ADE	hobuse-**l**	hobuste-**l**
ABL	hobuse-**lt**	hobuste-**lt**
TRANS	hobuse-**ks**	hobuste-**ks**
TERM	hobuse-**ni**	hobuste-**ni**
ESS	hobuse-**na**	hobuste-**na**
ABE	hobuse-**ta**	hobuste-**ta**
COM	hobuse-**ga**	hobuste-**ga**

Concerning this issue, we can see that the paradigm splits into two parts. The lower part (below the line) is agglutinative, with number-invariant case suffixes attaching to different bases in the singular and in the plural. The cases above the line cannot be decomposed like this.

An interesting generalization is that the oblique affixes attach to the genitive of the relevant number (Blevins 2005:5). In other words, the singular oblique base *hobuse* is the GEN.SG case, while the plural oblique base *hobuste* is GEN.PL. This holds for all paradigms in Estonian.[27]

In a system where different cases correspond to different layers of structure (recall (58)), the basic division among the cases could be depicted as in (118). The tree depicts the allative (also dative) plural form *hobuste-le* 'to (the) horses.' The point of the tree is to show that the genitive constituent (whatever its internal structure) is spelled out by a form that incorporates number, and the oblique case layers (above GEN) are spelled out by a number-invariant case marker.

---

[27]Some nouns allow for additional ways of forming the illative and the partitive. These additional cases (called illative 2 and partitive 2) are ommited here for reasons of space. An anonymous reviewer points out that the illative 2 is unlike the "regular" obliques in that it is not based on the genitive and patterns with the cases above the line, sometimes showing syncretism with the partitive.

(118)

```
                    OBLP
              ┌───────┴───────┐
           GENP              K₄
        ┌────┴────┐           │
      hobuste              le
   'horse, GEN.PL'        ALL
```
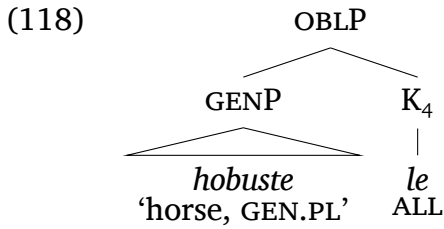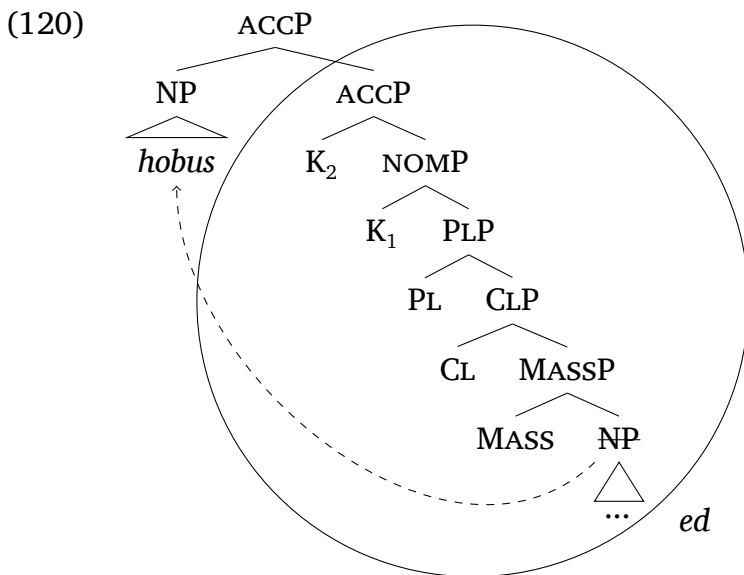
Let me now rearrange the paradigm (117) into the three columns corresponding to the mass, count and plural forms, see (119). Here the NOM/ACC mass and counting form *hobus-t* is the traditional partitive singular. The genitive of these two numbers is the traditional genitive singular form. The additional obliques are not shown, since they are, recall, based on the genitive form and follow the general template in (118). The plural column is the same as in the traditional paradigm.

(119)

	PSEUDO-PART	COUNTED	PLURAL
NOM	*hobus-t*	*hobus-t*	*hobus-ed*
ACC	*hobus-t*	*hobus-t*	*hobus-ed*
GEN	*hobus-e*	*hobus-e*	*hobus-te*

As we can see, the forms are segmented such that the shared part *hobus-* is separated from the endings. I shall now analyze the paradigm under the assumption that this division is the correct way to separate the endings and the stems, though this is admittedly a simplification. Other paradigms in the language show consonant gradation and allomorphy that I cannot deal with for reasons of space.

Adopting the segmentation as presented in the table, and adopting the conclusion that the case endings spell out also number, the structure of the accusative plural would be as in (120). As the tree makes it clear, I am assuming that the stem *hobus-* spells out just the NP, leaving all number and case features for the suffix.

(120)

```
                    ACCP
            ┌─────────┴─────────┐
          NP                  ACCP
         ╱╲              ┌──────┴──────┐
       hobus            K₂          NOMP
                              ┌───────┴──────┐
                             K₁            PLP
                                        ┌────┴────┐
                                       PL        CLP
                                              ┌────┴────┐
                                             CL       MASSP
                                                   ┌────┴────┐
                                                 MASS        N̶P̶
                                                             △
                                                            ···   ed
```

In order to spell out the structure that it does, the lexical entry of the accusative plural *-ed* must be as in (121a). The genitive plural *-te* is in (121b.)

(121)   a.   *ed* =   [ACC [NOM [PL [CL [MASS]]]]]
        b.   *te* = [GEN [ACC [NOM [PL [CL [MASS]]]]]]

Let me now turn to the analysis of the remaining two numbers in (119). The question to be addressed now is how to allow for the two markers (the GEN *-e* and NOM/ACC *-t*) to spell out both number structures. The challenge is the following. Suppose that we specify *-t* in a way that it matches the NOM of the counting number in (122), as the circle around the lower NOM node indicates. Now if its entry was identical to the circled structure, it would not match the pseudo-partitive structure in (123) as the asterisk above the circle indicates. (The reason for the failed spellout in (123) is that the circled constituent in (123) is not a sub-constituent of the NOM node circled in (122).) However, we need *-t* to have such an entry that allows it to match both structures (122) and (123). (It is not an option to leave the case features without spellout, because then the pseudo-partitive structure would be indeclinable, which it is not).
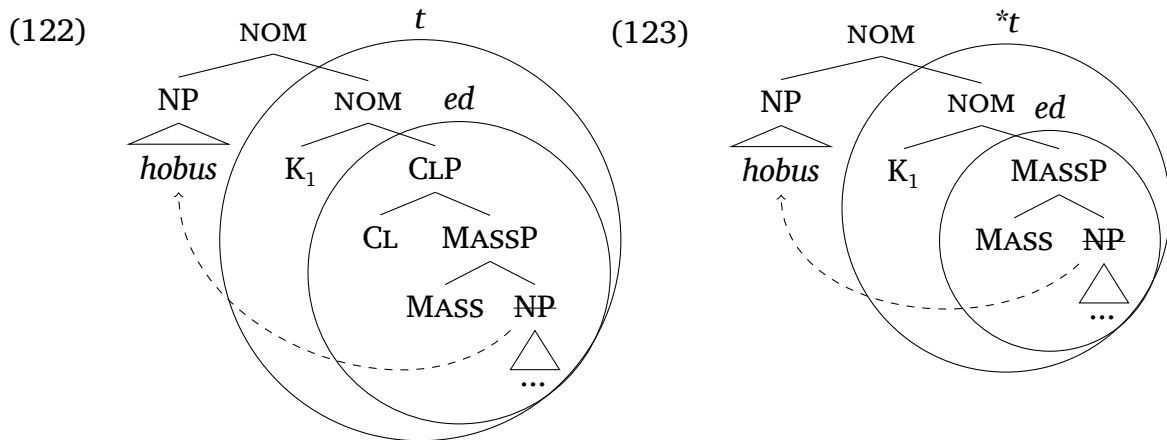
In order to make things work, we need to use pointers. Let me start from the observation that the marker *-ed* is able to spell out the number portion of the trees in (122) and (123). This is indicated by the inner circles in the relevant trees. Now recall that 'phonological idioms' like *mice* work as follows: if one daughter is spelled out by *mouse* and the other daughter is the PL feature, then *mice* can be inserted. Suppose that we define *-t* in an analogous fashion, saying that it can spell out any constituent that has *-ed* as one daughter, and the case feature K_1 as another daughter. Since *-ed* is ambiguous between spelling out CLP and MASSP, such an entry for *-t* is going to be ambiguous in the same way, applying both in (122) and (123).

  Taking into account that the very same *-t* also appears in the accusative case (and therefore needs to spell out also K_2), its actual lexical entry will be as in (124).

(124)   ACC ⟺ /-t/   (125)   GEN ⟺ /-e/

     K_2 NOM K_3 ACC

         K_1 *-ed* K_2 NOM

                                       K_1 *-ed*
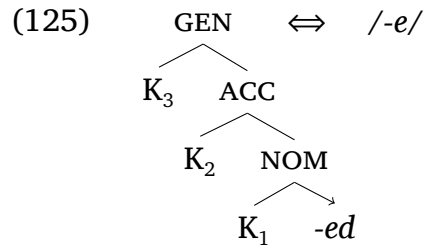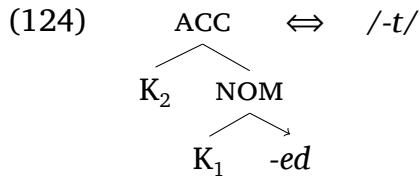
The genitive *-e* would have the entry as in (125). The entry is just like the one for *-t,* but has more case features, which allows it to surface in the genitive case.

Once pointers are introduced in the lexical entries in (125) and (124), all works fine. One issue that still needs to be addressed is the spellout of the plural. Specifically, now that we have introduced the lexical entry for *-t,* we have a new type of competition in the plural. To see this, consider the NOM.PL structure in (126).

(126)

               NOM

    NP   NOM   *ed*

 inimes K_1 PLP

           PL   CLP

              CL   MASSP

                   MASS   N̶P̶

                          ...
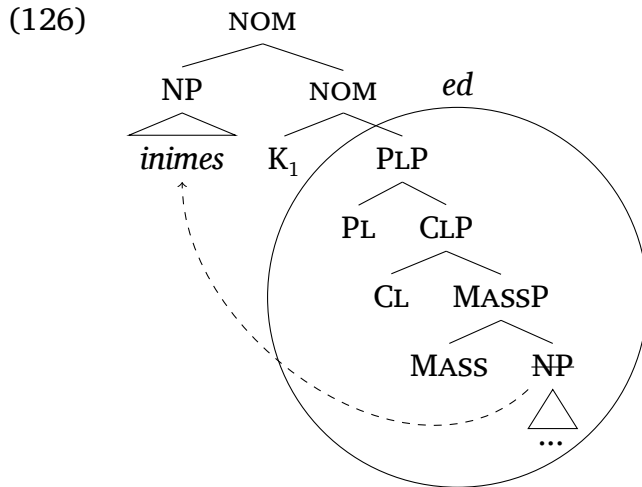
The tree depicts the stage of the spellout procedure where *-ed* spelled out the PLP, and we need to determine what lexical entry spells out NOMP. We know that *-ed* matches the NOMP in (126) and ultimately spells it out. However, the lexical entry for *-t* can also apply in (126), because it can spell out any constituent that has K_1 as one daughter, and the other daughter has been spelled out by *-ed.* The issue I want to address is how competition works in this particular case.

In section 6, I have introduced the assumption that the entry with fewest unused features wins. However, when it comes to spelling out (126), both entries have exactly one unused feature. To break the tie, I must therefore introduce an additional assumption. The specific assumption is in (127b).

(127)   Competition of entries:

     a.   The entry with the smallest number of unused features wins (no matter whether it has a pointer or not).

     b.   When two entries have the same number of unused features, prefer the

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one without a pointer.

To summarize the analysis of Estonian and Serbian: in the paradigms discussed, the counting form and the pseudo-partitive are always the same. However, in Serbian, the noun is indeclinable, and case must be expressed independently on the left branch. In Estonian, lexical items with pointers allow that the count/mass suffixes also spell out case, and the noun in Estonian thus varies for case.

7.3 North Saami

We are now in a situation where we have two types of lexical entries: those that do have a pointer inside them and those that do not. Let me begin this section by saying a bit about how these different types of items behave and interact, producing complex paradigm shapes.

Let us assume that we have the paradigm in (128), with markers confined to regions demarcated in the table.

(128)

	PSEUDO-PART	COUNTED	PLURAL
NOM	δ (NO POINTER)		β (NO POINTER)
ACC			
GEN		$\Leftarrow$ γ (POINTER) $\Uparrow$	α (NO POINTER) $\Uparrow$

This paradigm can be generated as follows. First, we have the lexical entry α, specified as GEN.PL and lacking a pointer. Because of the Superset Principle, this entry can be inserted in GEN.PL and in cases that are contained in GEN.PL. As a result, the entry for α as if spreads upwards in its column in the paradigm, and it is going to appear in all the cells up from GEN.PL, unless blocked by a more specific entry. In Table (128), the arrow indicates the direction in which it spreads. The important thing is that such spreading does not skip across cells: it preserves the linear contiguity restriction.

If there is (in addition) a NOM.PL entry β, which also has no pointer, it is going to win over α in NOM.PL, thereby confining α to GEN/ACC.PL. This is as depicted in Table (128).

Now when an entry has a pointer, it can (in addition) spread to the left across columns, because the lexical entry pointed to is compatible with multiple columns. For example, in Table (128), I include the entry γ specified for the genitive case. I assume that this entry has a pointer to β, which can spell out both the count structure and the mass structure. γ therefore spreads both upwards (as any item would) and leftwards (only pointer-containing entries do this). Importantly, horizontal spreading also preserves adjacency.

The spreading of γ can be again blocked by more specific entries. For instance, in Table (128), I place the lexical entry δ specified for the nominative of the mass structure. This entry wins in competition with γ, and surfaces in the relevant cell.

As a result, we derive a relatively complex paradigm shape.[28]

It turns out that North Saami has the same paradigm shape as in (128). Table (129) is placed here to illustrate this. The table has a layout argued for in this paper, and the forms are filled in by looking at (Nickel 1990:78). The left-most column gives the forms of the noun 'path' in the pseudo-partitive, which are identical to the singular forms. The same holds for the counted noun except in NOM.SG. The plural column shows the standard plural paradigm.

(129) North Saami *bálggis* 'path'

	MASS	COUNT	PLURAL
NOM	*bálgg-is*		*balgá-t*
ACC	*balg-á*		*balgá-id*
GEN			
ILL	*balg-ái*		*balgá-ide*
LOC	*balg-ás*		*balgá-in*
COM	*balg-áin*		*balgá-iguin*

What is most relevant is that the rows from NOM to GEN have the same dividing lines as Table (128), which gives us important cues regarding the analysis. As a starting point, notice that all the North Saami plural cases (except nominative) start with an *i*. This is suspicious, and suggests that we should recognize *-i* as a separate morpheme (as in Svenonius 2008). At the same time, note that despite the decomposition of the plural oblique cases into an *-i* and a case marker, the case markers are actually not number neutral, but specific for plural (they do not appear in any other number).

I therefore propose that the plural case markers have lexical entries as in (130a) and (130b).

(130) Lexical entries for the plural

    a.   *-d*   =   [GEN [ACC [NOM [PL]]]]
    b.   *-de* = [OBL [GEN [ACC [NOM [PL]]]]]
    c.   *-i*   = [CL [MASS]]

According to the entry (130a), the ACC/GEN case marker *-d* spells out not only case features, but also the topmost number feature, namely PL. Because of this, we will never find such a marker in any number that lacks PL, which is what any analysis must achieve. The same holds for the illative/dative *-de* in (130b).

In (130c), I give the 'plural marker' *-i*. It spells out the residual number features, i.e., those that are not spelled out by the suffixes. These turn out to be the features MASS and CL. The markers in (130) give rise to agglutinative structures of the type shown in (131).

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[28]See Taraldsen (2019) for an interesting discussion of how, under special circumstances, competition may lead to non-contiguous syncretism.

46

(131)
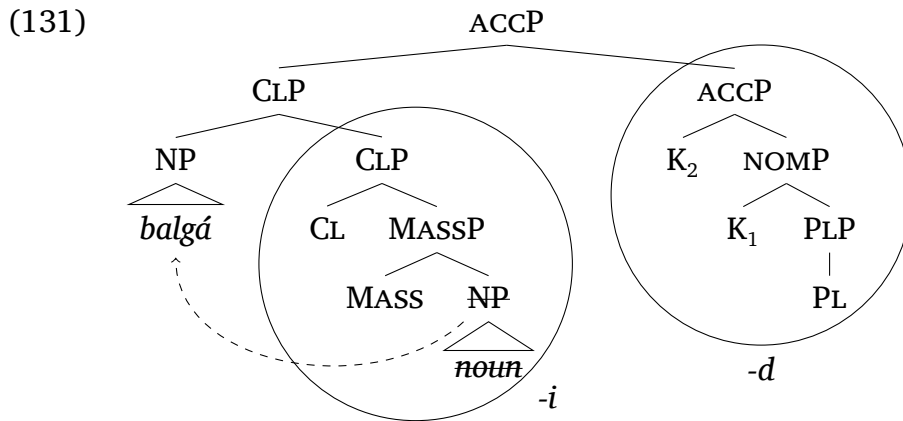
In the nominative plural, we have a non-decomposable marker *-t*. Its entry is therefore as given in (132), spelling out all the plural features and the NOM case feature. Because the entry contains the features CL and MASS, *-t* is also a candidate for insertion at CLP in (131), but it has a superfluous PL and nominative features, and it therefore loses to *-i*.

(132) *-t* = [NOM [PL [CL [MASS]]]]

The structure of the nominative plural is as in (133). Unlike the structure of the obliques, there is no pied-piping of number by the noun, and we therefore have a portmanteau.[29]

(133)
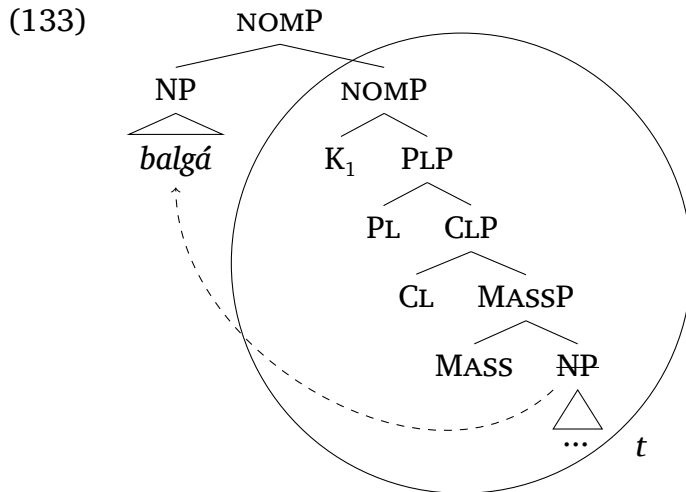
With the analysis of the plural in place, let me now turn to the count number. Here we see the form *balg-á* in NOM, ACC and GEN, spreading also to the column reserved

---

[29]The fact that we sometimes get pied-piping of number (in (131)) and sometimes not (in (133)) can be explained by the so-called backtracking (Starke 2018, Vanden Wyngaerd et al. 2020, Kloudová 2020). The spellout-movement algorithm leads to a derivation where the nominative (133) is produced first; however, when an accusative feature added to the tree, spellout fails and we must go back to CLP, which gets then pied-piped across PL. I refer the interested reader to the relevant literature.

for pseudo-partitives. The entry of *-á* is therefore as in (134).

(134)

```
        GEN      ⟺    /-á/
       /\
     K₃   ACC
         /\
       K₂   NOM
            /\
          K₁   -i
```
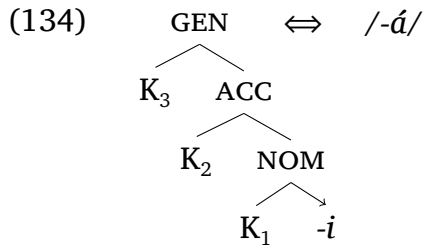
This entry specifies *-á* for all the features of the genitive, which allows it (due to the Superset Principle) to spell out any subconstituent, i.e., also the accusative and the nominative, a welcome result. Because the entry contains a pointer to *-i*, it can come on top of any number that *-i* spells out. Recall that *-i* can spell out both the count structure and the mass structure; therefore, *-á* can appear in both numbers, as illustrated in (135) and (136):

(135)

```
        ACC            -á
       /\
     NP    ACC
    /\    /\
  balg  K₂   NOM   -i
        /\
      K₁    CLP
           /\
         CL    MASSP
              /\
            MASS   NP
                  /\
                  ...
```

(136)

```
        ACC            -á
       /\
     NP    ACC
    /\    /\
  balg  K₂   NOM  -i
        /\
      K₁    MASSP
           /\
         MASS   NP
               /\
               ...
```
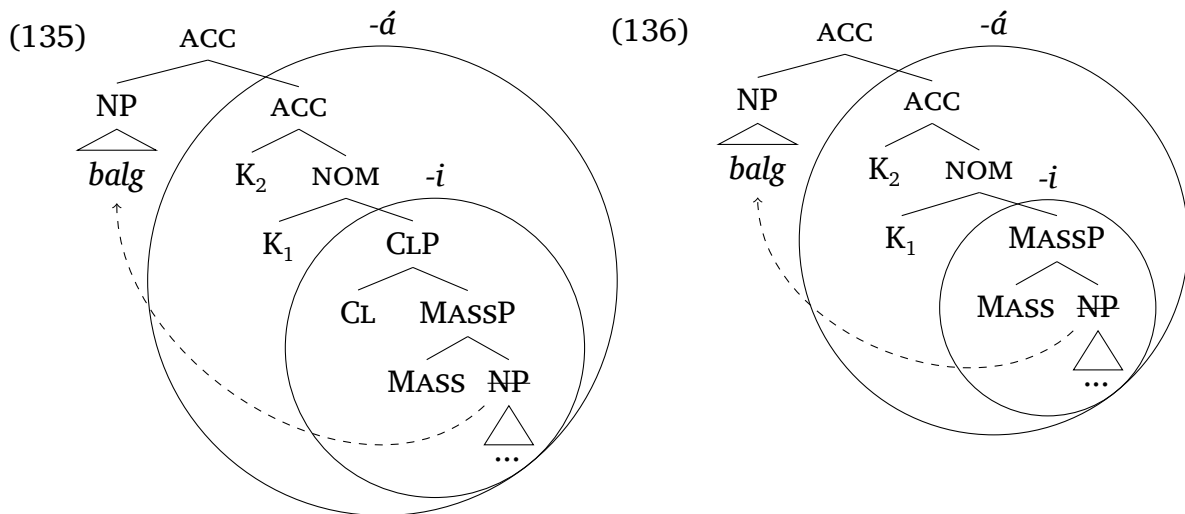
As a result of this, *-á* is applicable in the NOM–ACC–GEN cases of both the pseudo-partitive structure and the counting structure.

The final lexical entry we need is a dedicated marker for the nominative of the mass-denoting structure, see (137):

(137)

```
        NOM      ⟺    /-is/
       /\
     K₁    MASSP
          /
        MASS
```
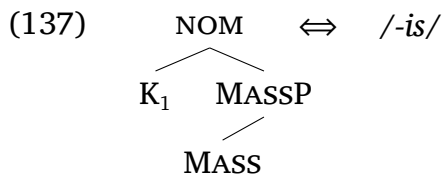
As highlighted at the outset of this section, this lexical entry blocks *-á* from appearing in the NOM of the pseudo-partitive structure.

7.4 Finnish

Finnish is the last language with the pseudo-partitive – counting syncretism. The empirical facts to be explained are as given in (138). The table is in most part repeated from (16), but the accusative row is added. (In the relevant numbers, the accusative is always the same as the nominative.) The main interest of the analysis is to see how the difference between Finnish and Estonian is going to be captured. The difference, recall, is the form of the pseudo-partitive noun in the oblique cases: in Estonian, the noun reflects the case of the whole phrase; in Finnish, it is invariant for case. The relevant cell is in bold.

(138)

	PSEUDO-PART	COUNTED	PLURAL
NOM	PART.SG (-a)	PART.SG (-a)	NOM.PL (-t)
ACC	PART.SG (-a)	PART.SG (-a)	NOM.PL (-t)
GEN	**PART.SG (-a)**	GEN.SG (-n)	GEN.PL (-jen)

In oder to save space, I don't present the complete derivations and only depict the logic of the analysis. I do so in Table (139). Note that I am placing an asterisk in the oblique cell of the pseudo-partitive. This means that I am going to analyze the invariance of the partitive in Finnish on analogy to Serbian: there is a paradigm gap in this cell, and case has to be expressed other places in the NP.

(139)

	PSEUDO-PART	COUNTED	PLURAL
NOM			
ACC		⇐ -a (POINT) ⇑	-t (NO POINT) ⇑
GEN	*	-n (NO POINT) ⇑	-jen (NO POINT) ⇑

The cells where entries are located in the grid (139) reflect their assumed lexical specification. For instance, the GEN.PL *-jen* appears in the relevant cell, and it would spread to ACC/GEN.PL, but it is blocekd by *-t,* which appears in the ACC.PL cell.

The table also includes information as to whether the lexical entries have a pointer at the junction of case and number – or not. Entries with pointers spread both up and left (unless blocked by a more specific competitor). The only entry with a pointer is the entry for the PART *-a* (I assume that just like the Estonian partitive, it points to the NOM/ACC.PL marker, *-t* in Finnish).

The main difference between Finnish and Estonian is that in Finnish, the genitive *-n* has no pointer. (Recall from (125) that the corresponding genitive marker does have it in Estonian.) The absence of a pointer in Finnish means that the *-n* in Table (139) only spells out the genitive of the counting number, and it does not spread into the pseudo-partitive column. As a result, the oblique case feature cannot be spelled out on the Finnish substance noun, which remains is indeclinable. As in Serbian, case must then be realized on the measure noun. To repeat, the presence/absence of a pointer in the lexical entry of the genitive is the main difference between Estonian and Finnish, which (within the system proposed) leads to the consequence that the substance noun is case-invariant in Finnish (while it declines in Estonian).

7.5 Czech

The current section marks the transition to languages with COUNT=PLURAL syncretism, starting from Czech. The general shape of the Czech paradigm I want to derive is given in (140), repeated from (26). What we see is that the counting form is always the same as the plural, while the substance noun is indeclinable.

(140)

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	GEN.SG	NOM.PL	NOM.PL	ABB
OBL	GEN.SG	OBL.PL	OBL.PL	ABB

To have specific endings to work with, I am going to use the endings of the masculine noun 'rope' (*provaz*). The paradigm fragment which I am going to provide lexical entries for is in (141).

(141)

	PSEUDO-PART	COUNTED	PLURAL
NOM	-u	-y	-y
ACC	-u	-y	-y
GEN	-u	-ů	-ů

Generating this paradigm within the current theory will require pointers to *caboodle* items. Consider why.

Let me start from the observation that the genitive plural/counting -*ů* obviously spells out the genitive case feature(s). Since it appears in two columns, it must have a pointer to some lexical item. (The reason is that it is impossible for a lexical item to spell out multiple columns without having a pointer.) For simplicity, I will assume that -*ů* points to the -*y* that appears in the accusative of the same two numbers.

(142)   GEN   ⟺   /-ů/

          K₃   -y

Consider now the entry for -*y*. Obviously, -*y* spells out the accusative case features (which allows it to appear also in the nominative). Since it appears in two columns, it must (again) have a pointer to something, see (143). What is this something?

(143)   ACC   ⟺   /-y/   (144)   PLP   ⟺   /-u/

          K₂   NOM   PL   CLP

               K₁   -?   CL   MASSP

                                                          MASS

50

In the ideal case, the item pointed to would be some independently existing entry. The only item left in the paradigm is *-u*. However, as I am going to show, it is impossible for *-y* to point to *-u*.

The closest we can come to a working theory is to say that *-u* would have the lexical entry as in (144). This proposal makes it possible for *-u* to appear as the marker of both the plural number and the counting number: this is required for *-y* to function as the nominative/accusative of these two numbers. We therefore correctly derive the shape of the NOM/ACC of the counting form and that of the plural.

However, the entry (144) also has the MASS feature. This seems to be needed to allow for *-u* to appear in the mass column (that is where we see it in the paradigm). However, this leads to a problem, because we now expect that the nominative of the mass structure will also be spelled out by *-y*. This is because *-y* is defined as the nominative of any structure that can be spelled out by *-u*. And since *-u* can spell out the mass structure, we expect *-y* in the nominative of the mass structure (contrary to fact).

The conclusion is that *-y* cannot point to *-u*, but to some other (yet to be determined) item. The lexical entries I propose are the following. First of all, we specify *-u* as the spellout of MASSP, see (145). With this entry, it is going to spell out the mass structure. If we further make sure that there will be no way to spell out case features on top of the mass-denoting structure, the *-u* will appear throughout the pseudo-partitive paradigm (which is what we need).

(145)　　MASSP　⟺　/-u/　　　　(146)　　PLP　⟺　/caboodle/

　　　MASS　　　　　　　　　　　　　PL　CLP

　　　　　　　　　　　　　　　　　　　　CL　-u
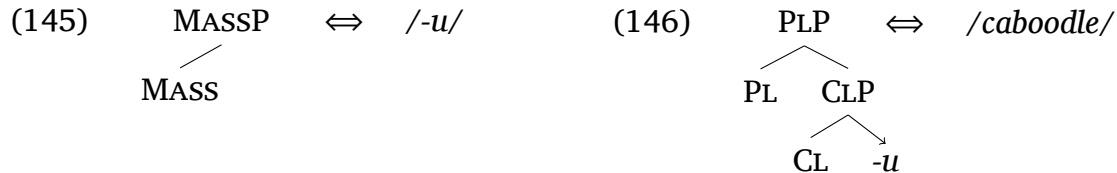
As the next step, we postulate a *caboodle* lexical item. In (146), I propose that this item spells out the features CL and PL when these are added on top of a structure spelled out by *-u*.

None of the lexical items in (145) or (146) spells out case: they only spell out number. Their distribution is such that *-u* spells out the mass structure, while *caboodle* spells out the counting and plural structures of the same nouns as *-u*. (This is because *caboodle* has a pointer to *-u*).

The final thing we need is to specify how case will be spelled out when added on top of these structures. The mass structure is indeclinable in Czech, therefore no case marker will have a pointer to *-u*. Similarly, no item will have case features on top of a [MASS] feature. That way, there is no way to spell out case on top of the mass structure, and the pure MASS marker *-u* will appear throughout the paradigm.

As the final step, we now specify *-y* as in (147).

(147)   ACC   ⟺   /-y/

```
        ACC  ⟺  /-y/
        ╱‾
   K₂    NOM
         ╱‾→
      K₁    caboodle
```
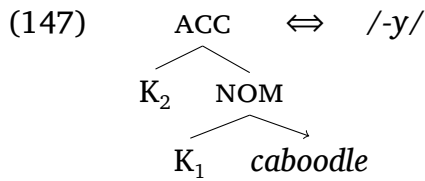
This will lead to a successful spell out of case for both number structures spelled out by *caboodle*. These entries therefore correctly derive the paradigm (141).

7.6 Russian

Let me now turn to Russian. In Russian, the counting form is the same as the plural in oblique cases, but it is different from the plural in the structural cases, where we find both AAB and ABC patterns, recall Table (33), repeated in (148).

(148)

	PSEUDO-PART	COUNTED		PLURAL	PATTERN
NOM	PART	GEN.SG GEN.SG	NUMER	NOM.PL	ABC, AAB
OBL		GEN.SG	OBL.PL		ABB

The specific paradigm I shall derive here is the most common type of masculine paradigm with markers distributed as in (149). These endings would be found on a noun like *zabor* 'fence,' recall (8) and (9).

(149)

	PSEUDO-PART	COUNTED	PLURAL
NOM			-y
ACC		a	-y
GEN		-ov	-ov

The analysis of Russian will be very similar to Czech. The main difference will rest in the specification of the marker that appears invariant throughout the PSEUDO-PART paradigm. It is clear that in Russian, this item must have a different specification than in Czech, since it appears also on count nouns, more specifically in the nominative and in the accusative. The entry I propose for this marker is therefore as follows:

(150)   ACCP   ⟺   /-a/

```
        ACCP  ⟺  /-a/
        ╱‾
   K₂    NOMP
         ╱‾
      K₁    CLP
            ╱‾
         CL    MASSP
               ╱
            MASS
```
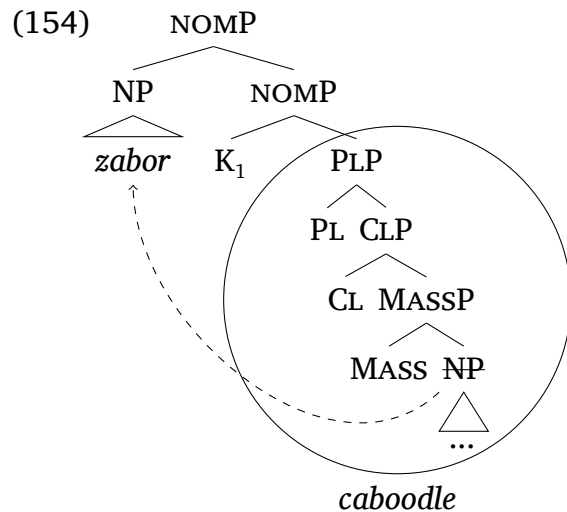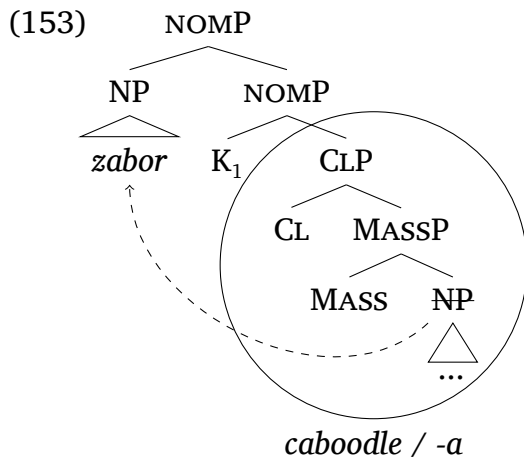
52
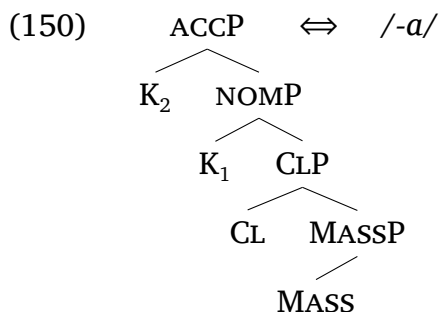
With this lexical entry, the marker *-a* will be able to spell out the NOM/ACC of the counting form, and it will also be able to spell out MASSP. However, it will still not be possible for it to spell out the case features added on top of MASSP. The mass column will therefore feature an indeclinable form.

The nominative/accusative plural marker *-y* is going to be specified as a NOM/ACC marker pointing to the same *caboodle* item as the Czech NOM/ACC.PL:

(151) ACCP ⟺ /-y/
　　　K$_2$　NOMP
　　　　　K$_1$　*caboodle*

(152) PLP ⟺ /caboodle/
　　　PL　CLP
　　　　CL　-a
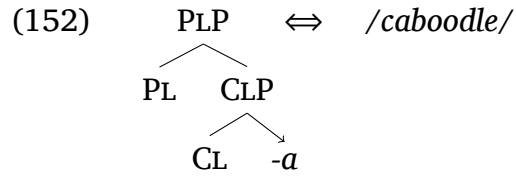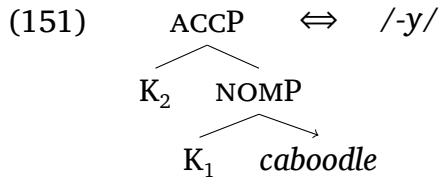
These entries lead to an interesting situation in the NOM/ACC of the counting number. Consider the structure (153):

(153) NOMP
　NP　　NOMP
zabor　K$_1$　CLP
　　　　CL　MASSP
　　　　　MASS　NP
　　　　　　　…
caboodle / -a

(154) NOMP
　NP　　NOMP
zabor　K$_1$　PLP
　　　　　PL　CLP
　　　　　CL　MASSP
　　　　　MASS　NP
　　　　　　　…
caboodle

Here, at the level of CLP, both the *caboodle* marker and *-a* can appear. In fact, *caboodle* is a better match, since it has only one superfluous feature (PL), while *-a* has two (NOM, ACC). When we try to spell out the NOMP, we again have two candidates, namely *-a* (150) and *-y* (151). Since they both match, we have to rank them. They each have one superfluous feature, so there is a tie between them regarding this property. Recall that in such case, the entry without a pointer should win, which leads to the appearance of *-a* in NOM (and ACC) of the counting form.

Note that in the plural, *caboodle* is the only candidate for the spellout of PLP, see (154), and therefore the nominative plural is marked by *-y*.

The genitive plural *-ov* will be specified as in (155).

(155)   GENP   ⟺   /-ov/
         ╱   ╲
      K₃   ACCP
            ╱   ╲
         K₂   NOMP
               ╱   ╲
            K₁   *caboodle*
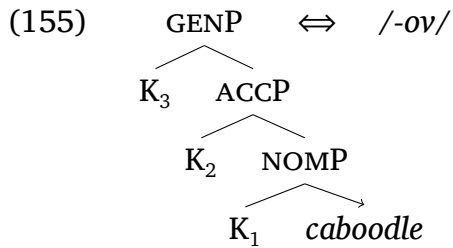
When specified this way, *-ov* is the only item that can spell out both the genitive and – due to its pointer – also the number features of the counting form and the plural. As a result, it is going to surface not only in the plural, but also in the genitive of the counting form, see (156).

(156)
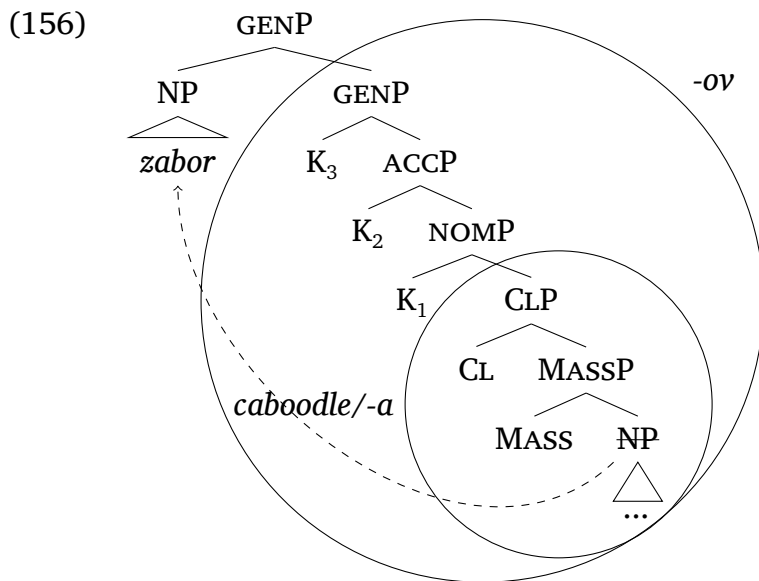
The effect of this is that in oblique cases, we get an apparent plural form after the numeral, contrasting with what looks like a singular (pseudo-partitive) form in the structural cases (recall (153)). However, this is only an effect of surface morphology; the underlying number specification is the same in both kinds of cases, and the only difference is the syncretism pattern produced by the lexical entries: AAB vs. ABB.

7.7   South Saami

As the final case, consider the South Saami paradigm in (157), repeated from (30).

(157)

	PSEUDO-PART	COUNTED	PLURAL	PATTERN
NOM	ELAT.SG	NOM.PL	NOM.PL	ABB
OBL	ELAT.SG	OBL.SG	OBL.PL	ABC

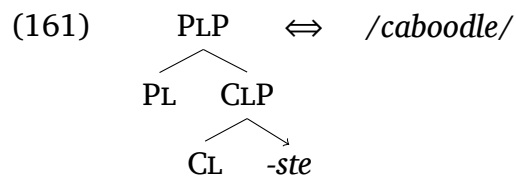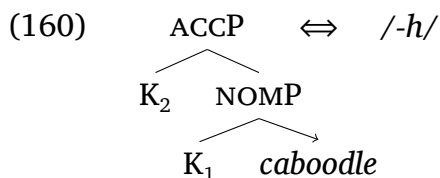Using specific entries and including the object case in the table, we get (158):[30]

(158)

	PSEUDO-PART	COUNTED	PLURAL
NOM	*-ste*	*-h*	*-h*
OBJ	*-ste*	*-h*	*-h*
GEN	*-ste*	*-n*	*-i*

First, we specify *-i* as a genitive plural without any pointer, see (159a). Then we specify *-n* as the genitive of the counting number, (also without any pointer) see (159b).

(159) a. *-i* = [GEN [ACC [NOM [PL [CL [MASS]]]]]]
       b. *-n* = [GEN [ACC [NOM   [CL [MASS]]]]]

Both of these entries are also candidates in the NOM/ACC of their respective numbers, but are blocked by *-h* which has fewer superfluous features at the top, see (160). Since *-h* appears both in the plural and in the counting number, it has a pointer to the familiar *caboodle* item, which is given in (161). On analogy to the analysis of Czech and Russian, the caboodle item itself has a pointer to the mass marker *-ste*.

(160) ACCP ⟺ */-h/*
         K$_2$ NOMP
              K$_1$ *caboodle*

(161) PLP ⟺ */caboodle/*
         PL CLP
            CL *-ste*

The suffix *-ste* spells out only MASS, see (162).

(162) *-ste* = [MASSP]

As a consequence of this analysis, there is no way to spell out case features on top of a number structure including only MASS, and the pseudo-partitive does not inflect.

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[30]North Saami has differential object marking (Bergsland 1946, Ylikoski 2019). This means it has two direct-object cases, depending on definiteness. I focus here on the indefinite object, which has *-h* in the plural. In the descriptive tradition, the term accusative is reserved for the 'marked' (definite) accusative, which is syncretic with the dative (it is marked by *-i-d*). Therefore, I use the label OBJ (instead of ACC) in the table. See Caha (2018) for a discussion.

8 Conclusions

The main empirical claim of this article is that there is a *ABA constraint on syncretism holding between the form of the noun in the pseudo-partitive construction, after numerals, and in the plural. I argued that the existence of this constraint is the consequence of nesting structures of a kind familiar from the *ABA literature (Caha 2009, Bobaljik 2012). In terms of structure, the mass denotation (found in pseudo-partitives) is basic, the count denotation (found after numerals) is derived from it by a head I call CL, and finally the plural is derived from the count denotation by eliminating the atoms from the count (number-neutral) denotation (as argued for independently in Borer 2005, Harbour 2014, Martí 2020a).

The second fact I explored is that in some languages, the syncretism pattern found depends on the specific case environment. In order to model this, I have adopted the proposal that case features stack on top of number structures of various sizes. In Section 7, I have shown that when the Nanosyntax spellout procedure applies to such structures, it correctly derives all the attested patterns of marking, including the fact that pseudo-partitives often fail to inflect for case (there are paradigm gaps).

In the theory proposed, lexical entries spread from a particular cell (for which they are specified) into adjacent cells, leading to a theory where syncretic cells form linearly contiguous regions in a two-dimensional paradigm space.

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