Nominal ellipsis reveals concord in Moksha Mordvin

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Abstract

On the basis of original data from Moksha Mordvin (Finno-Ugric), I argue that some languages have nominal concord even though modifiers of the noun generally do not show inflection. Evidence for the presence of concord comes from nominal ellipsis, under which inflection is overt and restricted in the same way as regular nominal concord. There are thus two types of languages with nominal concord. Languages of the first type always have overt concord (cf. Estonian). Languages of the second type, such as Moksha, show concord morphology only if the noun is elided. The difference between the two types of languages is due to different orderings of Spell-Out with respect to other operations. Concord is always morphologically realized under ellipsis, because in this case there is an additional feature on a nominal modifier, which postpones Spell-Out and allows concord to be realized.

Keywords: concord, nominal ellipsis, Moksha Mordvin, Spell-Out, Agree

1 Introduction

In Moksha Mordvin, modifiers generally do not show concord with the noun (1a), but are inflected if the noun is elided (1b).

(1) a. Mon and-inʲə   [akšə katə-tʲ]   / *[akšə-tʲ
         I   feed-PST.3.O.1SG.S white cat-DEF.SG.GEN   white-DEF.SG.GEN
         katə-tʲ].
         cat-DEF.SG.GEN
         'I fed the white cat'.
     b. Mon and-inʲə   [akšə-tʲ]   / *[akšə].
         I   feed-PST.3.O.1SG.S white-DEF.SG.GEN   white
         {'Which cat did you feed?'} 'I fed the white one'.

This type of nominal ellipsis is attested in other languages, e.g., Hungarian (Kester, 1996a; Saab & Lipták, 2016), Persian (Ghaniabadi, 2010), Turkish (Bošković & Şener, 2014), and Ossetic (Hettich, 2002) among others. There are three main approaches that explain why a modifier shows inflection only if the noun is absent. Kester (1996a,b) argues that a *pro* in an ellipsis site triggers agreement (see also Lobeck (1995)). Bošković & Şener (2014) present a nominalization analysis. A modifier is nominalized and therefore shows nominal affixes, no ellipsis is involved. Saab & Lipták (2016) (see also Dékány (2011), Ruda (2016), Murphy (2018), and Saab (2019)) propose that some nominal features are not elided together with

a noun, and inflection results from Local Dislocation, which moves stranded affixes to the closest host.

All these approaches share a idea that a nominal modifier receives nominal features because the noun is absent and that inflection is necessary to satisfy some constraint (e.g., *pro*-licensing conditions or the Stranded Affix Filter) that will be violated otherwise. Here I argue that features are regularly present on a nominal modifier, but normally remain without morphological realization. Ellipsis makes this general but otherwise indiscernible property of Moksha nominal syntax appear.

I analyze inflection in elliptical contexts as nominal concord. Evidence for this comes from novel data on nominal ellipsis in Moksha, which show that inflection under ellipsis is restricted in the same way as regular nominal concord. Languages with nominal concord fall intro two types depending on the morphological realization. In languages of the first type, concord exponents are always present (cf. Russian or Estonian), while in languages of the second type, concord is morphologically realized only if the noun is elided. Moksha (and potentially other languages with inflecting ellipsis) belong to the second type.

Following Carstens (2001, 2018), Baker (2008), Toosarvandani & van Urk (2014), Landau (2016), and Puškar (2017, 2018) (and pace Norris (2014) and Bayırlı (2017)), I take nominal concord to result from Agree. Nominal modifiers agree with a noun in concord languages of both types. This agreement feeds Spell-Out and morphological realization in languages like Russian, but not in languages like Moksha. The difference between the two types of languages is due to different orderings of Spell-Out with respect to other operations (see Georgi (2017), Assmann et al. (2015), and Murphy & Puškar (2018) for other instances of cross-linguistic variation derived from different orders of elementary operations). Agreement is always morphologically realized under ellipsis, because in this case there is an additional feature on a nominal modifier, which invariably postpones Spell-Out and allows concord to be realized.

I proceed as follows. In section 2, I present new data on nominal ellipsis in Moksha. In section 3, I show that existing approaches do not cover a full range of Moksha data. In section 4, I derive the distribution of concord exponents. In section 5, the analysis is applied to the Moksha data. In section 6, I conclude.

2   Data

This section starts by providing a necessary background on nominal morphology in Moksha and then proceeds to nominal ellipsis, primarily focusing on inflection that appears on a nominal modifier in elliptical contexts. I show that even though the basic pattern of inflection under ellipsis is well-known from other languages (see Hungarian (Kester, 1996a; Saab &

Lipták, 2016), Persian (Ghaniabadi, 2010), Turkish (Bošković & Şener, 2014), Ossetic (Hettich, 2002) among others), there are restrictions on this phenomenon in Moksha that have not been discussed yet.

2.1 Background

Moksha Mordvin is a Finno-Ugric language. Together with Erzya it forms the group of Mordvin languages. Both languages are spoken in the Republic of Mordovia, Russia. The data come from my own fieldwork.

Nouns in Moksha are inflected for case, definiteness and number. If the noun is marked for definiteness, there are three case forms: nominative, genitive and dative. Number is distinguished in all forms of the definite declension. Definiteness fuses with case in the singular and with plural in the plural. If the noun is not marked for definiteness, 15 cases can be distinguished (nominative, genitive, dative, ablative, inessive, elative, illative, lative, prolative, translative, caritive, causalis, equative, temporalis, and vocative). Number is marked only in the nominative. The part of the nominal paradigm is illustrated in (2) below. In addition to the rich case system, Moksha has postpositions.

(2)   Part of the Moksha nominal paradigm illustrated by the noun velʲə 'village'

	Indefinite declension		Definite declension	
	SG	PL	SG	PL
nominative	velʲə	velʲə-t	velʲə-sʲ	velʲə-tʲnʲə
genitive	velʲə-nʲ		velʲə-tʲ	velʲə-tʲnʲə-nʲ
dative	velʲə-nʲdʲi		velʲə-tʲi	velʲə-tʲnʲə-nʲdʲi
ablative	velʲə-də			
inessive	velʲə-sə			
elative	velʲə-stə			

All inflection appears on the noun. If an inflectional exponent is placed only on the modifier or on the noun and the modifier, the ungrammaticality arises; see (3a) with an adjective and (3b) with a numeral.[1]

(3)   a.   ravžə pinʲə-t / *ravžə-t   pinʲə-t / *ravžə-t   pin'ə
             black dog-PL   black-PL dog-PL   black-PL dog
             'black dogs'

        b.   kaftə pinʲə-nʲdʲi / *kaftə-nʲdʲi pinʲə-nʲdʲi / *kaftə-nʲdʲi pinʲə
             two dog-DAT   two-DAT   dog-DAT   two-DAT   dog
             'to two dogs'

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[1] If a noun phrase is in the nominative, a few native speakers allow to double number on indefinite pronouns.

Nominal modifiers like adjectives, numerals and demonstratives are obligatorily prepositional; see (4) with an adjective.

(4)　Mon nʲɛj-inʲə　　　　[ravžə pinʲə-tʲ]　　　/ *[pinʲə-tʲ　　　　ravžə].
　　　I　see-PST.3.O.1SG.S black dog-DEF.SG.GEN　　dog-DEF.SG.GEN black
　　　'I saw the black dog.'

Possessors and arguments are usually prepositional, but for them postposition is possible as well:

(5)　Kolʲɛ kepədʲ-əzʲə　　　　[tʲɛ　ava-tʲ　　　　　　sumka-nc]　　　　/ [
　　　Kolia grab-PST.3SG.O.3SG.S　this woman-DEF.SG.GEN bag-3SG.POSS.SG.GEN
　　　sumka-nc　　　　　　tʲɛ　ava-tʲ].
　　　bag-3SG.POSS.SG.GEN this woman-DEF.SG.GEN
　　　'Kolia grabbed this woman's bag.'

Sentential arguments and finite relatives are obligatory postpositional; see (6) with a relative clause.

(6)　Mon nʲɛj-sa　　　　　[pinʲə-tʲ,　　　　kona-nʲ　ezdə　pelʲ-an].
　　　I　see-NPST.3SG.O.1SG.S　dog-DEF.SG.GEN which-GEN in.ABL fear-NPST.1SG
　　　'I see the dog that I am afraid of. '

Possessors are marked for genitive; cf. (7a). The same case is used to mark direct objects; cf. (7b).

(7)　a.　tʲɛ　ava-tʲ　　　　　　kud-əc
　　　　　this woman-DEF.SG.GEN house-3SG.POSS.SG
　　　　　'the house of this woman'

　　　b.　Mon nʲɛj-inʲə　　　　tʲɛ　ava-tʲ.
　　　　　I　see-PST.3.O.1SG.S this woman-DEF.SG.GEN
　　　　　'I saw this woman.'

Direct objects can also be unmarked. Verbs agree with marked direct objects (cf. (8a)) and do not agree with unmarked direct objects (cf. (8b)).

(8)　a.　Mon nʲɛj-sa　　　　　knʲiga-tʲ　　　/ *knʲiga.
　　　　　I　see-NPST.3SG.O.1SG.S book-DEF.SG.GEN　　book

I will abstract away from this in what follows and leave out what this marginal option might be due to.

(i)　kodamə bədʲə pinʲə-t / %kodamə-t bədʲə pinʲə-t
　　　which　INDEF dog-PL　which-PL INDEF dog-PL
　　　'some dogs'

b. Mon nʲɛj-an   knʲiga / *knʲiga-tʲ.
    I   see-NPST.1SG book   book-DEF.SG.GEN
    'I see a / the book.'

2.2   Nominal ellipsis

If the noun is elided, its modifier is inflected for its features. This is shown for case marking on the adjective in (9), for number marking on the demonstrative in (10), for definiteness, case, and number on the numeral in (11).

(9) Mon maks-ənʲ   [kodamə bədʲə akʃə-nʲdʲi]
     I   give-PST.1SG which   INDEF white-DAT
     '{Context: To which cat did you give food?} I gave to a white one.'

(10) Tu-sʲ-tʲ   [tʲa-t].
      come-PST.3-PL   this-PL
      '{Context: Which women came?} These [women] came.'

(11) Paka zvonʲ-cʲə-sʲ   anʲcʲək [kaft-nʲə-nʲdʲi].
      yet call-FREQ-PST.3[SG] only   two-DEF.PL-DAT
      '{Context: My mom is calling to her friends.} By now she called only to the two [friends].'

Morphological exponents that appear on the nominal modifier can differ from exponents on the noun in the corresponding non-elliptical context. For example, the noun modified by the demonstrative in (12a) is marked for the genitive of the definite declension, but if the noun is elided, the demonstrative takes the genitive of the indefinite declension (12b). The restriction is not unique for this pronoun. Similar restrictions are attested for other demonstrative pronouns *sʲɛ* 'that', *tona* 'that, the other one', for the relative pronoun *kona* and for animate proper nouns; for details on the distribution of the definite and the indefinite declensions in Moksha see (Kashkin, 2018).

(12) a. Mon soda-sa   [tʲɛ   ava-tʲ].
          I   know-NPST.3SG.O.1SG.S   this woman-DEF.SG.GEN
          'I know this woman.'
      b. Mon soda-sa   [tʲɛ-nʲ]   / *[t'ɛ-tʲ].
          I   know-NPST.3SG.O.1SG.S   this-GEN   this-DEF.SG.GEN
          '{Which of these women do you know?} I know this one.'

If there is more than one remaining modifier, only the linearly last modifier is inflected:

(13) Mon and-inʲə   [mazi akšə-tʲ]   / *[mazi-tʲ   akšə] /
      I   feed-PST.3.O.1SG.S nice white-DEF.SG.GEN   nice-DEF.SG.GEN white

*[mazi-tʲ   akšə-tʲ].
  nice-DEF.SG.GEN white-DEF.SG.GEN
'{Which cat did you feed?} I fed the beautiful white one.'

Inflection appears on the head of a branching modifier even if its head is not the linearly closest element to the ellipsis site. This can be illustrated by participles. In Moksha an argument of the participle can precede (cf. (14a)) or follow it (cf. (14b)).

(14)   a.   Mon rama-jnʲə   [keluv-ənʲ lopa-stə ti-f
               I   buy-PST.3.O.1SG.S birch-GEN leaf-EL make-PTCP.RES
               nastojka-tʲ].
               liquor-DEF.SG.GEN
               'I bought the liquor made from birch leafs.'

        b.   Mon rama-jnʲə   [ti-f   keluv-ənʲ lopa-stə
               I   buy-PST.3.O.1SG.S make-PTCP.RES birch-GEN leaf-EL
               nastojka-tʲ].
               liquor-DEF.SG.GEN
               'I bought the liquor made from birch leafs.'

If the noun is elided, morphological exponents appear on the participle rather then on its argument in both cases; see (15a,b).

(15)   a.   Mon rama-jnʲə   [keluv-ənʲ lopa-stə ti-f-tʲ].
               I   buy-PST.3.O.1SG.S birch-GEN leaf-EL make-PTCP.RES-DEF.SG.GEN
               '{Context: Which liquor did you buy?} I bought the [liquor] made from birch leafs.'

        b.   Mon rama-jnʲə   [ti-f-tʲ   keluv-ənʲ lopa-stə] /
               I   buy-PST.3.O.1SG.S make-PTCP.RES-DEF.SG.GEN birch-GEN leaf-EL
               *[ti-f   keluv-ənʲ lopa-stə-tʲ].
                 make-PTCP.RES birch-GEN leaf-EL-DEF.SG.GEN
               '{Context: Which liquor did you buy?} I bought the [liquor] made from birch leafs.'

A modifier marked for elative is the argument of the participle in (15b), and it cannot show an inflection that corresponds to features of the elided noun. In contrast, if it modifies the elided noun directly, inflection is possible.

(16)   Mon rama-jnʲə   [keluv-ənʲ lopa-stə-tʲ].
            I   buy-PST.3.O.1SG.S birch-GEN leaf-EL-DEF.SG.GEN
            '{Context: Which liquor did you buy?} I bought the one from birch leafs.'

Thus, if the noun is elided, inflection appears on the head of its linearly last modifier.

2.3 Connectivity effects

Merchant (2001) has presented evidence for unpronounced syntactic structure in the ellipsis site (see also the recent overviews by van Craenenbroeck & Merchant (2013) and Merchant (2019)). As it stands, it is now a common assumption in the literature on nominal ellipsis; see Corver & van Koppen (2009), Alexiadou & Gengel (2012), Merchant (2014), and Saab & Lipták (2016). Diagnostics that indicate syntactic structure in nominal ellipsis are reviewed by Saab (2019). Applied to Moksha, they show that the elided noun is syntactically present.

An elided noun demonstrates connectivity effects with respect to the rest of the noun phrase. First, an elided noun can assign a Θ-role to its argument; see (17).

(17) Mon muj-in^{j}ə   [t^{j}ɛ pisat^{j}əl^j-t^j skučnə-stə].
      I   find-PST.3.O.1SG.S this writer-DEF.SG.GEN boring-EL
      '{Context: In which novel did you find a mistake?} I found in this author's boring [novel].'

Second, a modifier of the elided noun can be extracted as in non-elliptical contexts; see (18).

(18) Mon af   soda-sa,   kin^j kolga Katia rama-z^{j}ə   [
      I   NEG know-NPST.3SG.O.1SG.S who.GEN about Katia buy-PST.3SG.O.3SG.S
      s^{j}ə oc^{j}u-t^j]
      this big-DEF.SG.GEN
      '{Context: Katia bought books.} I don't know, about whom Katia bought this big one.'

Third, idiosyncratic markings of arguments are preserved under ellipsis; see (19a-c). As shown by Kozlov (2018a), a direct object of an atelic verb can be marked by the postposition *esə*. This marking is obtained by the corresponding nominalization; see Zakirova (2018). Such marking is also grammatical under ellipsis.

(19) a. Son šuv-s   t^{j}ɛ lotk-t^j esə i   lotka-s^j.
          she dig-PST.3[SG] this hole-DEF.SG.GEN in.IN and spot-PST.3[SG]
          'She was digging this hole and then stopped'.   (Kozlov, 2018a, 423)

      b. [T^{j}ɛ zadača-t'   esə kuvaka az-ən-kšn^{j}ə-ma-s^j]
          this task-DEF.SG.GEN in.IN long   say-FREQ-FREQ-NZR-DEF.SG
          iz^j pomaga.
          NEG.PST[3SG] help.CN
          'This long explanation of the task didn't help.'

      c. [T^{j}ɛ zadača-t^j esə kuvaka-s^j] iz^j pomaga.
          this task-DEF.SG.GEN in.IN long-DEF.SG NEG.PST[3SG] help.CN
          '{Context: Did you read explanations?} The long [explanation] of this task did not help.'

2.4 Restrictions on remnants

In Moksha, the ability to show morphological exponents in elliptical contexts divides nominal modifiers into two groups. The first group consists of modifiers that take inflection in these environments. These are adjectives, numerals, demonstratives, participles, nouns without a case marker, modifiers marked for genitive of indefinite declension, caritive and elative. Inflection on adjectives, numerals, demonstratives, and participles is already illustrated in examples above; see (9) for an adjective, (10) for a numeral, (11) for a demonstrative , (15) for a participle, and (16) for a modifier with elative marking. Example (20) shows inflection on a noun without a case marker.

(20) Panʲčf-t   rama-sʲ   [senʲəm sʲelʲmə-sʲ].
      flower-PL buy-PST.3[SG] blue   eye-DEF.SG
      '{Context: Which girl bought flowers?} The [girl] with blue eyes bought flowers.'

Example (21) illustrates that a modifier marked for genitive of indefinite declension is inflected in an elliptical context.[2]

(21) a. Mon jarc̦-an   [sasʲedn̦ʲɛj virʲ-ənʲnʲə-də].
          I   eat-NPST.1SG next   forest-GEN-ABL
          '{Which mushrooms are you eating?} I am eating [mushrooms] from the next forest'.

      b. Minʲ rama-sʲk   [pona-nʲnʲə-tʲ].
          we buy-PST.3.O.3PL.S wood-GEN-DEF.SG.GEN
          '{Context: Which hat did you buy?} We bought the woolen hat.'

Inflection on a modifier marked for caritive is shown in (22).

(22) Son maksʲ   [zonʲtʲik-ftəmə-tʲi].
      he give.PST.3[SG] umbrella-CAR-DEF.SG.DAT
      '{Context: To whom did he give his coat?} He gave to the [person] without an umbrella'.

The second group consists of modifiers that cannot show inflection in elliptical contexts. Modifiers marked for genitive of the definite declension, dative modifiers of the definite and indefinite declension, and modifiers marked for lative belong to this group.[3] Example (23) shows the ungrammaticality of inflection on a modifier marked for genitive of the definite

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[2]The genitive marker in the presence of the noun is -(ə)nʲ, but it is -(ə)nʲnʲə- before inflection of the elided noun. The geminated allomorph is not restricted to ellipsis. It is used when a genitive exponent is not word-final; compare example (38) below, where the genitive modifier is used as a nominal predicate and the genitive exponent is followed by plural affix.

[3]Another modifier that potentially belongs to this group is noun with inessive. However, here the judgments of native speakers vary and are not completely clear. For this reason, I omit inessive from further discussion.

declension.

(23) Mon maks-in^jə [t^jɛ ava-t^j brad-əncti] /
I give-PST.3.O.1SG.S this woman-DEF.SG.GEN brother-3SG.POSS.SG.DAT
*[t^jɛ ava-t^j-əncti].
this woman-DEF.SG.GEN-3SG.POSS.SG.DAT
'{Context: To whose brother did you give a book?} I gave to this woman's'.

Example (24) shows that inflection under ellipsis is ruled out for modifiers marked for dative of the definite declension.

(24) Mon n^jɛj-sa [vir^j-t^ji ki-t^j] /
I see-NPST.3SG.O.1SG.S forest-DEF.SG.DAT road-DEF.SG.GEN
*[vir^j-t^ji-t^j].
forest-DEF.SG.DAT-DEF.SG.GEN
'{Context: Which road do you see?} I see [the road] to the forest.'

Example (25) illustrates this restriction for modifiers marked for dative of the indefinite declension.

(25) Mon juma-ft-in^jə [kodamə bəd^jə s^jt^jər^j-n^jɛ-n^jd^ji
I disappear-CAUS-PST.3.O.1.SG.S which INDEF girl-DIM-DAT
kaz^jn^jə-t^j] / *[s^jt^jər^j-n^jɛ-n^jd^ji-t^j].
present-DEF.SG.GEN girl-DIM-DAT-DEF.SG.GEN
'{Which present did you loose?} I lost [a present] for some girl.'

Modifier marked for lative also cannot show inflection; see (26).

(26) Val-əz^jə [vir^j-i ki-t^j] / *[vir^j-i-t^j].
food-PST.3SG.O.3SG.O forest-LAT road-DEF.SG.GEN forest-LAT-DEF.SG.GEN
'{Which road is flooded?} The [road] to the forest is flooded.'

Modifiers that are not inflected for nominal features can license nominal ellipsis; see (27) and (28). The elided noun is in the subject position in (27); it is assigned the nominal case (unmarked in Moksha), and the plural agreement on the predicate indicates that the elided noun has the plural number feature. The stranded modifier is marked for dative of the definite declension, and (as discussed above) it cannot be inflected for the features of the elided noun. Ellipsis is however grammatical if the modifier is not inflected.

(i) Mon nɛj-in^jə an^jc^jək [jaks^jt^jər^j vaz^j-n^jɛ-sə c^jora-n^jɛ-t^j] /
I see-PST.3.O.1SG.S only red hat-DIM-IN boy-DIM-DEF.SG.GEN
%[vaz^j-n^jɛ-sə-t^j].
hat-DIM-IN-DEF.SG.GEN
'{Context: I am looking for the boy in the blue hat.} I only saw the [boy] in the red hat.'

(27)   ... a   [vir-tʲi]   (/ *vir-tʲi-t)   ulʲ-sʲ-tʲ   tʲɛjnʲɛ.
            but   forest-DEF.SG.DAT   forest-DEF.SG.DAT-PL   be-PST.3-PL   narrow
            '{The roads to the city were wide} and [the roads] to the forest were narrow.'

The elided noun occupies the direct object position in example (28). The object agreement on the verb indicates that the elided noun has the genitive case feature. The stranded modifier is marked for lative, so it cannot be additionally inflected for the genitive of the head noun. Ellipsis of the head noun is allowed without an additional inflection on the modifier.

(28)   Son   aṛt-əzʲə   [sportzal-u] (/ *sportzal-u-tʲ)   ravžə
            she   paint-PST.3SG.O.3SG.S   gym-LAT   gym-LAT-DEF.SG.GEN   black
            kraska-sə.
            paint-IN
            '{Context: Which door did she paint black?} She painted [the door] to the gym black.'

Reduced acceptability arises if the case of the remnant coincides with the case assigned to the elided noun; see (29). In this example, the remaining modifiers is the possessor of the elided noun, and it is marked for the genitive case. The elided noun is in the direct object position, and it is also assigned genitive. I suggest that reduced acceptability is due to the garden-path effects: The position of the elided noun is occupied by a different noun that however has the expected case, so that there are no grammatical clues to indicate nominal ellipsis.

(29)   ??Mon nʲɛj-sa   [tʲɛ   ava-tʲ].
      I   see-NPST.3SG.O.1SG.S   this   woman-DEF.SG.GEN
      '{Context: Which house did you see?} Intended: I saw this woman's.'

Languages with generally overt nominal concord also have two types of nominal modifiers: some modifiers show agreement with the noun, others do not. Baker (2008) suggests that the difference between the two strategies results from the presence of ϕ-features. Modifiers cannot agree with another noun if they have their own ϕ-features, because these features intervene and block agreement with another noun. I will argue that the presence of ϕ-features also underlies the ability to show inflection in elliptical contexts. In Moksha, modifiers that do not have their own ϕ-features are obligatorily inflected for features of an elided noun, while modifiers that have their own features cannot show inflection.

Nouns without a case marker and modifiers marked for indefinite genitive, caritive and elative show inflection in elliptical contexts and therefore might initially look problematic for the generalization above. I devote the rest of this section and the next section to show that in fact they do not have ϕ-features of their own. Let us start with unmarked nouns. As shown in Pleshak (2018), unmarked nouns do not only lack case marking; they also cannot

be inflected for other nominal features. This is shown by the ungrammaticality of number marking in (30).

(30)   Son nʲɛj-əzʲə   [kaftə pilʲgə(*-t) kaza-tʲ].
       she see-PST.3SG.O.3SG.S two   leg(-PL)   goat-DEF.SG.GEN
       'She saw the goat with two paws.'

Unmarked nouns also cannot be modified by a demonstrative; see (31). This suggests that they are bare nouns without any nominal features.

(31)   Son nʲɛj-əzʲə   [(*tʲɛ) sʲenʲəm selʲmə sʲtʲərʲ-nʲɛ-tʲ].
       she see-PST.3SG.O.3SG.S   this blue   eye   girl-DIM-DEF.SG.GEN
       'She saw this girl with blue eyes.'

As for indefinite genitive, caritive and elative, they behave differently from other case forms and I suggest that they lack ϕ-features and rather function as attributivizers in adnominal position. The peculiarity of these forms is reflected in the existing literature on Moksha: The case status of the caritive case is questioned and discussed in Hamari (2014) and indefinite genitive is not included in the list of cases in some descriptions of Moksha grammar; see Kolyadyonkov & Zavodova (1962, 189-192) and Cygankin (1980, 112). They treat the indefinite genitive as a derivational suffix that builds adjectives and is homophonic to the corresponding case affix. Such a view is supported by the fact that an indefinite genitive can be attached to adverbs, such as 'yesterday' in (32a), and turn them into nominal modifiers, as in (32b).

(32)   a.   Son sa-sʲ   isʲak.
            she come-PST.3[SG] yesterday
            'She came yesterday.'
       b.   Son rama-zʲə   [isʲak-ənʲ   kši-tʲ].
            she buy-PST.3SG.O.3SG.S yesterday-GEN bread-DEF.SG.GEN
            'She bought yesterday's bread.'

The behavior of these forms in the predicative position that will be discussed in the next section constitutes a main piece of empirical evidence for absence of ϕ-features.

2.5   Non-verbal predication

According to the typological survey by Stassen (1992, 2005), in the predicative position adjectives tend to agree with the subject, while nouns rather do not show agreement. Baker (2008) draws a parallel between this tendency and restrictions on nominal concord and shows that both can be derived from the presence of ϕ-features. Thus, if inflection in elliptical contexts is restricted by the presence of features on nominal modifier, a correlation with

agreement in the predicative position is predicted. Modifiers that are inflected under ellipsis are also expected to agree in the predicative position and modifiers that cannot show nominal exponents under ellipsis should be also unable to agree in the predicative position. The empirical evidence shows that this is indeed the case.

In Moksha, adjectives in the predicative position agree with a third person subject in number. This is shown in (33)-(34); see also Kholodilova (2016, 2018) on a detailed description of non-verbal predication in Moksha).

(33) Son jomla / *jomla-j.
      he   small   small-NPST.3[SG]
      'He is small.'

(34) Sʲinʲ jomla-t / *jomla-j̊-tʲ.
      they small-PL   small-NPST.3-PL
      'They are small.'

Plural agreement is also possible if the predicative position is occupied by a bare noun, as in (35). Agreement is ruled out if the noun in the predicative position is marked for definiteness (cf. (36)) or possessivity (cf. (37)).[4]

(35) Sʲinʲ učitʲəl̥ʲ-t.
      they teacher-PL
      'They are teachers.'

(36) Sʲinʲ tʲɛ učitʲəl̥ʲ-nʲə   / *učitʲəl̥ʲ-nʲə-t
      they this teacher-DEF.PL   teacher-DEF.PL-PL
      'They are these teachers.'

(37) Sʲinʲ učitʲəl̥ʲ-ənzə   / *učitʲəl̥ʲ-ənzə-t
      they teacher-3SG.POSS.PL   teacher-3SG.POSS.PL-PL
      'They are his teachers.'

Number agreement is possible if the predicative position is occupied by the form marked by the genitive of indefinite declension, caritive or elative. Example (38) illustrates number agreement on the non-verbal predicate marked by the genitive of the indefinite declension.

(38) Kud-tʲnʲə   šuftə-nʲnʲə-t.
      house-DEF.PL wood-GEN-PL
      'The houses are wooden.'

Predicative number agreement on the caritive form is shown in (39).

---

[4]Moksha also has another type of non-verbal predication. If the subject is a first or second person pronoun or if the predication has reference to the past, the predicate is obligatorily marked for tense. Agreement for number and person then does not depend on ϕ-features on the non-verbal predicate; see (i)-(ii) for agreement on nouns marked for the definite declension. I suggest that this is due to the tense marking on the non-verbal predicate. The T head that is higher than the subject is responsible for the predicative agreement, so that the subject is the closest goal for agreement, and features on the non-verbal predicate cannot intervene (see also Baker (2008, 56-63)).

(i)   Minʲ tʲɛ učitʲəl̥ʲ-nʲə-tamə.
      we this teacher-DEF.PL-NPST.1PL
      'We are these teachers.'

(ii) Minʲ tonʲ učitʲəl̥ʲ-nʲə-lʲ-əmə.
      we you.GEN teacher-DEF.PL-IMPF-PST.1PL
      'We were your teachers.'

(39)   Tʲɛ kaza-tʲnʲə   sʲura-ftəmə-t.
         this goat-DEF.PL antler-CAR-PL
         'The goats are without antlers.'

The non-verbal predicate is marked by the elative in (40), and it also shows the number agreement.

(40)   Tʲɛ nastojka-tʲnʲə keluv-ənʲ   lopa-stə-t.
         this liquor-DEF.PL birch-GEN leaf-EL-PL
         'These liquors are from birch leafs.'

Number agreement is ruled out for non-verbal predicates marked by the genitive of the definite declension, by the dative of the definite declension, by the dative of the indefinite declension, and by the lative. Example (41) illustrates this restriction for the genitive of the definite declension.

(41)   Kolʲəndʲəma-tʲnʲə tʲɛ   stʲərʲ-nʲɛ-tʲ   / *sʲt'ərʲ-nʲɛ-tʲ-tʲ   /
         toy-DEF.PL   this girl-DIM-DEF.SG.GEN   girl-DIM-DEF.SG.GEN-PL
         *sʲtʲərʲ-nʲɛ-tʲ-ət.
          girl-DIM-DEF.SG.GEN-PL
         'The toys are this girl's.'

Examples (42) and (43) show ungrammaticality of number agreement on the non-verbal predicates marked by the dative of the definite and the indefinite declension correspondingly.

(42)   Koləndʲəma-tʲnʲə tʲɛ sʲtʲərʲ-nʲɛ-tʲi   / *sʲtʲərʲ-nʲɛ-tʲi-t.
         toy-DEF.PL   this girl-DIM-DEF.SG.DAT   girl-DIM-DEF.SG.DAT-PL
         'The toys are for this girl.'

(43)   Kolʲəndʲəma-tʲnʲə kodamə bədʲə sʲtʲərʲ-nʲɛ-nʲdʲi / *sʲtʲərʲ-nʲɛ-nʲdʲi-t.
         toy-DEF.PL   which   INDEF girl-DIM-DAT   girl-DIM-DAT-PL
         'The toys are for some girl.'

The non-verbal predicate is marked by the lative in (44), and the number agreement is ruled out:

(44)   Tʲɛ ki-tʲnʲə   virʲ-i   / *virʲ-i-t.
         this road-DEF.PL forest-LAT   forest-LAT-PL
         'These roads are to the forest.'

The data are summarized in (45) below. It shows that the split between nominal modifiers in elliptical contexts mirrors the split in the predicative position. Modifiers that show inflection under ellipsis, also show number agreement in the predicative position. Agreement is ungrammatical for forms that are not inflected under ellipsis.

(45) Inflection on an element under ellipsis and in the predicative position

	Under ellipsis	In predicative position
Adjective	YES	YES
Indefinite genitive	YES	YES
Caritive	YES	YES
Elative	YES	YES
Unmarked noun	YES	YES
Definite genitive	NO	NO
Definite dative	NO	NO
Indefinite dative	NO	NO
Lative	NO	NO

Before turning to the consequences of the data in (45) one clarification is required. Babby (1975; 2009, 93-110) and Bailyn (2012, 68-70) suggest that adjectives in the predicative position modify a silent noun. If so, restrictions on agreement in the predicative position can be reduced to restrictions on inflection under ellipsis. The idea that an adjective in the predicative position may be followed by the unpronounced noun is supposed to explain the difference in the agreement on long and short form adjectives in Russian. Long form adjectives show the same agreement pattern in the attributive and in the predicative position, which is different from agreement on short forms and on verbs. Geist (2010) and Borik (2014) have shown that this analysis encounters empirical difficulties. For instance, long form adjectives in predicative position are distributed differently from overt nouns modified by an adjective. Note also that there are alternative accounts for these kinds of agreement restriction; see Wechsler (2011) and Puškar-Gallien (2019) for on similar patterns in other Slavic languages. In addition, it is generally unclear whether this analysis can be extended to other languages: It goes against the typological generalization that adjectives are more likely to agree in the predicative position than nouns, and it seems to be highly problematic for languages with a different agreement pattern in the attributive and in the predicative position, cf. obligatory concord in the attributive position and its absence in the predicative position in German.

There is also empirical evidence against the presence of null noun in the predicative adjective contexts in Moksha. First, a form marked for elative can be used in the adnominal position to mark clothes (see (46a)), but such use of the elative form is ungrammatical if it modifies a verb (see (46b)) or appears in the predicative position (see (46c)). This restriction is unexpected if the elative form in the predicative position modifies a silent noun.

(46) a. Sʲinʲ senʲəm panar-stə sʲtʲərʲ-nʲɛ-tʲnʲə.
          they blue   dress-EL girl-DIM-DEF.PL
          'They are the girls in blue dresses.'

b. *Sʲtʲərʲ-nʲɛ-sʲ   sa-sʲ   sen'əm panar-stə.
   girl-DIM-DEF.SG come-PST.3[SG] blue   dress-EL
   'The girl come in the blue dress.'

c. *Sʲinʲ senʲəm panar-stə / *panar-stə-t.
   they blue   dress-EL   dress-EL-PL
   'They are in blue dresses.'

Second, the inflection on an adjective in the predicative position may differ from the one that is expected in an elliptical context. In (47), the noun in the predicative position is marked for plural and definiteness. This is presumably a realization of features of the noun rather then agreement with the subject. The adjective in (48), which differs from (47) only in the absence of the noun, agrees with the subject in number (plural), but cannot be marked for definiteness, as would be the case under ellipsis.

(47) Sʲinʲ cʲebɛrʲ doktər̥ʲ-n'ə.   (48) Sʲinʲ cʲebɛr̥ʲ-tʲ / *cʲebɛr̥ʲ-nʲə.
      they good   doctor-DEF.PL   they good-PL   good-DEF.PL
      'They are the good doctors.'   'They are good.'

For these reasons, I conclude that number exponents that appear on non-verbal predicates instantiate agreement with the subject and cannot result from ellipsis. The data summarized in (45) confirm absence of φ-features on modifiers marked for indefinite genitive, caritive and elative.

To sum up so far, modifiers are inflected for nominal features in Moksha only if the noun is elided. Inflection appears on the linearly last of multiple modifiers. If a stranded modifier is branching, the head of the modifier is inflected. An elided noun shows connectivity to the rest of the noun phrase, which implies that the elided noun is present in syntax. Modifiers that have their own φ-features cannot be marked for features of an elided noun, thereby showing the same restriction on the distribution of agreement as in languages with (overt) concord.

3 Existing approaches

Three approaches that explain why a modifier shows inflection only in elliptical contexts have been proposed in the literature. In this section I discuss them one by one. I show that none of them derives the full range of Moksha data.

3.1 Licensing by inflection

On the basis of data from other Finno-Ugric languages (Finnish, Northern Saami, and Hungarian), Kester (1996a,b) argues that inflection results from agreement between the modifier

and *pro*. Following Lobeck (1995), she assumes that the ellipsis site is occupied by *pro* and that *pro* has to be identified and licensed. Inflectional morphology is responsible for licensing. Adjectives are taken to be specifiers of separate functional projections. *Pro* raises to the lower of these functional projections, and the adjective in its specifier then obligatorily undergoes spec-head agreement with *pro*. This explains the origin of inflection, and why inflection occurs only on the linearly last of multiple adjectives.

While this approach crucially relies on the idea that the ellipsis site is occupied by *pro*, the data in section 2.3 have shown that the ellipsis site in Moksha nominal ellipsis is not occupied by *pro*, but contains a full-fledged nominal structure. This is problematic for the analysis of inflecting ellipsis proposed by Kester because the special properties attributed to *pro*, particularly the obligatory agreement with it – derive the exceptional agreement in elliptical contexts. Once it is shown that the ellipsis site contains a noun with the same syntactic properties as its non-elided counterpart, the crucial assumption of the analysis is undermined. Any attempt to reformulate the analysis so that the agreement is obligatory only if the noun is elided would be a mere restatement of the data.

3.2 Substantivization

Bošković & Şener (2014) consider data from Turkish, where, as in Moksha, nominal modifiers that are unmarked in the presence of a noun are inflected for nominal features if a noun is absent. They suggest that some of these cases are due to nominal ellipsis, while others result from nominalization. Classifiers that are introduced in a separate projection above NP can trigger ellipsis of the noun phrase. In contract, adjectives that occupy the specifier of NP and demonstratives that are NP adjuncts cannot be stranded in their base positions because this would lead to an illegitimate ellipsis of a non-maximal projection. To derive inflection on modifiers that in their approach cannot trigger ellipsis, Bošković & Şener propose that such modifiers are substantivized and therefore marked for nominal features. Substantivization involves a type shifting operation that turns nominal modifiers of type ⟨e,t⟩ into arguments of type ⟨e⟩. This operation is argued by Bošković (2013) to be more productive in languages without articles. It remains unclear why inflection appears on classifiers in elliptical contexts.

If we were to assume that modifiers showing inflection in Moksha are nominalized, this approach would indeed correctly predict that only one of multiple modifiers shows inflection and that inflection appears on the head of a branching modifier. Such an assumption is untenable given the data in section 2.3. As discussed above, it shows that an elided noun demonstrates connectivity with respect to the rest of the noun phrase (e.g. an elided noun can assign Θ-role and case to its arguments). This means that an elided noun must be present in syntax, which excludes the substantivization approach.

Another option is to assume that inflecting modifiers in Moksha, like classifiers in Turkish,

occupy a separate projection and can license ellipsis (as will be suggested below). However, there is no explicit account analysis of how inflection appears on classifiers, so that inflection in elliptical context remains unaccounted in both cases.
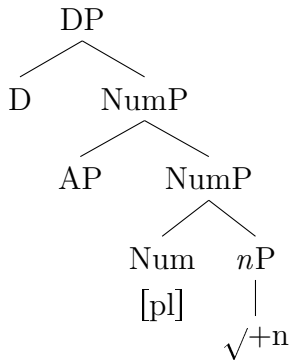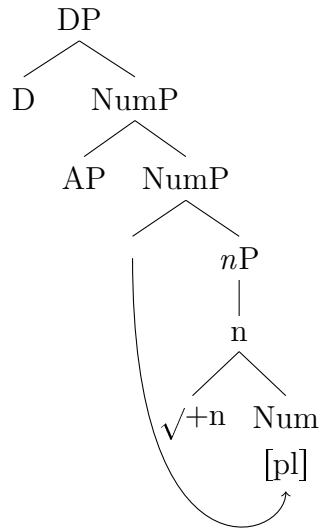
3.3   Cliticization

Since affixes that appear on the remnant of the elided noun generally look like affixes that would be attached to the noun, it seems natural to assume that these are the same affixes. If the noun has been present, they are expressed on the noun. If the noun is elided, they lean on another element. This type of analysis is pursued quite often; see Dékány (2011, 51-53, 2015), Lipták & Saab (2014), Ruda (2016), Saab & Lipták (2016), Murphy (2018), and Saab (2019). A full-fledged mechanism of how affixes of an elided noun end up being attached to its modifier is developed by Saab & Lipták (2016). In what follows I show that their version of the cliticization analysis cannot derive the Moksha data. However, more generally the problems arising under this particular analysis turn not to be specific to this implementation of the cliticization hypothesis; they indicate that cliticization in a pretheoretical sense is not an option.

Saab & Lipták (2016) investigate nominal ellipsis in Hungarian. There, as in Moksha, if the noun is elided, its remaining modifier is inflected. Although the data clearly shows that both number and case affixes appear on the remnant (see (49)), Saab & Lipták limit their analysis to number.
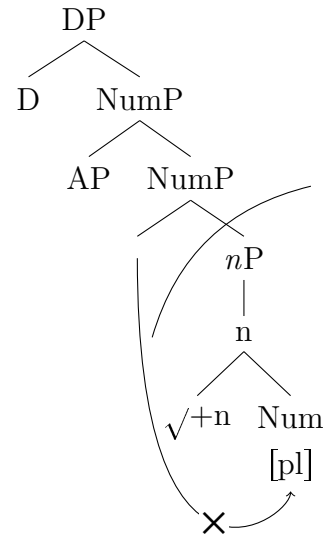
(49)   Mari a   régi kis   ház-ak-at   látta. Én az új   nagy-[__]*(-ok-at).
        Mari the old small house-PL-ACC saw   I   the new big-PL-ACC
        'Mari saw the old small houses. I saw the new big ones.' (Saab & Lipták, 2016, 84)

They assume the structure of the noun phrase in (50). The number feature originates in NumP. It usually attaches to the noun via post-syntactic Lowering (Embick & Noyer, 2001), as in (51). Saab & Lipták propose that ellipsis implies not only absence of Vocabulary Insertion; in fact an elided constituent is inaccessible for all post-syntactic operations, including Lowering (see, however, Georgieva et al. (2019) for evidence against this assumption). Ellipsis thus bleeds Lowering of the plural feature to the noun; see (52).

(50) DP structure   (51) Num-to-*n* Lowering   (52) Ellipsis

```
       DP                        DP                        DP
      /  \                      /  \                      /  \
     D   NumP                  D   NumP                  D   NumP
        /   \                     /   \                     /   \
      AP    NumP                AP    NumP                AP    NumP
           /   \                        \                        \
         Num    nP                       nP                       nP
         [pl]   |                        |                        |
               √+n                       n                        n
                                        / \                      / \
                                     √+n   Num                √+n   Num
                                           [pl]                     [pl]
                                                                 ×
```

This leads to the 'stranded' affix configuration that is repaired by another post-syntactic operation, Local Dislocation (see Embick & Noyer (2001); Embick (2007)). Local Dislocation applies to the plural feature and attaches it to the closest available element, which happens to be a modifier of the elided noun; see (53).

(53) Linearization → Local Dislocation → Vocabulary Insertion
      adjective * PL   adjective-PL   újak ('new.PL')

This analysis elegantly derives a part of the data: It explains why inflection on nominal modifiers is restricted to elliptical contexts and why it appears only on the last modifier. However, even if we put aside the issue about case and other nominal affixes that presumably can be resolved by some post-syntactic machinery (for instance, successive phase-bound Lowering as in Pietraszko (2018)) or by generating all nominal features in one functional projection (as suggested below), the Moksha data provide three arguments against the cliticization approach.

First, the position of inflection depends on the syntactic structure. As shown by branching modifiers in Moksha, inflection appears on the head of the linearly closest constituent, not just on the linearly closest element; see (15b) above, repeated here as (54). In this example, the elided noun is modified by the complex participle phrase, and the argument of the participle is closer to the ellipsis site. It is nevertheless the participle that is inflected. Local Dislocation by definition applies after Linearization and thus has no access to syntactic structure (see Embick & Noyer (2001, 2007), Embick (2007)). The cliticization approach therefore wrongly predicts that the stranded inflection of the elided noun will be on the argument of the participle, rather than on the participle.

(54) Mon rama-jnʲə   [ti-f-tʲ   keluv-ənʲ lopa-stə] /
      I   buy-PST.3.O.1SG.S make-PTCP.RES-DEF.SG.GEN birch-GEN leaf-EL
          *[ti-f   keluv-ənʲ lopa-stə-tʲ].
          make-PTCP.RES birch-GEN leaf-EL-DEF.SG.GEN
      '{Context: Which liquor did you buy?} I bought the one which is made from birch
      leaf.

Second, the cliticization analysis as it stands over-generates inflection on all nominal modi-
fiers. This contradicts the data in section 2.4. They show that nominal modifiers in Moksha
fall into two groups. Modifiers without their own ϕ-features are inflected under ellipsis, while
modifiers that do not have their own ϕ-features cannot show inflection. Clearly, this type of
evidence does not play a role in the evidence that Saab & Lipták set out to account for; and
one might think that their analysis may be easily fixed by adding of some restrictions on the
positioning of affixes. However, closer inspection reveals that it would be extremely difficult
to formulate such a restriction, because the necessity for the new host arises only quite late
at PF – therefore the relevant restrictions cannot appeal to syntax.

    One possible candidate might be the so-called 'one case rule' (see Pesetsky (2013)) that
prohibits a sequence of two case affixes. Such a rule would still not derive the data though:
Emerging inflection does not necessarily include an overt case affix; see (55), where attach-
ment of the plural suffix to the case suffix is ungrammatical.

(55) [Sportzal-u] / *[sportzal-uf-t aṛt-f-t]   sɛngɛrʲɛ kraska-sə.
      gym-LAT   gym-LAT-PL paint-PTCP.RES green   paint-IN
      '{Context: Those doors are red} and [the doors] to the gym are painted green.'

This filter also does not capture the restrictions on agreement in the predicate position. As
shown in section 2.5, these restrictions mirror the restrictions on inflection under ellipsis.
Hence an analysis the derives them both by the same mechanism is preferable.

    Another possibility might be a filter that prohibits two sets of ϕ-features from different
noun phrases to be realized within one phonological word. It is however unclear whether
the origin of ϕ-features is determinable after Linearization. Even more importantly, such a
restriction is empirically wrong for Moksha. Moksha has both subject and object agreement,
so that ϕ-features from two different noun phrases can be spelled out within one inflected
verb; see (56).

(56) Son nʲɛj-əzʲ-nʲə   tʲɛ lomatʲ-tʲnʲə-nʲ.
      she see-PST.3SG.S.3PL.O this people-DEF.PL-GEN
      'She saw these people.'

Third and finally, the analysis predicts examples like (27)-(28) above ((28) is repeated here
as (57)) to be ungrammatical. They show that the modifiers that do not bear inflection, can

license ellipsis.

(57) Son ar̥t-əz^jə   [sportzal-u] ravžə kraska-sə.
      she paint-PST.3SG.O.3SG.S gym-LAT   black paint-IN
      '{Context: Which door did she paint black?} She painted [the door] to the gym black.'

Ellipsis is assumed to bleed Lowering, but here 'stranded' nominal features is not suffixed on another host. Potentially this could be the case, because the 'stranded' features configuration was resoled by deletion of the features. Saab & Lipták suggest Morphological Ellipsis, an operation that obligatorily deletes stranded features of the elided noun under identity to features on the remaining nominal modifier. It derives the absence of cliticization of 'stranded' features in languages with concord, like Spanish. This solution cannot be adopted for Moksha, because the modifier in (57) does not show overt concord with the noun and crucially belongs to the type of nominal modifiers that cross-linguistically cannot agree with the noun, so that there cannot be any trigger for Morphological Ellipsis in this case. Thus, nominal features do not lower to the noun because of ellipsis and are stranded, but none of the two available repair operations applies to them: Affixes do not move to the modifier, and they cannot be deleted, because the context for deletion is not met. Consequently, the Stranded Affix Filter is violated and (57) is predicted to be ungrammatical.

I conclude that cliticization cannot be right analysis of inflection under ellipsis in Moksha. The main counter-evidence comes from branching modifiers and restrictions on inflection with some modifiers. Note also that these type of data have not been investigated in other languages (e.g., Hungarian), which have been derived by cliticization. As long as these data are missing, it remains unclear whether the cliticization analysis is tenable for other languages with inflection under ellipsis.

4 Proposal

4.1 Ellipsis reveals concord

I would like to propose that inflection under nominal ellipsis in Moksha is best analyzed as nominal concord. Modifiers regularly agree with the noun, but this agreement does not feed morphological realization if the noun is present. Concord is realized only if the noun is elided. Under this analysis, ellipsis makes a general but otherwise indiscernible property of Moksha nominal syntax apparent. The distribution of features follows from conditions on Spell-Out, and on the types of features that can be spelled out.

An idea of cyclic Spell-Out, under which syntactic structure is spelled out in phases, was developed by Chomsky (2000, 2001) (see also Uriagereka (1999)). He suggests that

complements of the phase heads (C and v^*) undergo Spell-Out. Various modifications of what constitutes the spell-out domain were developed since then. Marantz (2007) and Embick (2010) (among others) argue that the smaller parts of the syntactic structure – complements of the category-defining heads, are also domains for Spell-Out. It was further suggested that Spell-Out applies more locally. Wojdak (2008) and Starke (2009) propose that Spell-Out applies after each Merge, and Epstein & Seely (2002) suggest that each syntactic operation initiates Spell-Out.

Here I pursue a local approach to Spell-Out and suggest that Spell-Out applies to a node that has no *unsatisfied* features. A feature counts as unsatisfied if it can induce operations. This holds for probe features that trigger Agree ($[*F:\_\_*]$) and Merge ($[\bullet F\bullet]$) (following the notation in (Heck & Müller, 2007)). These features are satisfied after the operations that they bring about apply.

While it was suggested that the Spell-Out creates syntactically inaccessible domains (see e.g. Uriagereka (1999), Nunes & Uriagereka (2000)), I do not adopt this view here. I assume that upon Spell-Out a part of the structure is sent to PF for Vocabulary Insertion and linearization, but thereby it does not vanish from syntax (see, e.g., Dobler et al. (2011), Piggott & Travis (2017), Martinović (2019), and also Chomsky (2008, 143)). This position is supported by the fact that different syntactic processes have different locality domains; see Bošković (2007a,b), who shows that agreement can target domains that are not accessible for movement. As for syntactic opacity, there are different ways of deriving it without appealing to Spell-Out; see Rackowski & Richards (2005), Müller (2011), and Keine (2019) for some options.

(58)   Spell-Out:
        Spell-Out applies to a node that has no unsatisfied features.

A second ingredient of the analysis is Probe Conversion. I suggest that a life cycle of a probe includes two operations:[5] Valuation and Conversion.[6] Probes are valued by Agree; see one possible definition in (59).

(59)   Agree:

_____

[5]Another splitting up of Agree was proposed by Arregi & Nevins (2012). They suggest that Agree is a two-step process that consists of Agree-Link and Agree-Copy. Agree-Link operates in narrow syntax and established the connection between a probe and a goal, while Agree-Copy applies at PF and is responsible for copying the feature value from the goal to the probe.

[6]Analyzing the mechanism for the deletion of uninterpretable features suggested by Chomsky (2001), Epstein & Seely (2002) come to the conclusion that it requires probes to be different from originally valued features shortly after valuation. Chomsky suggests that unvalued features correspond to uninterpretable features and have to be deleted before transfer to LF. Deletion should apply after valuation, but originally unvalued features should still be detectable, so that it can be ensured that the right kinds of features undergo deletion.

If α has unvalued feature F_1, β has a corresponding valued feature F_2, and α c-commands β, the feature value is copied from F_1 to F_2.
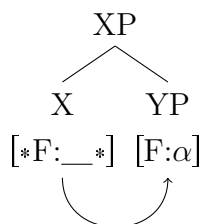
After valuation, probe features are still identifiable as such (which is indicated by the presence of asterisks). They are subsequently subject to Probe Conversion; see (60). Probe Conversion makes valued probes indistinguishable from originally valued features. This means that only converted probes can serve as a goal for further Agree or be targeted by Vocabulary Insertion.

(60)   Probe Conversion:
        Probe Conversion applies to valued probes and makes them identical to originally valued features. Only converted probes can be morphologically realized.

Agreement, valuation and conversion are illustrated in (61)-(63). In (61), the head X has an unvalued probe that agrees with a goal in its c-command domain. The structure in (62) shows the valued probe before conversion. In the next step, conversion applies and turns the valued probe into a regular feature; see (63). According to (58), X undergoes Spell-Out at the stage shown in (62) because there are no unsatisfied features on X. Probe $[*F:\alpha*]$ is already valued at this point and therefore satisfied. It is however not yet converted and therefore cannot be morphologically realized itself. Although F is converted at the next stage of the derivation (see (63)), node X has already been spelled out by then. Thus, conversion feeds further syntactic processes, but it comes too late to feed (i.e. counterfeeds) Vocabulary Insertion.

(61)   Agree   (62)   Valuation   (63)   Probe Conversion

             XP   XP   XP
            / \   / \   / \
           X   YP   X   YP   X   YP
      $[*F:\_\_*]$ $[F:\alpha]$ $[*F:\alpha*]$ $[F:\alpha]$ $[F:\,\alpha]$ $[F:\alpha]$
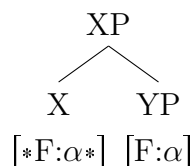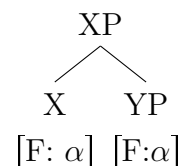
The derivation sketched here allows features to be accessible in syntax, but inaccessible in morphology. This corresponds to nominal concord in Moksha, where concord features are normally exempt from morphological realization. This opens up a new approach to the emergence of concord inflection under nominal ellipsis: Concord exponents are present if the noun is elided because a probe is not the last unsatisfied feature on a nominal modifier. When a probe feature is valued by Agree, and thus satisfied, there is still an [E]-feature present on the same head that is responsible for syntactic licensing of ellipsis; see (64). Following Merchant (2001, 2005), I assume that [E] is a complex feature with syntactic, semantic and phonological requirements, which together produce what is generally called ellipsis. [E]-

features responsible for different types of ellipsis have a different feature specifications. Here I assume the minimally required feature specification of nominal ellipsis triggering [E]: It has an unchecked nominal feature [E$_{[*n*]}$] that ensures the local presence of a noun. Thus, syntactic licensing of ellipsis is understood as checking of the sub-feature on [E]. Absence of morphological realization of material within the ellipsis site is due to deletion (or non-insertion) at PF, for which morpho-phonological side of [E] is responsible.

The presence of an unsatisfied feature on [E] prevents application of Spell-Out immediately after Agree and valuation in (64), allowing Probe Conversion to apply first; see (65). Spell-Out applies to node X at the stage shown in (66), where the probe is converted and therefore becomes subject to Vocabulary Insertion.

(64)   Agree + Valuation   (65)   Probe Conversion   (66)   [E]-licensing
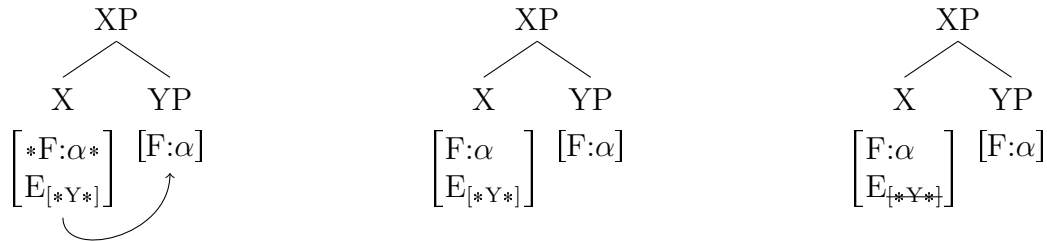
4.2   Two types of concord languages

Depending on the distribution of overt concord exponents, two types of languages with nominal concord can be identified. Languages of the first type always have overt concord. Languages like Estonian, Russian, or Spanish belong to this type. Languages of the second type show overt concord morphology only if the noun is elided. Moksha is an example of a such language.

Following Georgi (2014, 2017), Assmann et al. (2015), and Murphy & Puškar (2018), among others, I assume that the order of some operations is not universally determined, and can be fixed language-specifically, thereby leading to different patterns in seemingly similar environments. I suggest that the different orders of Spell-Out and Probe Conversion underlie the difference between the two types of concord languages. Probe Conversion is ordered before Spell-Out in Russian-type languages, so that agreement invariably feeds realization. Probe Conversion is ordered after Spell-Out in Moksha-type languages, which generates variation in the realization of nominal concord.

The two types of languages with nominal concord and the orders of Probe Conversion and Spell-Out that correspond to them are summarized in (67).

(67)   Morphological realization of concord exponents

	noun present	noun elided
I. Probe Conversion < Spell-Out *Russian-type*	+	+
II. Spell-Out < Probe Conversion *Moksha-type*	−	+

4.3 Derivations

By going through some sample derivations I show that the proposal correctly derives the concord patterns in (67). For expository purposes the discussion in this section is limited to number concord (see 4.4 for case concord). I assume that ϕ-features originate in a functional projection above the root (see an overview of arguments in Alexiadou et al. (2007)). In particular, I assume that these features are generated in the n head, but nothing hinges on this and it could well be a special functional projection (e.g., ϕP) or a series of functional projections (e.g., #P, πP) that host the features. More importantly, I assume an AP-over-NP structure (see, e.g., Abney (1987), Bošković (2005), and Murphy (2018)). A notable challenge for this structure comes from complex adjective phrases, where an adjective is followed by its argument. This issue is addressed in section 5.2 below. Finally, following Carstens (2001, 2018), Baker (2008), Toosarvandani & van Urk (2014), Landau (2016), Ingason & Sigurðsson (2017), and Puškar (2017, 2018), I take nominal concord to result from Agree. Alternative approaches to concord are discussed in section 4.4.

Scenario 1: Suppose a language has an order of Probe Conversion before Spell-Out. In an elliptical context a modifier (an adjective in the structures below) enters the derivation with an unvalued number feature and feature [E]. Number agreement applies first, so the # probe gets a value; see (68). Next the number probe is converted; see (69). After this, [E] feature is licensed by nP and is subsequently satisfied; see (70). The node A undergoes Spell-Out in the following step in (71), when it has no unsatisfied features and the probe for number is converted. This generates overt concord inflection under ellipsis in Russian-type languages.
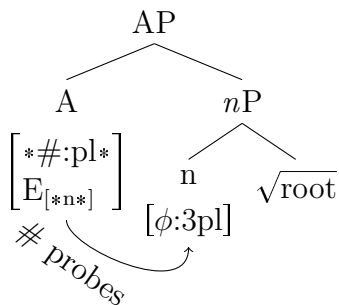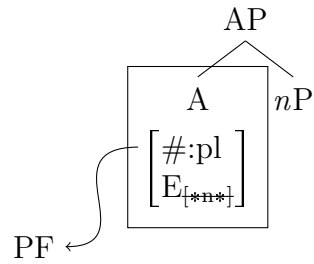
(68)   Step I: Agree + Valuation   (69)   Step II: Probe Conversion
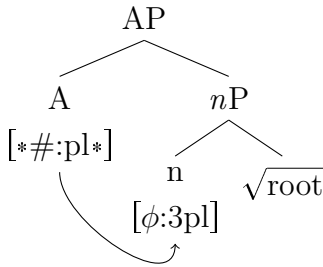
(70) Step III: [E]-licensing

$$
\begin{array}{c}
\text{AP} \\
\diagdown \\
\text{A} \qquad n\text{P} \\
\left[\begin{array}{c}\text{\#:pl} \\ \text{E}_{[*n*]}\end{array}\right] \quad n \quad \sqrt{\text{root}} \\
\qquad [\phi\text{:3pl}]
\end{array}
$$

(71) Step IV: Spell-Out

$$
\begin{array}{c}
\text{AP} \\
\boxed{\text{A}} \;\; n\text{P} \\
\left[\begin{array}{c}\text{\#:pl} \\ \text{E}_{[*n*]}\end{array}\right] \\
\text{PF} \leftarrow
\end{array}
$$
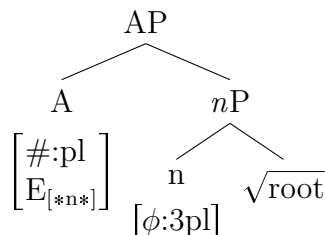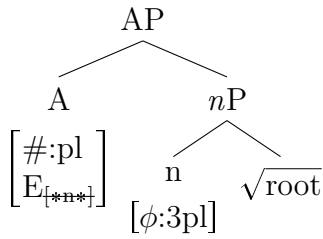
Scenario 2: If a language has the same Probe Conversion before Spell-Out order and the noun is not elided, nominal concord is overtly realized as well. In this case an adjective has only unvalued #-features. After its valuation, all features on A are satisfied, but since Conversion is ordered before Spell-Out, the valued probe is converted first; see (72)-(73). Spell-Out applies in the next step; see (74). This derives overt concord in non-elliptical contexts in Russian-type languages.

(72) Step I: Agree + Valuation

$$
\begin{array}{c}
\text{AP} \\
\diagdown \\
\text{A} \qquad n\text{P} \\
[*\text{\#:pl}*] \quad n \quad \sqrt{\text{root}} \\
\qquad [\phi\text{:3pl}]
\end{array}
$$

(73) Step II: Probe Conversion

$$
\begin{array}{c}
\text{AP} \\
\diagdown \\
\text{A} \qquad n\text{P} \\
[\text{\#:pl}] \quad n \quad \sqrt{\text{root}} \\
\qquad [\phi\text{:3pl}]
\end{array}
$$
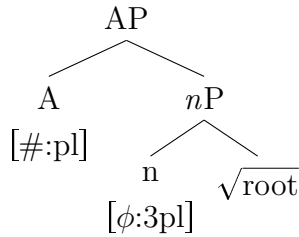
(74) Step III: Spell-Out

$$
\begin{array}{c}
\text{AP} \\
\boxed{\text{A}} \;\; n\text{P} \\
[\text{\#:pl}] \\
\text{PF} \leftarrow
\end{array}
$$
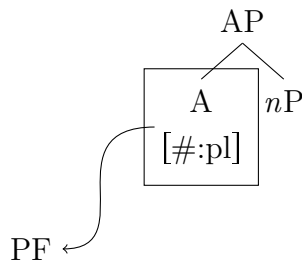
Scenario 3: Suppose now that a language has the reverse order of operations, i.e., Spell-out can apply before Probe Conversion. A nominal modifier has only the probe responsible for concord; it probes and gets a value; see (75). There are no unsatisfied features on the node after this, so that Spell-Out applies; see (76). The valued probe is converted only after Spell-Out; see (77). This generates an absence of concord exponents in non-elliptical contexts in Moksha-type languages.
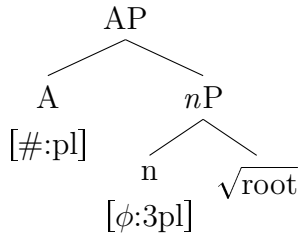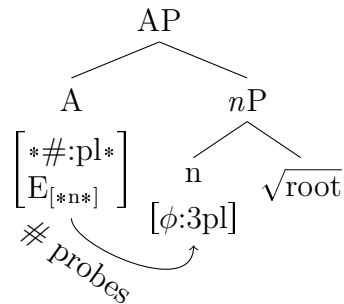
(75) Step I: Agree + Valuation

AP
├─ A [∗#:pl∗]
└─ nP
   ├─ n [φ:3pl]
   └─ √root
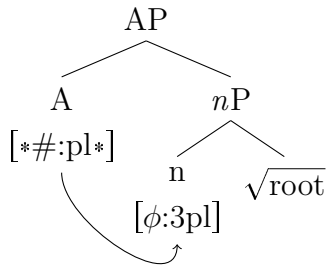
(76) Step II: Spell-Out

AP
├─ A [∗#:pl∗] (boxed)
└─ nP
→ PF
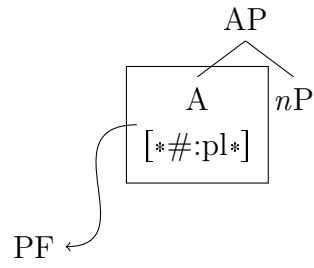
(77) Step III: Probe Conversion
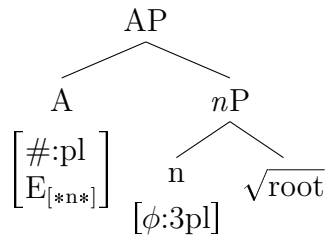
AP
├─ A [#:pl]
└─ nP
   ├─ n [φ:3pl]
   └─ √root

Scenario 4: The Spell-Out before Probe Conversion order yields a different outcome in an elliptical context. In this case a modifier bears an additional feature [E] that is unsatisfied after #-feature is valued; see (78). For this reason Spell-Out cannot apply at this point. # probe is converted in the following step; see (79). Next [E] is licensed; see (80). Finally, the adjective undergoes Spell-Out; see (81). This produces overt nominal concord under ellipsis in Moksha-type languages.

(78) Step I: Agree + Valuation

AP
├─ A [∗#:pl∗ / E_{[∗n∗]}] #probes
└─ nP
   ├─ n [φ:3pl]
   └─ √root

(79) Step II: Probe Conversion

AP
├─ A [#:pl / E_{[∗n∗]}]
└─ nP
   ├─ n [φ:3pl]
   └─ √root

(80) Step III: [E]-licensing

AP
├─ A [#:pl / E_{[∗n∗]}]
└─ nP
   ├─ n [φ:3pl]
   └─ √root
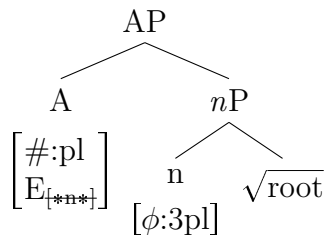
(81) Step IV: Spell-Out

AP
├─ A [#:pl / E_{[∗n∗]}] (boxed)
└─ nP
→ PF

26
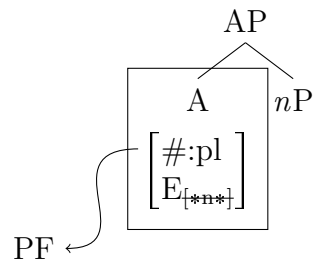
4.4 Case concord

Unlike other nominal features that originate within a DP, case is standardly considered to be assigned by a head outside of DP (v, T or P). By then a DP constitutes a proper sub-part of the structure, so that any operation that delivers case concord violates the Strict Cycle Condition (82); see Chomsky (1973, 1995, 2019).

(82)   Strict Cycle Condition (SCC):
         Within the current domain Δ_1, no operation may exclusively affect positions within another domain Δ_2 that is dominated by Δ_1.

In addition, under the assumption that DP (or any highest nominal projection) is a phase (see, e.g., Svenonius (2004), Matushansky (2004), and Bošković (2014)), and that v assigns case to the direct object, case concord within the direct object DP violates even the weakest version of the Phrase Impenetrability Condition given in (83) (see Chomsky (2001)), because the complement of the D head should be inaccessible after the next higher phase head v is merged.

(83)   Phase Impenetrability Condition (PIC):
         Given the structure [$_{ZP}$ Z ... [$_{HP}$ α [H YP]]] , where H and Z are phase heads, the domain of H is not accessible to operations at ZP, only H and its edge are accessible to such operations.

One possible solution to these problems is to abandon cyclicity. This position is taken by Norris (2014, 2018) and Bayırlı (2017) (see also Pesetsky (2013), Baier (2015), and Hanink (2018)), who allow for downward percolation of features in syntax. Norris proposes a case concord rule, according to which a case feature spreads from DP to each node within an extended nominal projection that does not have a case feature. Similarly, Bayırlı (2017) uses a Feature Assignment operation that passes features down the tree. Both proposals add an operation that aims to derive feature co-variance on two elements, i.e., something that is traditionally derived by Agree. This introduces redundancy and raises the question to which extent these operations can derive other phenomena captured by Agree, and whether Agree can be completely dispensed with in their presence.[7] It also goes without saying that these operations cannot exist in syntax, which is subject to the SCC, but once the SCC is rejected, a variety of illegitimate derivations that are successfully excluded by the SCC arise (see Heck (2016, 11-15) for some examples) and they have to be somehow blocked. In addition, neither of the two proposals solves the problem posed by case concord within the direct object DP, unless the PIC is rejected as well.

---

[7]Norris (2014, 2017) presents four differences between nominal concord and argument-predicate agreement that build the main empirical argument against analyzing nominal concord by Agree. Here I will

Another possible solution is to redefine Agree as Feature Sharing (see Frampton & Gutmann (2000, 2006) and Pesetsky & Torrego (2007)). This option is pursued by Kramer (2009) and Danon (2011). This means that all unvalued case features within the nominal domain fuse together into one Probe dominated by multiple nodes, and then case assignment from a higher head simultaneously provides all elements within the nominal domain with case, so that there is no need for counter-cyclic operations that spread the case feature from the D head to nominal modifiers and the noun. While this proposal circumvents the problem for the SCC, the PIC is still violated by case concord within a direct object DP, because some nodes dominating the shared probe should not be accessible to operations at vP. In addition, multidominant structures that are produced by Feature Sharing are spelled out differently than other cases of multidominance: A shared constituent is typically spelled out only in one of its positions (see Citko (2011)), but a shared feature is morphologically realized in all of them. As long as this basic difference is not derived, a feature sharing analysis of nominal concord remains incomplete.

Here I explore a different solution. I suggest that case, like other nominal features, originates within the noun phrase, on n, so that concord for case is not different from concord with respect to number. The case probe on a nominal modifier c-commands the valued case feature and agrees with it. Since the number and case probes on a nominal modifier always target the features of the same noun (see section 5.4, where I discuss instances of agreement for case and ϕ features with different nouns in a verbal domain), I assume that unvalued #

briefly address these differences and show that some of them are essentially spurious, whereas others are not problematic for the Agree-based analysis of nominal concord.

First, in some languages (for example, in Estonian), concord is realized on multiple elements within DP, while agreement in the clausal domain appears only on the predicate. However, as also acknowledged by Norris (2017), the split is not clear-cut, and predicative agreement can also appear on multiple hosts: on a main verb and on an auxiliary, or on other elements, such as adverbs and postpositions (see, e.g., Bond & Chumakina (2016) on these phenomena in Archi). Moreover, some languages (for example, Hindi) have rich clausal agreement, but no nominal concord. Should this be taken as an argument against analyzing predicative agreement by Agree?

Second, only heads participate in predicative agreement, while elements showing nominal concord can occupy a specifier and an adjunct position as well. This distinction crucially depends on assumptions about the architecture of DP, and under the analysis of nominal concord presented here, all agreeing elements are heads of an extended nominal projection. That said, placement of agreeing elements within specifiers or adjuncts is indeed problematic for an Agree-based analysis, because being too deeply embedded a head cannot c-command the rest of the noun phrase, where the goal for agreement is presumably located. There are several ways to approach this complication; cf. upward Agree (see Baker (2008)) or probe projection (see Carstens (2016)).

Third, while predicative agreement takes place between two distinct extended projections, a probe and a goal are within one extended projection under nominal concord. This is an interesting observation, but I do not see how this could be problematic for any existing implementation of Agree.

Fourth, predicative agreement may be restricted by the case of a potential goal, so that only nouns in nominative or absolutive case can be agreed with, but such restrictions are not attested for nominal concord. Case sensitivity of predicative agreement is sometimes attributed to the fact that oblique nouns are embedded in PP/KP and this prevents probes from reaching the features of DP. Given that all nominal modifiers are introduced below a PP/KP, no connection to case is expected.

and case features on a nominal modifier probe together.

A DP-internal origin of case features solves the problem posed for the SCC as well as the problem for the PIC, and it does not require to reject one of these principles or substantially change the Agree. However, it raises questions about case assignment: In particular it remains to be shown how it can be ensured that the case feature on n is the correct case for the noun in its position. This can be achieved if heads that are traditionally conceived of as case assigners have in fact an unvalued case feature. It probes, agrees with the corresponding case feature on a noun and if a wrong case value is assigned, the derivation cannot succeed (e.g. v with a nominative case feature is not eligible).[8]

Thus, case concord works exactly like number concord. Both case and # features probe simultaneously, so that none of them postpone Spell-Out and allow the other probe to be converted first. The structure in (84) incorporates the present assumptions about case concord and case assignment. κ stands for a case feature; genitive is the case of direct objects in Moksha. As before, the morphological realization of concord depends on the order between Spell-Out and Probe Conversion on the one hand, and on whether the noun is elided or not on the other.

(84)   Case and number concord

---
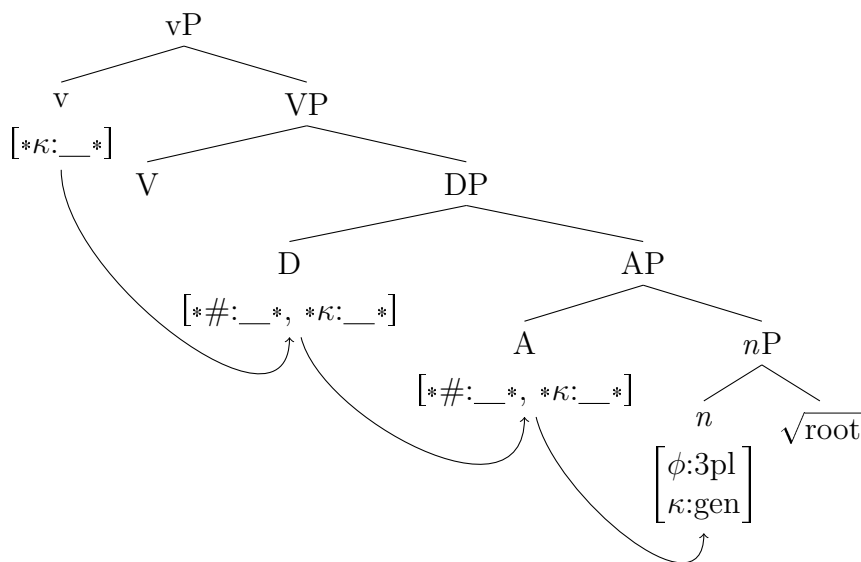
[8]While the reversal of case assigner and case assignee might seem unusual, note that this does not require any machinery that was not yet present. Recall that besides a case feature nouns are also assigned a Θ-role and even though there is no one-to-one correspondence between case and Θ-role, they correlate. Consequently, the case (in a traditional system, assigned to a noun by a functional head) should match the Θ-role assigned by a verb. If they are not compatible, the derivation is filtered out. This differs from cases where a derivation fails due to the wrong case feature assigned from a noun to a higher head, only in that then case has to match features inherent to that head. Alternatively, it can be assumed that the higher functional head has a valued case probe and it is checked against the valued case feature on the noun.

To sum up, there are two types of languages with nominal concord. Nominal modifiers invariably show inflection in languages of the first type. Languages of the second type are traditionally not recognized as concord languages, because modifiers of the noun generally do not show inflection. Evidence for the presence of concord in such languages comes from nominal ellipsis, under which inflection is realized. The existence of two language types and the distribution of concord exponents follow from the following assumptions: Spell-Out applies to a syntactic node that has no unsatisfied features; valued probes are morphologically realized only after Probe Conversion; and the order between Spell-Out and Probe Conversion varies across languages.

5 Nominal concord in Moksha

A dependence between the realization of concord exponents and the presence of a noun has been derived in the previous section. In this section, I show that the analysis covers other restrictions on overt inflection in Moksha. I start with multiple modifiers (5.1); then I turn to branching modifiers (5.2) and modifiers with ϕ-features (5.3); finally, I discuss overt predicative agreement (5.4).

5.1 Multiple modifiers

As shown in section 2.2, concord in Moksha is overtly realized only on the linearly last of multiple remnants, and presence of inflection on other nominal modifiers is ruled out; see example (13), repeated here as (85).

(85)   Mon and-in^{j}ə   [mazi akšə-t^j]   / *[mazi-t^j akšə] /
       I   feed-PST.3.O.1SG.S nice white-DEF.SG.GEN   nice-DEF.SG.GEN white
       *[mazi-t^j akšə-t^j].
         nice-DEF.SG.GEN white-DEF.SG.GEN
       '{Which cat did you feed?} I fed the beautiful white one.'

This restriction follows from requirements on ellipsis licensing: One [E]-feature is enough to trigger ellipsis of the noun, and it immediately precedes the ellipsis site (see Merchant (2001, 2005) and Aelbrecht (2011)). In example (85), the adjective *akšə* 'white' is closer to the ellipsis site, so that it hosts the [E] feature that allows for morphological realization of inflection; see (86). Another adjective is merged higher; it has the corresponding probes and agrees, but it has no additional feature that would allow to convert valued probes before Spell-Out; see (87).[9] The modifier here agrees with respect to number, case and definiteness

---

[9]Note that the reverse order of adjectives from example (85) is also grammatical: *akšə mazi katə-t^j* (white beautiful cat-DEF.SG.GEN); *akšə mazi-t^j* (white beautiful-DEF.SG.GEN). If different orders can result from movement, then nothing in principle excludes movement of an originally lower adjective to a position above

(see Wintner (2000) and Kramer (2010) for examples of definiteness agreement in other languages). I assume that definiteness is like other nominal features in that it originates on n (but it is then interpreted on D (cf. Hankamer & Mikkelsen (2005) and Heck et al. (2009)). It probes simultaneously with case and number. [10]
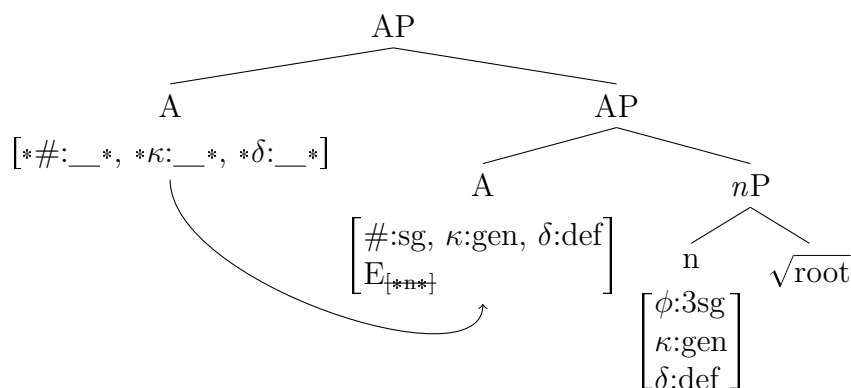
(86)   Lower adjective: concord and [E] features
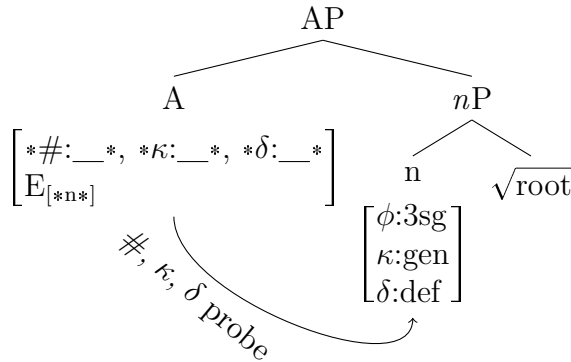
an originally higher adjective. This wrongly predicts that an adjective with an overt inflection can be moved to a position, where it precedes an adjective without inflection. There are two ways to move an adjective in the AP-over-NP structure. The first option is head movement to the higher A, but since head movement is standardly assumed to underlie word formation, this can be excluded independently. The second option is AP-movement. Since nP is included into AP and the order *adjective noun adjective* is generally impossible in Moksha, the nP should first vacate AP, and then AP can undergo remnant movement to some higher position. In the case of ellipsis this would however mean that the constituent that is elided fully matches the constituent that is moved out of the ellipsis site. Such cases are to the best of my knowledge not attested. I therefore conclude that in elliptical contexts different orders of adjectives result from base generation, not movement.

[10]Not any combination of nominal features is possible; see the data in section 2.1. For example, definiteness is marked in nominative, genitive, and dative case forms, but not in others. Pleshak et al. (2017) and Privizentseva (2019) suggest that nouns in nominative, genitive and dative are DPs, while nouns in other cases are KPs. This analysis can be easily replicated under current assumptions. Case and definiteness features originate on n, definiteness has to be interpreted in the D head, oblique cases that unlike structural cases clearly have a semantic content are interpreted in the K head, and DP is not compatible with KP. The last assumption is also required in Pleshak et al. (2017) and Privizentseva (2019). Since nothing in the present analysis hinges on the structural difference between DP and KP, the disallowed combinations of features can be also attributed to simple restrictions on feature co-occurrence.

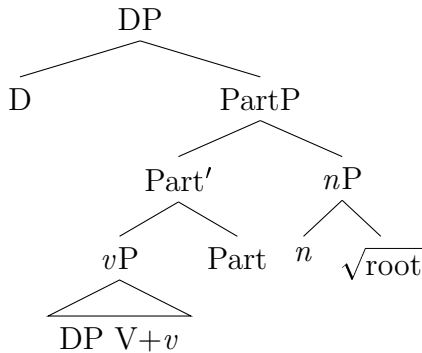(87)   Higher adjective: concord features

$$
\begin{array}{c}
\text{AP} \\
\diagup \qquad \diagdown \\
\text{A} \qquad\qquad\qquad \text{AP}
\end{array}
$$

A
$[*\#{:}\_\_*, *\kappa{:}\_\_*, *\delta{:}\_\_*]$

AP branch: A
$\begin{bmatrix} \#{:}\text{sg},\ \kappa{:}\text{gen},\ \delta{:}\text{def} \\ \text{E}_{[*\mathbf{n}*]} \end{bmatrix}$

nP branch: n
$\begin{bmatrix} \phi{:}\text{3sg} \\ \kappa{:}\text{gen} \\ \delta{:}\text{def} \end{bmatrix}$
  $\sqrt{\text{root}}$

5.2   Branching modifiers

In section 4.3, I have assumed that an adjective takes a noun as a complement; however, as noticed by Alexiadou & Wilder (1998) and Roehrs (2018), a challenge for this structure comes from internally complex adjectival phrases. In Moksha, the group of modifiers that show concord exponents under ellipsis includes adjectives, numerals, demonstratives, participles, unmarked nouns, and modifiers marked for indefinite genitive, caritive, and elative. All these modifiers agree with the noun in exactly the same way as shown for simple adjectives above, and I suggest that they should accordingly be analyzed in the same way. Some of them however can be internally complex. In this section I show that branching modifiers can be analyzed under an AP(/PartP/NumeralP etc.)-over-NP structure and discuss participle phrases as an example of internally complex agreeing modifiers. In Moksha, the argument of the participle can precede or follow it. Independently of that, concord inflection appears on the participle; see examples (14)-(15) above and (88) here.

(88)   Mon rama-jn^{j}ə   [keluv-ən^j lopa-stə ti-f-t^j]   /
       I   buy-PST.3.O.1SG.S birch-GEN leaf-EL   make-PTCP.RES-DEF.SG.GEN
       [ti-f-t^j keluv-ən^j lopa-stə].
        make-PTCP.RES-DEF.SG.GEN birch-GEN leaf-EL
       '{Context: Which liquor did you buy?} I bought the [liquor] made from birch leafs.'

Abstracting away from the precise amount of verbal structure in Moksha participles (which requires additional research; see Kozlov (2018b) for some data), I take the verbal part of the structure to be embedded under the Part head, after which it can be combined with a noun. This yields the structure in (89). Arguments are introduced within the verbal domain, and unvalued features responsible for nominal concord as well as the [E] feature (if present) are located on the Part head. The directionality of branching in PartP is not fixed and this allows a participle to be located before or after its argument. The noun is in this structure a right-peripheral specifier of PartP.

(89)　　Complex participle phrase

```
              DP
          ____|_____
         D          PartP
                 _____|_____
               Part'         nP
             ___|___       __|___
            vP    Part    n   √root
          __|__
        DP  V+v
```

This structure derives the correct word order and constituency, but now features on a nominal modifier do not c-command a noun they should agree with; they c-command the argument of the participle instead. In what follows, I address these issues and show that they can be resolved in multiple ways. I will outline the possibilities, but will not confine myself to one of them.
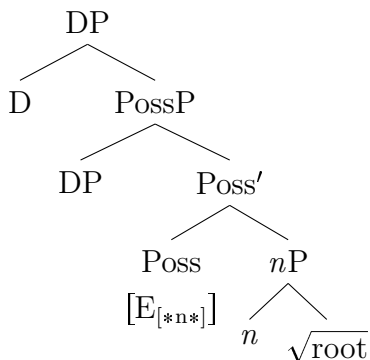
Let us start with the absence of c-command. According to (61), Agree applies only if a probe c-commands a goal, but this definition has by now been argued to be too restrictive for various phenomena. There are two prevalent alternatives. One is upward Agree (see Baker (2008), Zeijlstra (2012), Wurmbrand (2012), and Bjorkman & Zeijlstra (2019)), according to which Agree applies if a goal c-commands a probe. Features on n project to nP if the bare phrase structure is postulated, and nP c-commands the Part head, so that agreement (and licensing of ellipsis) can apply by probing upwards. Note that if a modifier is non-branching, the modifier and the nP c-command each other, so that upward Agree can derive agreement on simple modifiers as well. Another option is to allow agreement in spec-head configurations (see Chomsky (1993) and Koopman (2006)). In order to do so, c-command can simply be replaced by m-command; alternatively, probe projection can be assumed (as in Béjar & Rezac (2009), Carstens (2016), and Keine & Dash (2019)). In the first case Part m-commands nP, and in the second case probes are projected to Part′, which c-commands nP. All these options produce the required locality.

As for an argument of the participle, there are again several ways to exclude agreement with it. One possibility is to fix the preferred direction of Agree (see, e.g., Baker (2008), Assmann et al. (2015)), so that upward agreement will be favoured over downward agreement or spec-head agreement – over agreement under c-command. Alternatively, an argument of the participle may be too deeply embedded and not accessible anymore. For example, it is in a complement of another phase head in (89). While this option might turn out to be the simplest one because inaccessibility would follow from independent restrictions on agreement, for now it can be concluded that it would clearly require additional research on the internal structure of complex modifiers.

5.3 Modifiers with ϕ-features

Modifiers marked for definite genitive, dative, or lative cannot show concord inflection under ellipsis. As argued in sections 2.4 and 2.5, they differ from modifiers that are inflected in that they have a distinct set of ϕ-features and hence cannot be heads in extended projection of another noun. I suggest that they are specifiers of dedicated functional projections. A possessor, for example, occupies a specifier of PossP.[11] If the noun is elided, the Poss head bears feature [E], as in (90).

(90)   Possessor as a remnant

```
              DP
            /    \
          D      PossP
               /      \
             DP       Poss'
                     /     \
                  Poss      nP
                 [E_{[*n*]}]  /  \
                            n   √root
```

Modifiers that have their own ϕ-features also cannot agree with a head noun in Russian-type concord languages. Baker (2008) shows that this restriction is due to intervention. He assumes that lexical categories are embedded under the FP shell that is responsible for concord. If the complement of FP is occupied by AP that has no ϕ-features, the probes on the F head can reach the noun. If the complement of FP is occupied by NP, the probes get valued by the features from NP in its complement, concord with the head of the noun phrase is thereby blocked. I follow the spirit but not the letter of this analysis. I have assumed above that unvalued features responsible for concord on adjectives are located on A head, and there is no need for FP above it. If a modifier is not an adjective, but another noun phrase, it should bear the same set of unvalued features that are meant to produce concord. Independently of the exact position of the probes within the modifying DP, they will first encounter the features from within this DP: features on nP in the case of downward probing, features on D in the case of upward probing. This means that they would just duplicate the features that are already present, would not contribute to either morphology or interpretation. For this reason such probes cannot be learned. This explains why modifiers that have their own ϕ-features systematically do not undergo concord.

---

[11]As shown in section 2.1, nominal modifiers that are nouns or postpositional phrases are usually prenominal, but can also appear after the head noun. I tentatively suggest that in such cases a modifier is realized in its base position, as a complement of a noun; it is not moved to a prenominal position.

5.4 Inflection in the verbal domain

Moksha has overt predicative agreement with respect to ϕ-features; see multiple examples above and (91)-(95) here. The conditions on Spell-Out and its ordering before Probe Conversion generate absence of concord exponents in the nominal domain, and all things being equal, it looks as though absence of overt agreement morphology is also predicted in the verbal domain.

(91) Mon luv-an.
      I   read-NPST.1SG
      'I read.'

(92) T^jin^j luv-i.
      you.PL read-NPST.2PL
      'You (pl) read.'

In Moksha, all unvalued features on a nominal modifier always agree with the same noun. Predicative agreement is however different from nominal concord in that case assignment and ϕ-agreement are not tied together. Case assignment does not require presence of ϕ-agreement; cf. assignment of dative or more oblique cases and genitive (the case of the direct object) in non-finite clauses (see (93)). Next, ϕ-agreement can also proceed without case assignment; see (94), where a noun with a genitive case assigned in the embedded clause controls number agreement on a matrix verb.
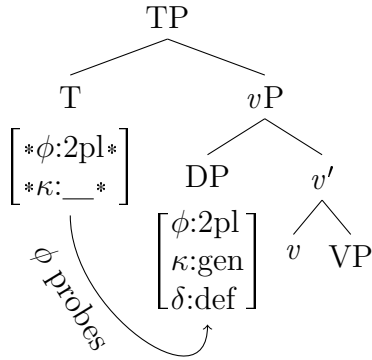
(93) S^jt^jər^j-n^jɛ-s^j   mašt-i   pɛn^jakud-ən^j uš-n^jə-mə.
      girl-DIM-DEF.SG   can-NPST.3[SG]   chimney-GEN fire_up-FREQ-INF
      'A girl can fire up a chimney.'   (Egorova, 2018)

(94) Modamar̥-n^jə-n^j   možnə-t vatka-m-s.
      potato-DEF.PL-GEN can-PL   peel-INF-ILL
      'One can peel potatoes.'   (A. Kozlov p.c.)

Recall from section 4.4 that case originates on the n and a higher head (e.g., T or v) has an unvalued case feature that agrees with the noun. The empirical evidence shows that case assignment and ϕ-agreement on a verb do not necessary co-occur; so I suggest that unvalued case and ϕ-features do not probe together in the clausal domain, as they do in the nominal domain. Agreement in ϕ-features applies first and only then does the unvalued case feature probe.[12] This means that there is an unsatisfied case feature after ϕ-agreement, and conditions for Spell-Out are not met. ϕ-features undergo Probe Conversion, case probes and gets valued. Spell-Out applies right after valuation of the case feature. For this reason, ϕ-agreement is overtly realized on a predicate, and the case feature is not. This is shown in
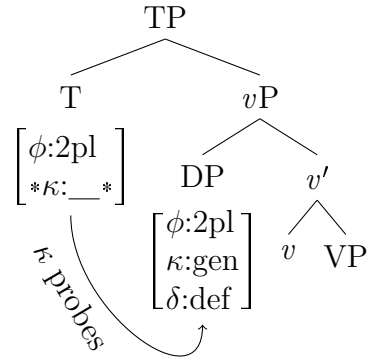
---

[12]Section 2.5 provides data on number agreement on non-verbal predicates. For number exponents to be morphologically realized, case probes should be also directly on a non-verbal predicate. I assume that this is indeed the case; see Matushansky (2019) for arguments against PredP and fn. 4 for cases of non-verbal predication with more clausal structure.
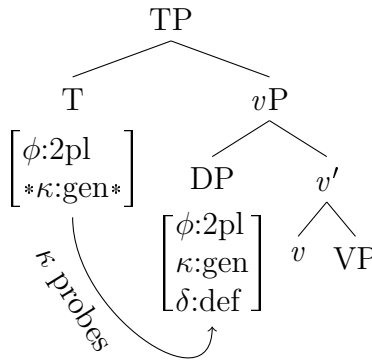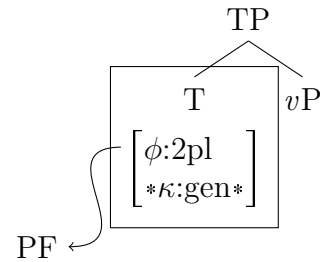
(95)-(98).[13]

(95) ϕ-agreement

$$
\begin{array}{c}
\text{TP} \\
\diagup \quad \diagdown \\
\text{T} \qquad v\text{P} \\
\begin{bmatrix} *\phi\text{:2pl}* \\ *\kappa\text{:\_\_}* \end{bmatrix} \quad \text{DP} \quad v' \\
\begin{bmatrix} \phi\text{:2pl} \\ \kappa\text{:gen} \\ \delta\text{:def} \end{bmatrix} \quad v \quad \text{VP}
\end{array}
$$

ϕ probes

(96) ϕ Conversion

$$
\begin{array}{c}
\text{TP} \\
\diagup \quad \diagdown \\
\text{T} \qquad v\text{P} \\
\begin{bmatrix} \phi\text{:2pl} \\ *\kappa\text{:\_\_}* \end{bmatrix} \quad \text{DP} \quad v' \\
\begin{bmatrix} \phi\text{:2pl} \\ \kappa\text{:gen} \\ \delta\text{:def} \end{bmatrix} \quad v \quad \text{VP}
\end{array}
$$

κ probes

(97) κ-agreement

$$
\begin{array}{c}
\text{TP} \\
\diagup \quad \diagdown \\
\text{T} \qquad v\text{P} \\
\begin{bmatrix} \phi\text{:2pl} \\ *\kappa\text{:gen}* \end{bmatrix} \quad \text{DP} \quad v' \\
\begin{bmatrix} \phi\text{:2pl} \\ \kappa\text{:gen} \\ \delta\text{:def} \end{bmatrix} \quad v \quad \text{VP}
\end{array}
$$

κ probes

(98)   Spell-Out

$$
\begin{array}{c}
\text{TP} \\
\diagup \quad \diagdown \\
\boxed{\text{T} \quad} v\text{P} \\
\begin{bmatrix} \phi\text{:2pl} \\ *\kappa\text{:gen}* \end{bmatrix}
\end{array}
$$

PF

To sum up, different properties of nominal concord in Moksha have been analyzed in this section. In 5.1, the presence of concord exponents only on the linearly last of multiple modifiers has been derived from requirements on ellipsis licensing. In 5.2, it has been shown that branching modifiers can be analyzed under an AP-over-NP structure: A nominal modifier is first combined with its complement and then with a head noun. In 5.3, referential modifiers have been discussed. Being equipped with their own ϕ-features, they cannot agree with the noun and appear in a specifier projection. In 5.4, I have turned to predicative agreement. It is morphologically realized because ϕ and case features probe sequentially in the clausal domain (which is confirmed by the data).

---

[13]If the order of elementary operations is assumed to be determined for the domain (e.g., a phase) rather than for the language in general, there is an alternative account for realization of verbal inflection. In particular, inflection is morphologically realized on the predicate, because Probe Conversion is ordered before Spell-Out in the predicative domain, so that the probes on T are obligatorily converted before it is spelled out and the features are morphologically realized. In this case, the orders of Probe Conversion and Spell-Out are different in the clausal and in the nominal domains in Moksha, and the order in the clausal domain in Moksha is the same as in the nominal domain in Russian.

6 Conclusions

On the basis of original data from Moksha Mordvin, I have proposed a new analysis of a well-known phenomenon: In a language without a regular nominal concord, nominal modifiers are inflected if the noun is elided. I have claimed that this inflection is nominal concord and this type of nominal ellipsis indicates the presence of concord in the language. To capture the fact that concord exponents are not morphologically realized if the noun is present, I have developed an analysis that allows features in the syntax to regularly avoid morphological realization. In particular, a feature is not morphologically realized if it is a valued but not converted probe at the point when Spell-Out applies. A valued probe is not converted before Spell-Out if it acquires a value by last syntactic operation induced by features on the node and if Spell-Out is ordered before Probe Conversion in the language. Both these conditions are met in non-elliptical contexts in Moksha. If the noun is elided, the valuation of concord features are not the last syntactic operation, so that features are converted before Spell-Out and are therefore morphologically realized. Another condition is not met in concord languages like Russian, where concord exponents are always present. In Russian-type languages, Probe Conversion is ordered before Spell-Out. This order ensures that valued probe features are accessible in morphology. If this analysis is on the right track, it has a number of implications for syntactic theory.

First, Spell-Out is local. It applies to a node that has no unsatisfied features, where a feature counts as unsatisfied if it can induce syntactic operations (Agree or Merge).

Second, valuation does not imply realization. Probes are different from inherently valued features for some time after valuation, and valued probes are subject to morphological realization only after Probe Conversion applies to them.

Third, the order of elementary operations can be parameterized. An order between some operations may not be fixed universally, but determined language-specifically. Cross-linguistic variation can arise from different orders of elementary operations.

Fourth, Agree derives concord. Like other cases of feature co-variance, nominal concord results from Agree.

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