Nominal ellipsis reveals concord in Moksha Mordvin

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Abstract

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 phonologically realized and restricted in the same way as regular nominal concord. To account for the distribution of concord exponents, I develop a model that allows features to be present in syntax but avoid realization. In particular, I propose that (i) Spell-Out applies to a node as soon as its Merge and Agree features are satisfied; (ii) Agree features are by default ineligible at PF and need to undergo Probe Conversion in order to get accessible to PF processes. The distribution of features then follows from the respective timing of Spell-Out and Probe Conversion.
Keywords: concord, nominal ellipsis, Moksha Mordvin, Spell-Out, Agree, interpretability, PF, Probe Conversion

1 Introduction

In some languages modifiers generally do not show concord with the noun (as in (1a) but are inflected if the noun is elided (see (1b)):

(1) a. [adjective noun-**infl**] / *[adjective-**infl** noun-**infl**]
b. [adjective-**infl** ~~noun-**infl**~~] / *[adjective ~~noun-**infl**~~]

Inflection under ellipsis is attested in a number of languages; see 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 the idea that a 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.

In this paper, I will present the original data on nominal ellipsis in Moksha Mordvin. On basis on these new data I will 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 thus fall into two types depending on the morphological realization. In languages of the first type, concord exponents are always present (see 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), Ingason & Sigurðsson (2017), and Puškar (2017, 2018) (and pace Pesetsky (2013), 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 invariably feeds PF processes (most importantly, Vocabulary Insertion) in languages like Russian but not in languages like Moksha.

In this paper, I develop a principled approach to how features that are present in syntax can be inaccessible at PF. Building on the principle of Full Interpretation introduced by Chomsky (1986), I explore the question of (un)interpretability at PF and come to a conclusion that probe features are best viewed as ineligible by default but can undergo Probe Conversion that deletes diacritics that prevent their interpretation at PF. Probe Conversion counterfeeds Spell-Out under certain conditions, and then probe features do not receive phonological realization.

This paper is structured as follows. Section 2 presents an empirical part of my research. Here I discuss the distribution of inflection under nominal ellipsis in Moksha Mordvin. Section 3 shows that the existing approaches to the phenomenon do not cover a full range of the Moksha data. In section 4, I develop an analysis that captures of concord exponents. Section 5 shows how different properties of nominal ellipsis in Moksha can be derived under this analysis. Finally, section 6 contains conclusions, implications, and further extensions of the proposal.

2 Data

This section starts with a background on Moksha nominal morphology, and then proceeds to nominal ellipsis, primarily focusing on inflection that appears on a nominal modifier in elliptical contexts. It shows 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 mainly come from my fieldwork that I conducted in the villages Lesnoje Tsibajevo and Lesnoje Ardashevo (Temnikovsky District) in 2015-2019. Elicitation was used for data collection.

Nouns in Moksha are inflected for case, definiteness, and number. If the noun is marked for definiteness, it has three case forms: nominative, genitive, and dative. Number is distinguished in all these forms. Definiteness fuses with case in the singular and with number 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. Nouns can be also inflected for person and in some forms for number of the possessor. 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 exponent is placed only on the modifier or on both the noun and the modifier, ungrammaticality arises. This is shown in (3a) for an adjectival modifier and in (3b) for a numeral.[1]

(3) a. ravžə pinʲə-t / *ravžə-t pinʲə-t / *ravžə-t pinʲə
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'

Nominal modifiers like adjectives, numerals and demonstratives are obligatorily prenominal; 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 usually precede a noun, but can also follow it:

(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 obligatory follow nouns; 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; see (7a). The same case is used for direct objects; see (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 (see (8a)) and do not agree with unmarked direct objects (see (8b)).

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

[1]If a noun phrase is in the nominative, a few native speakers allow to double number on indefinite pronouns. 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 akšə-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] / *[tʲɛ-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-t^{j} akšə-t^{j}].
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. The data come from the participles and their arguments. Generally, in Moksha an argument of the participle can precede (see (14a)) or follow it (see (14b)).

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

b. Mon rama-jn^{j}ə [ti-f keluv-ən^{j} lopa-stə
I buy-PST.3.O.1SG.S make-PTCP.RES birch-GEN leaf-EL
nastojka-t^{j}].
liquor-DEF.SG.GEN
'I bought the liquor made from birch leafs.'

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

(15) a. 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
'{Context: Which liquor did you buy?} I bought the [liquor] made from birch leafs.'

b. Mon rama-jn^{j}ə [ti-f-t^{j} keluv-ən^{j} lopa-stə] /
I buy-PST.3.O.1SG.S make-PTCP.RES-DEF.SG.GEN birch-GEN leaf-EL
*[ti-f keluv-ən^{j} lopa-stə-t^{j}].
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-jn^{j}ə [keluv-ən^{j} lopa-stə-t^{j}].
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, this 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, it assigns a Θ-role to its argument; see (17). In the antecedent sentence, we can see that the noun *azks* 'novel' is the nominalization of the verb 'say'. Being elided in the answer sentence, this noun assigns Agent Θ-role to its argument: Pushkin is interpreted as the writer, not as the possessor of the novel.

(17) Kona az-ks-stə ton muj-it^{j} ošibka-t^{j}?
which say-NZR-EL you find-PST.3.O.2SG.S mistake-DEF.SG.GEN?
Mon muj-in^{j}ə [Puškən-ən^{j} od-stə].
I find-PST.3.O.1SG.S Pushkin-GEN new-EL
'In which novel did you find a mistake? I found in the new [novel] by Pushkin.'

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 Kat^{j}a rama-z^{j}ə [
I NEG know-NPST.3SG.O.1SG.S who.GEN about Katia buy-PST.3SG.O.3SG.S
s^{j}ɛ 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), and it is also grammatical under ellipsis.

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

b. [T^{j}ɛ zadača-t^{j} esə kuvaka az-ən-kšn^{j}ə-ma-s^{j}]
this problem-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 problem didn't help.'

c. [Tʲɛ zadača-tʲ esə kuvaka-sʲ] izʲ pomaga.
this problem-DEF.SG.GEN in.IN long-DEF.SG NEG.PST[3SG] help.CN
'{Context: Did you read explanations?} The long [explanation] of this problem didn't help.'

2.4 Restrictions on remnants

In Moksha, the ability to show inflection 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 the indefinite declension, caritive, elative, and equative. Inflection on adjectives, numerals, demonstratives, and participles is already illustrated in the 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 the indefinite declension is inflected in an elliptical context.[2] The case of an elided noun is ablative in (21a) because ingestive verbs ('eat' in this example) require such marking for its argument (see Toldova (2018, 556)).

(21) a. Mon jaɾ̥c-an [sasʲednʲɛj 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 wool-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'.

[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 used when a genitive exponent is not word-final.

Inflection on a modifier with an equative marking is given in (23).

(23) A tʲɛdʲɛ-zʲə nʲɛj-əzʲə katə-ška-tʲ
but mother-1SG.POSS.SG see-PST.3SG.O.3SG.S cat-EQU-DEF.SG.GEN
'{Context: I saw the small rat,} and my mother saw the [rat] the size of the cat.'

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 (24) shows the ungrammaticality of inflection on a modifier marked for genitive of the definite declension.

(24) Mon maks-inʲə [tʲɛ ava-tʲ brad-əncti] /
I give-PST.3.O.1SG.S this woman-DEF.SG.GEN brother-3SG.POSS.SG.DAT
*[tʲɛ ava-tʲ-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 (25) shows that inflection under ellipsis is ruled out for modifiers marked for dative of the definite declension.

(25) Mon nʲɛj-sa [virʲ-tʲi ki-tʲ] /
I see-NPST.3SG.O.1SG.S forest-DEF.SG.DAT road-DEF.SG.GEN
* [virʲ-tʲi-tʲ].
's forest-DEF.SG.DAT-DEF.SG.GEN
'{Context: Which road do you see?} I see [the road] to the forest.'

Example (26) illustrates this restriction for modifiers marked for dative of the indefinite declension.

(26) Mon juma-ft-inʲə [kodamə bədʲə sʲtʲərʲ-nʲɛ-nʲdʲi
I disappear-CAUS-PST.3.O.1.SG.S which INDEF girl-DIM-DAT
kazʲnʲə-tʲ] / *[sʲtʲərʲ-nʲɛ-nʲdʲi-tʲ].
present-DEF.SG.GEN girl-DIM-DAT-DEF.SG.GEN
'{Context: Which present did you loose?} I lost [a present] for some girl.'

[3]Another modifier that potentially belongs to this group is a 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.

(i) Mon nɛj-inʲə anʲcʲək [jaksʲtʲərʲ vazʲ-nʲɛ-sə cʲora-nʲɛ-tʲ] /
I see-PST.3.O.1SG.S only red hat-DIM-IN boy-DIM-DEF.SG.GEN
%[vazʲ-nʲɛ-sə-tʲ].
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.'

Modifier marked for lative also cannot show inflection; see (27).

(27) Val-əz^{j}ə [vir^{j}-i ki-t^{j}] / *[vir^{j}-i-t^{j}].
flood-PST.3SG.O.3SG.S forest-LAT road-DEF.SG.GEN forest-LAT-DEF.SG.GEN
'{Context: Which road is flooded?} The [road] to the forest is flooded.'

Modifiers that are not inflected for nominal features can license nominal ellipsis; see (28) and (29). The elided noun is in the subject position in (28); 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 when the modifier is not inflected.

(28) ... a [vir^{j}-t^{j}i] (/ *vir^{j}-t^{j}i-t) ul^{j}-s^{j}-t^{j} t^{j}ɛjn^{j}ɛ.
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 (29). The object agreement on the verb indicates that the elided noun has the genitive case feature. The stranded modifier is marked for the lative, i.e., the case to which inflection of an elided noun does not attach. Ellipsis of the head noun is allowed without an additional inflection on the modifier.

(29) Son a̰rt-əz^{j}ə [sportzal-u] (/ *sportzal-u-t^{j}) 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 (30). In this example, the remaining modifier 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.

(30) ??Mon n^{j}ɛj-sa [t^{j}ɛ ava-t^{j}].
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 agreeing and non-agreeing modifiers 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 particular, 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. Thus, such modifiers as adjectives or numerals clearly do not have their own ϕ-features, and they get inflected under ellipsis, while modifiers such as definite genitive or lative are nouns with their own ϕ-features, and they cannot show inflection. Unmarked nouns as well as modifiers marked for indefinite genitive, caritive, elative, and equative 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 showing that in fact they do not have ϕ-features of their own.

Let us start with unmarked nouns. As shown in Pleshak & Kholodilova (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 (31).

(31) 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, independently of whether it bears a corresponding definiteness inflection; see (32). The presence of the demonstrative is grammatical only if it modifies the head noun 'girl'. This suggests that unmarked nouns are bare nouns without nominal features.

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

As for indefinite genitive, caritive, elative, and equative, they behave differently from the case forms and I suggest that they lack ϕ-features and are in fact attributivizers syncretic to the corresponding case affixes. The peculiarity of some of these forms is reflected in the existing literature on Moksha: The case status of the caritive case is discussed and questioned 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 syncretic 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 (33), and turn them

into nominal modifiers, as in (34).

(33) Son sa-sʲ isʲak.
she come-PST.3[SG] yesterday
'She came yesterday.'

(34) [isʲak-ənʲ kši-tʲ]
yesterday-GEN bread-DEF.SG.GEN
'yesterday's bread.'

Similarly, the use of elative in adnominal position is somewhat different. In particular, the elative attributivizer in (35a) marks cloth, but such a use is ungrammatical for the elative case; see (35b).

(35) 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 senʲəm panar-stə.
girl-DIM-DEF.SG come-PST.3[SG] blue dress-EL
'The girl come in the blue dress.'

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. If inflection in elliptical contexts is indeed restricted by the presence of features on nominal modifier, it is predicted to correlate 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 (36)-(37) (see also Kholodilova (2016, 2018) for more details).

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

(37) 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 (38). Agreement is ruled out if the noun is marked for definiteness (see (39)) or possessivity

(see (40)).[4]

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

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

(40) 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, elative, or equative. Example (41) illustrates number agreement on the non-verbal predicate marked by the genitive of the indefinite declension.

(41) 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 (42).

(42) 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 (43), and it also shows number agreement.

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

Finally, plural agreement on the equative form in given in (44).

(44) Tʲɛ krisa-tʲnʲə katə-ška-t.
this rat-DEF.PL cat-PL

[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.'

'These rats are the size of a cat.'

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 (45) illustrates this restriction for the genitive of the definite declension.

(45) Kolʲəndʲəma-tʲnʲə tʲɛ stʲərʲ-nʲɛ-tʲ / *sʲtʲərʲ-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 (46) and (47) show ungrammaticality of number agreement on the non-verbal predicates marked by the dative of the definite and the indefinite declension correspondingly.

(46) Kolʲəndʲəma-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.'

(47) 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 (48), and the number agreement is ruled out:

(48) 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 (49) below. The table 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.

(49) 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
Equative	YES	YES
Unmarked noun	YES	YES
Definite genitive	NO	NO
Definite dative	NO	NO
Indefinite dative	NO	NO
Lative	NO	NO

Before I will turn to the consequences of the data in (49) 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 is followed by the unpronounced noun is used to explain the difference in 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 the 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) 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; see, for instance, 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 predicative contexts in Moksha. First, as shown in (35) above, elative in the adnominal position can be used to mark clothes, but such a use is ungrammatical otherwise. It is also illicit in the predicative position (see (50)). This restriction is unexpected if the elative form in the predicative position modifies a silent noun.

(50) *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 under ellipsis. In (51), the noun in the predicative position shows plural and definiteness. This is presumably a realization of features of the noun rather than agreement with the subject. The adjective in (52), which differs from (51) 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.

(51) Sʲinʲ cʲebɛrʲ doktər̥-nʲə.
they good doctor-DEF.PL
'They are the good doctors.'

(52) Sʲinʲ cʲebɛr̥ʲ-tʲ / *cʲebɛr̥ʲ-nʲə.
they good-PL good-DEF.PL
'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 (49) confirm absence of ϕ-features on modifiers marked for indefinite genitive, caritive, elative, and equative.

To sum up the empirical part, 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, that that shows 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 and show that none of them derives the full range of the 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 projections, and the adjective in its specifier then obligatorily agrees with

it. 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 contains a full-fledged nominal structure. It has been shown that the elided noun can assign a Θ-role to its argument. Since *pro* is just a null pronoun, it does not have an argument structure and it would not be able to assign an Agent Θ-role. It has also been shown that case and postpostion that come from the verbal structure of the nominalization are present under ellipsis. *Pro* does not contain any verbal structure, so that such marking is predicted to be ungrammatical if the position were taken by *pro*.

Thus, the ellipsis site cannot be occupied by *pro*. This is problematic for the analysis proposed by Kester because the special properties attributed to *pro*, particularly the obligatory agreement with it – derive the exceptional agreement under ellipsis. 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 Nominalization

Bošković & Şener (2014) consider data from Turkish, where, as in Moksha, nominal modifiers are unmarked in the presence of a noun and are inflected if a noun is absent. They suggest that some of these cases are due to ellipsis, while others result from nominalization. Classifiers that are introduced in a separate projection above NP can trigger ellipsis of the noun phrase. In contrast, adjectives that are in NP specifiers 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 nominalized and therefore marked for nominal features. Nominalization involves a type shifting operation that turns 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. However, such an assumption is untenable given the data in section 2.3. As discussed above, they show that an elided noun exhibits connectivity with respect to the rest of the noun phrase (e.g., an elided noun can assign a Θ-role and case to its arguments). This means that an elided noun must be present

in syntax, which excludes the nominalization approach.

Another option is to assume that inflected 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 analysis of how inflection appears on classifiers, so that inflection in elliptical context remains unaccounted in Turkish as well as in Moksha.

3.3 Cliticization

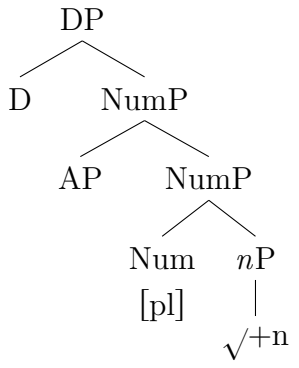
Since affixes that appear on the remnant of the elided noun generally look like affixes that would be attached to the noun, it seems natural to assume that these are the same affixes. If the noun has been present, they are expressed on the noun. If the noun is elided, they lean on another element. This 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 show that both number and case affixes appear on the remnant (see (53)), Saab & Lipták limit their analysis to number.

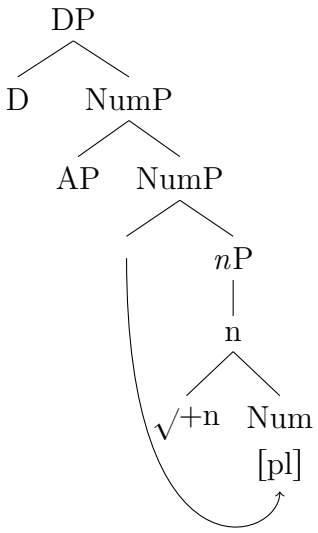
(53) Mari a régi kis ház-ak-at látta. Én az új nagy-[__]*(-ok-at).
Mari the old small house-PL-ACC saw I the new big-PL-ACC
'Mari saw the old small houses. I saw the new big ones.' (Saab & Lipták, 2016, 84)

They assume the structure of the noun phrase in (54). The number feature originates in NumP. It usually attaches to the noun via post-syntactic Lowering (Embick & Noyer, 2001), as in (55). Saab & Lipták propose that ellipsis indicates 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 (56).

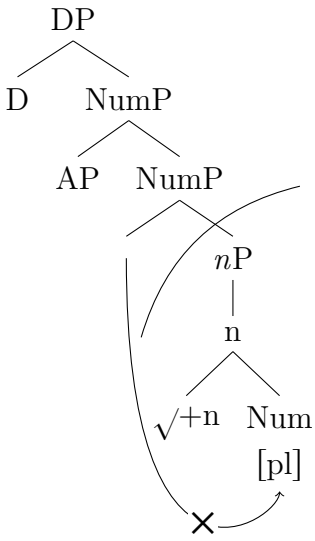
(54) DP structure



(55) Num-to-n Lowering



(56) Ellipsis



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 (57).

(57)

Linearization	→ Local Disclocation	→ 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 (58). 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.

(58) 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 leafs.

Second, the cliticization analysis as it stands over-generates inflection on all nominal modifiers. 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 with ϕ-features cannot show inflection. Clearly, this type of evidence does not play a role in the data that Saab & Lipták set out to account for; and one might think that their analysis may be easily extended by adding of some restrictions on the affix hosts. 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, so that 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 (59), where attachment of the plural suffix to the case suffix is ungrammatical.

(59) [Sportzal-u] / *[sportzal-uf-t aɾ̥t-f-t] sɛngɛrʲɛ kraska-sə.
gym-LAT gym-LAT-PL paint-PTCP.RES-PL 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 that 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 but even if it is, 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 (60).

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

Third and finally, the analysis predicts examples like (28)-(29) above ((29) is repeated here as (61)) to be ungrammatical. They show that the modifiers without inflection can license

ellipsis.

(61) Son a̰rt-əzʲə [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 are not suffixed to another host. Potentially this could be the case because the 'stranded' features configuration was resolved 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 such as Spanish. This solution cannot be adopted for Moksha because the modifier in (61) 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. To sum up, in (61) stranded nominal features are not rescued by cliticization (if so, they would appear on the modifier marked for lative) and cannot be deleted because the context for Morphological Ellipsis is not met. Consequently, they must violate the Stranded Affix Filter, and relevant examples are predicted to be ungrammatical.

Another possible reason for absence of inflection on the modifier in (61) was suggested by an anonymous reviewer: The elided constituent is NumP rather than *n*P, as it was proposed for non-agreeing remnants in Spanish (see Saab & Lipták (2016, 96-98)). The number feature is then within the ellipsis site so it is elided together with the noun. However, under assumptions about DP syntax adopted in Saab & Lipták (2016), case and definiteness are in nominal projections above NumP, and they will be still stranded under NumP ellipsis. Thus, contrary to the facts, NumP ellipsis approach predicts that case and definiteness but not number will be realized on a stranded modifier.

I conclude that cliticization cannot be the right analysis of inflecting ellipsis in Moksha. The main counter-evidence comes from branching modifiers and restrictions on inflection with some modifiers. Note also that this type of data has not been investigated in languages that have been derived by cliticization (e.g., Hungarian). 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.[5] 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 smaller parts of 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 Agree ([$*$F: $\square$ $*$]) or 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 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.

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

[5] An analogous argument has been brought forward for covert movement and ellipsis by Kotek & Erlewine (2016) and Abels & Dayal (2017).

A second ingredient of the analysis is Probe Conversion. I assume that probe features differ form other features by their *ability* to trigger Agree operation. Agree can check or supply a value for a feature but it does not alter an inherent potential of a feature to induce syntactic operations. Thus, after Agree applies, probe features remain different from features that do not trigger Agree. I further suggest that this ability to trigger operations defines a feature as properly syntactic and makes it uninterpretable at PF and LF interfaces. According to the principle of Full Interpretation (see Chomsky (1986)), features that are not interpreted at the interface cannot be present there. This means that the ability to trigger syntactic operations must also provide an instruction that such features are not transferred to the interfaces. I will indicate feature's potential to Agree and its ineligibility at the interfaces by asterisk diacritics ([$*$F:$\alpha*$]). At the same time, it is clear that probe features often have phonological realization and therefore have to be present and interpreted at PF. To be phonologically realized, probe features need to undergo Probe Conversion; see (63). Probe Conversion removes the properties that identify a probe feature as illegible at PF. I will represent this by the removal of an asterisk to the left of a probe ([F:$\alpha*$]). After that, former probes are indistinguishable from originally valued features for PF purposes and can be subject to Vocabulary Insertion.

(63) Probe Conversion:
Probe Conversion applies to valued (or checked) Agree features and deletes the diacritics that mark them as ineligible at PF.

The notion of Probe Conversion rests on the assumption that probe features are still different from originally valued features after application of Agree. In the next few paragraphs, I will show that this assumption is not new, and that it is required independently.[6]

According to the principle of Full Interpretation introduced by Chomsky (1986), each element present at the interface (PF or LF) must have an interpretation there. Applied to LF, this means that features not contributing to the semantic interpretation must be stripped away before a syntactic object is passed to the interface. Uninterpretability is however a property at the interface; it is per se not available in syntax. Chomsky (1995) suggests that the absence of a value is a syntactic correlate of uninterpretability at LF: Features that enter the derivation unvalued are uninterpretable at LF and must be deleted before Transfer. This deletion should apply immediately upon valuation because after that the distinction will be lost, and yet valued and deleted features must be accessible in syntax and morphology. This leads to the conclusion that this deletion is not the same as erasure (see Chomsky (1995), Chomsky (2000)). It is in fact just a diacritic that distinguishes features valued or checked in the course of the derivation from features that are inherently valued.

[6] I am grateful to an anonymous reviewer for raising this issue.

A different solution to the problem posed by the necessity to delete uninterpretable features was explored in Chomsky's later work (see Chomsky (2004), Chomsky (2008), see also Epstein & Seely (2002)). There, all uninterpretable features are introduced on the phase heads (C, v*) and are then inherited by lower projections. Valuation applies simultaneously with Transfer, so that there is no need for additional diacritics that would keep former probes identifiable between valuation and Transfer. However, this analysis cannot correctly account for deletion of uninterpretable features in a rather sizable amount of cases; see Epstein et al. (2010, 2012), Obata & Epstein (2011). First, as pointed out by Richards (2007), it precludes the presence of uninterpretable features on phase heads and in their specifiers: This part of the structure is only transferred with a higher phase, so that any uninterpretable feature present there will be valued long before Transfer and its distinction from an interpretable feature will be lost. Natural languages have phenomena that require uninterpretable features on phase heads. These include reflexes of successive cyclic movement that often result from agreement between a phase head and an element moving through its specifier, complementizer agreement, object agreement (assuming its locus is *v*; see Béjar & Rezac (2009)), and agreement on articles and other D elements (assuming DP is a phase; see Svenonius (2004)). Second, this solution also cannot handle uninterpretable features on elements that agree within a current phase and then move out of it. One instance of such a movement is T-to-C movement. Finally, simultaneous application of all operations on the phase level excludes feeding relations between them, and it has been shown that such relations exist; see, e.g., Kučerova (2007) on object shift feeding agreement with a lower noun phase.

To sum up, the simultaneity of valuation and Transfer does not fully resolve the (un)-interpetability problem and marking of uninterpretable features by diacritics remains the only valid solution. I conclude that to avoid uninterpretable features at LF and satisfy the principle of Full Interpretation, probe features must have a marking in syntax that does not allow them to be transferred to LF (see Epstein et al. (2010, 2012) for the same conclusion). I propose that this marking is not inserted after Agree applies, but it is a general capacity to trigger Agree that distinguishes probe features from features that are originally valued.[7] I further suggest that this renders a feature uninterpretable at the LF as well as at the PF interface and prevents it from entering both interfaces.

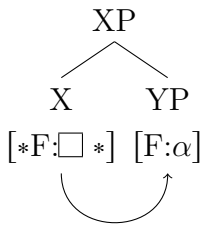
An argument for PF uninterpretability of features that trigger Agree or more generally features that trigger syntactic operations comes from an observation that these features are postulated in syntax more frequently than they are actually realized. First, features that

[7]Chomsky (2000) motivates Agree by the need to delete uninterpretable features before LF. Under the analysis developed in this paper, it is the ability to trigger Agree that identifies features as ineligible at the interfaces so that the motivation for existence of Agree as a syntactic operation can be essentially the same as in Chomsky's approach. As for the application of Agree in individual derivations, it is motivated by Spell-Out. According to (62), a node can be spelled out only after Agree. If Agree does not apply, Spell-Out also does not apply, and a derivation has no output.

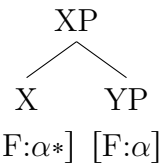
trigger external and internal Merge are not subject to realization. Second, Agree is often used for licensing; see, for instance, Béjar & Rezac (2003), Rezac (2008) on a requirement for features like [participant] to be licensed or Vergnaud (2008/1977), Chomsky (1981, 49) on case licensing for nouns that is also in force in languages without an overt case morphology.[8] I hypothesize that both non-realization of Merge features and restricted realization of probe features are due to uninterpretability of the operation inducing features at PF. In cases where there is a phonological realization of a probe feature, it means that it underwent Probe Conversion (see (63)) before Spell-Out.

Let us have a look at the derivation. In (64), the head X has the unvalued probe that agrees with the goal in its c-command domain. As mentioned above, I use the asterisk symbols to indicate probe features. In (65), the probe is valued. Instead of introducing a rather suspicious distinction between deletion and erasure, I keep the asterisk symbols as diacritics that single out valued probes. Here they mark uninterpretability at both LF and PF, but these properties do not always coincide: After valuation, the conditions for the application of Probe Conversion are met, so that it applies to the valued probe [$*$F:$\alpha*$] and deletes the properties that make the probe illegitimate at PF. Since PF is traditionally depicted as the left branch on the Y-model, the deletion of the PF-related properties is mnemonically indicated by the removal of the asterisk to the left of the feature. The right asterisk is preserved as a marker of the uninterpretability at LF. This is shown in (66).

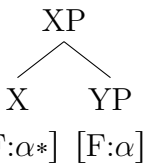
(64) Agree



(65) Valuation



(66) Probe Conversion



Recall that according to (62), Spell-Out applies when all features on a syntactic node are satisfied. In (65), probe [$*$F:$\alpha*$] is valued and therefore satisfied. This means that Spell-Out applies to X at this stage. Feature [$*$F:$\alpha*$] is however not yet converted and cannot be present at PF. Although F is converted at the next stage of the derivation (see (66)), node X has already been spelled out by then. Thus, conversion comes too late to feed (i.e., counterfeeds) Vocabulary Insertion. This allows features to be accessible in syntax, but inaccessible at PF, and corresponds to nominal concord in Moksha, where concord features are normally exempt from realization.[9]

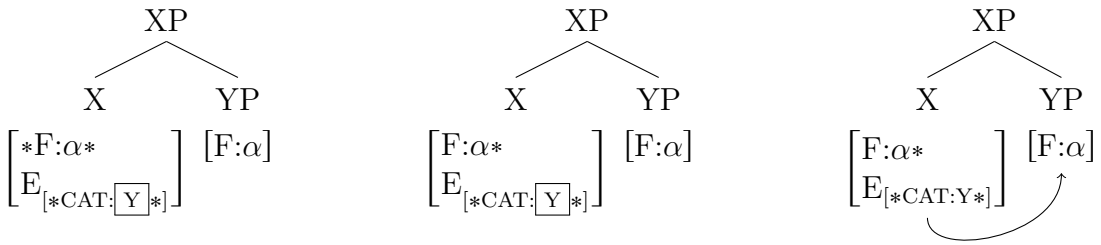
[8] In section 4.4, I assume that nouns have valued case features, while heads like v or T have case probes so that it is the later that can be viewed as being licensed by Agree.

[9] Since derivations succeed independently of whether probe features are converted before Spell-Out, an anonymous reviewer asks what motivates Probe Conversion in the first place. Under current assumptions, Probe Conversion is what enables the presence of agreement morphology. I tentatively suggest that existence

The structures in (67)-(69) present the case when probe features are phonologically realized. Here, the probe feature on X is followed by another unsatisfied feature. Since agreement is realized under ellipsis in Moksha, I use the [E]-feature in this example. Following Merchant (2001, 2005) (see also Aelbrecht (2011)), [E]-features responsible for different types of ellipsis have different feature specifications. Here I assume a minimally required feature specification of [E] that triggers nominal ellipsis: It has the unchecked nominal feature $[\mathrm{E}_{[*\mathrm{CAT:}\boxed{\mathrm{N}}*]}]$ that ensures the local presence of a nominal constituent that will be elided later. Thus, syntactic licensing of ellipsis is understood as checking of the sub-feature on [E]. Ellipsis of the noun is then deletion (or non-insertion) of phonological material at PF, for which the morpho-phonological side of [E] is responsible.

In (67), the first feature on X ($[*\mathrm{F}{:}\alpha*]$) is already valued, so that Probe Conversion can apply to it in the next step, see (68). After this, the operations associated with this feature are exhausted and the derivation moves on to the next unsatisfied feature on X ($[\mathrm{E}_{[*\mathrm{CAT:}\boxed{\mathrm{Y}}*]}]$). The categorial sub-feature on [E] is checked in (69). Next, X has no unsatisfied features anymore, and Spell-Out applies to it. At this stage, the first feature [F] is already converted and therefore becomes subject to Vocabulary Insertion.[10]

(67) After valuation (68) Probe Conversion (69) [E]-licensing



This opens up a new approach to the emergence of concord inflection under nominal ellipsis. Concord features are present, but do not receive phonological realization in the presence of the noun because Spell-Out applies before probes are converted and get accessible to PF. Exponents are realized if the noun is elided because concord probes are followed by another unsatisfied feature. Its presence prevents Spell-Out from applying immediately after Agree and valuation of concord features, allowing them to be converted first.

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. Lan-

of Probe Conversion should be motivated by third factor principles that require information that is necessary for communication to be present.

[10]Here one might raise a question whether Probe Conversion applies if it counterfeeds Spell-Out and has no effect on realization. The definition of Probe Conversion that would lead to its non-application in such cases will have to be more complex. Therefore, the null hypothesis is that Probe Conversion does apply vacuously.

guages 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, and on the basis of currently available data other languages with inflecting ellipsis (e.g., Hungarian and Turkish) belong to this type as well.

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.

In particular, after the last probe feature is satisfied, the conditions for both Spell-Out (because all features are satisfied) and Probe Conversion (because there is a valued but unconverted feature) are met. In the derivations given above, Spell-Out applies first and this generates variation in the realization of nominal concord in Moksha-type languages. In Russian-type languages, on the other hand, Probe Conversion applies first, so that concord invariably feeds realization.

The two types of languages with nominal concord and the orders of Probe Conversion and Spell-Out that correspond to them are summarized in (70).[11]

(70) Morphological realization of concord exponents

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

4.3 Derivations

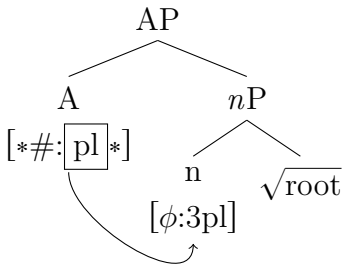
By going through some sample derivations I show that the proposal correctly derives the concord patterns in (70). For expository purposes the discussion in this section is limited to number concord (see 4.4 for case concord). I assume that ϕ-features originate in a functional projection above the root (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

[11] There are languages that do not show concord in the presence of the noun and also do not show it under ellipsis. An anonymous reviewer wonders whether they can be subsumed under the current analysis so that they also have concord probes, Spell-Out applies before Probe Conversion, but an additional [E]-feature does not create a window when concord probes can be converted before Spell-Out. This can be implemented by assuming that licensing of the [E]-feature applies simultaneously with valuation of concord probes. Such analysis however contradicts section 5.4, where I suggest that if features on one node not always co-occur, then they also do not probe together. More generally, if a language has no evidence for nominal concord, then I believe there is no need to postulate concord probes.

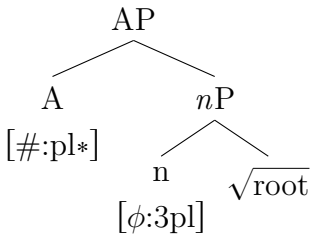
projections (e.g., #P, πP) that host the features. More importantly, I assume an AP-over-NP structure (see, e.g., Abney (1987), Bošković (2005), and Murphy (2018)). A notable challenge for this structure comes from complex adjective phrases, where an adjective is followed by its argument. This issue 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 there is no ellipsis and a language has an order Probe Conversion before Spell-Out. A modifier (an adjective in the structures below) enters the derivation with an unvalued number feature. I represent simple adjectives as A heads. Alternatively, adjectives can be analyzed as *a* head attached to a root (akin to *n*+root). In that case, *a* will have concord probes. In (71), the number probe agrees and gets its value. After this, all features on A are satisfied, but since Conversion is ordered before Spell-Out, the valued probe is converted first. This is shown in (72). The node A undergoes Spell-Out in the following step and the number probe is already converted by then; see (73). This derives overt concord in non-elliptical contexts in Russian-type languages.

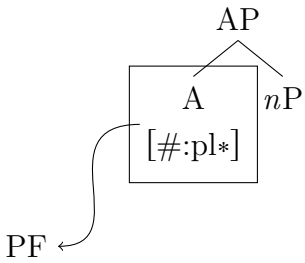
(71) Step I: Agree + Valuation



(72) Step II: Probe Conversion



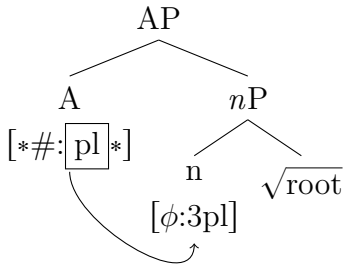
(73) Step III: Spell-Out



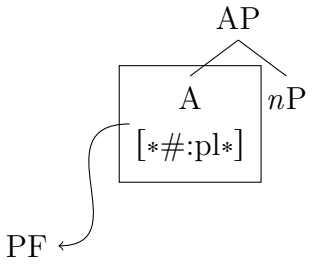
Scenario 2: If a language has the reverse order of operations, i.e., Spell-out applies before Probe Conversion, and there is no ellipsis, nominal concord is not realized overtly. A nominal modifier has the probe responsible for concord; it probes and gets a value; see (74). There are no unsatisfied features on the node after this, so that Spell-Out applies; see (75). The valued probe is converted only after Spell-Out; see (76). This generates an absence of concord exponents in non-elliptical contexts in Moksha-type languages.[12]

[12] An anonymous reviewer notes that a node with the [E]-feature and the elided constituent are not spelled out together. This means that at PF the node with [E] must be integrated with structure spelled out earlier to carry out ellipsis. This issue is also present under the standard assumption that *v*P and CP are Spell-Out domains. In sluicing, [E] on the C head leads to the ellipsis of the material within *v*P that has been spelled out earlier. Thus, the local application of the Spell-Out does not restrict the ellipsis to deletion as opposed to non-insertion of vocabulary items. The choice between these options depends on the timing of Vocabulary Insertion with respect to other operations at PF and is orthogonal to the size of the Spell-Out domains.

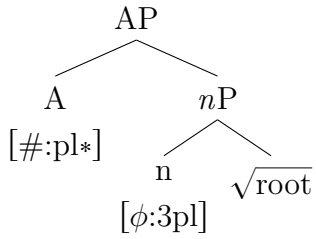
(74) Step I: Agree + Valuation



(75) Step II: Spell-Out

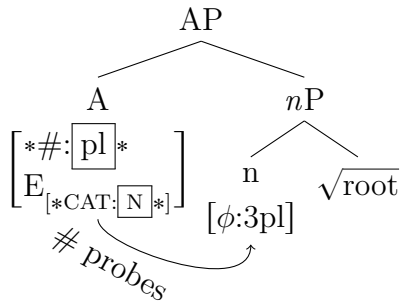


(76) Step III: Probe Conversion

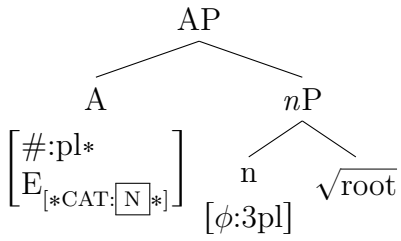


Scenario 3: Suppose now that a noun is elided and Probe Conversion is ordered before Spell-Out. An adjective has an unvalued number feature and feature $[\mathrm{E}_{[*\mathrm{CAT:}\boxed{\mathrm{N}}*]}]$ with unchecked categorial sub-feature. Number agreement applies first and #-probe gets a value; see (77). Next, the number probe is converted; see (78). After this, [E] checks its sub-feature against nP; see (79). Spell-Out applies at the step given in (80). At this point, number concord probe is valued and converted, which generates overt concord inflection under ellipsis in Russian-type languages. Note that the [E]-feature is also present at PF and this results in non-realization of nP. There is however no Vocabulary Insertion rule that matches [E]-feature to any lexical material, so that the categorial sub-feature on it is also not reflected in realization.

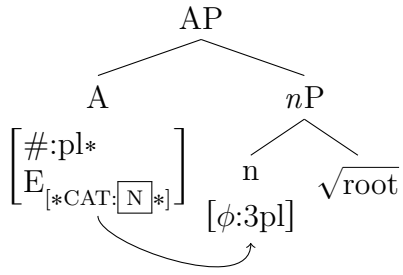
(77) Step I: Agree + Valuation



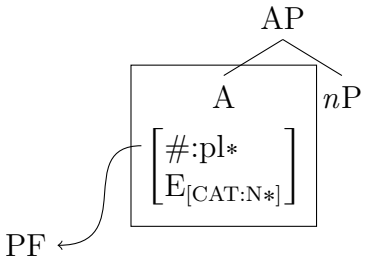
(78) Step II: Probe Conversion



(79) Step III: [E]-licensing



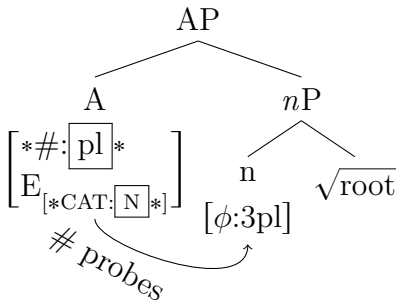
(80) Step IV: Spell-Out



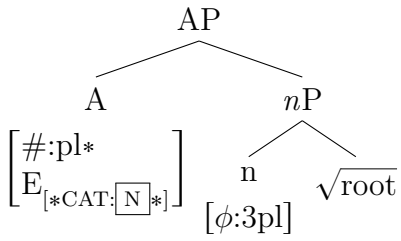
Scenario 4: The last possible combination of parameters is the elliptical context and the order of Spell-Out before Probe Conversion. While this order gives absence of concord exponents in the presence of the noun, it yields a different outcome in an elliptical context. In this

case a modifier bears an additional feature [E] that is unsatisfied after #-feature is valued; see (81). For this reason Spell-Out cannot apply at this point. The # probe is converted in the following step; see (82). Next [E] is licensed; see (83). Finally, the adjective undergoes Spell-Out; see (84). This produces overt nominal concord under ellipsis in Moksha-type languages.

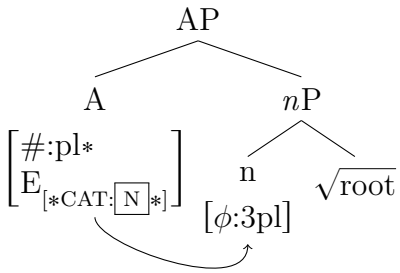
(81) Step I: Agree + Valuation



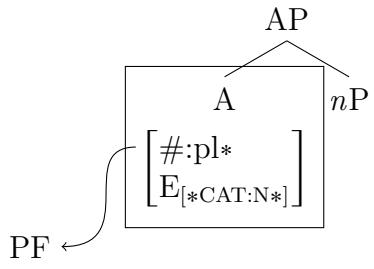
(82) Step II: Probe Conversion



(83) Step III: [E]-licensing



(84) Step IV: Spell-Out



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 (85); see Chomsky (1973, 1995, 2019).

(85) 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 (86) (see Chomsky (2001)) because the complement of the D head should be inaccessible after the next higher phase head v is merged.

(86) 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.[13] 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.

[13]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 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 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

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.

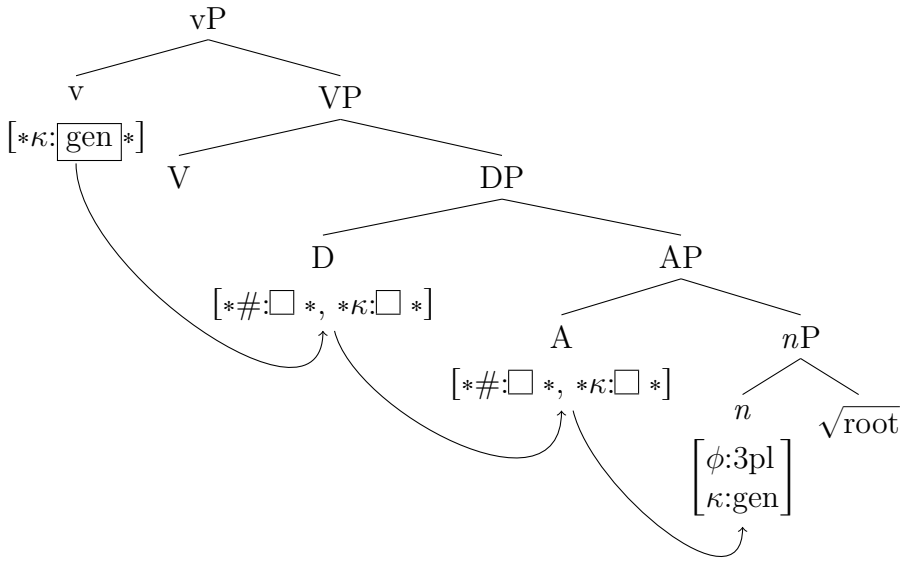
Here I explore a different solution. I suggest that case, like other nominal features, originates within the noun phrase, on n, so that concord for case is not different from number concord. The case probe on a nominal modifier c-commands the valued case feature and agrees with it. Since the number and 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 # 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 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 unchecked case feature. It probes and if the corresponding case feature on a noun does not match, the derivation cannot succeed.

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 (87) 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.

(87) Case and number concord

introduced below a PP/KP, no connection to case is expected.



To sum up, there are two types of concord languages. 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 generally are not inflected. Evidence for concord in such languages comes from 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 realized only after Probe Conversion; and the order between Spell-Out and Probe Conversion varies across languages.

5 Inflection 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 how the analysis covers other restrictions on overt inflection in Moksha. I start with multiple modifiers (5.1), proceed with branching modifiers (5.2), modifiers with an attributivizer and non-agreeing modifiers (5.3), then I turn to overt predicative agreement (5.4). In the final subsection, I discuss two further contexts when inflection appears on a nominal modifier and suggest that they are due to nominal ellipsis as well (5.5).

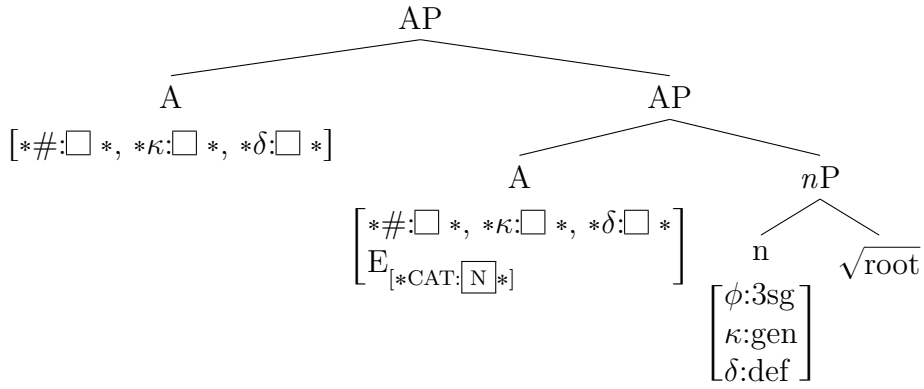
5.1 Multiple modifiers

As shown in section 2.2, concord in Moksha is realized only on the linearly last of multiple remnants, and inflection on other nominal modifiers is ruled out; see (13), repeated as (88).

(88) 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 (88), the adjective *akšə* 'white' is closer to the ellipsis site so that it hosts the [E]-feature that allows for morphological realization of inflection. The higher adjective has the corresponding probes and agrees, but it has no additional feature that would allow to convert valued probes before Spell-Out. The structure is given in (89).[14] The modifier here agrees with respect to number, case, and definiteness (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; see Hankamer & Mikkelsen (2005) and Heck et al. (2009)). It probes simultaneously with case and number. [15]

(89) Multiple modifiers



[14]Note that the reverse order of adjectives from example (88) 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 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.

[15]Pleshak et al. (2017) and Privizentseva (2019) suggest that some of the restrictions on co-occurrence of nominal features discussed in 2.1 arise from the structural difference between DP and KP. This analysis can be implemented under current assumptions, but for simplicity reasons I omit these details here.

5.2 Branching modifiers

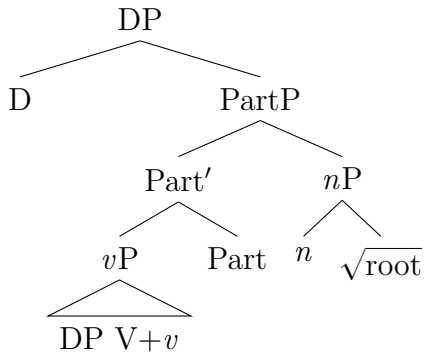
In section 4.3, I have assumed that an adjective takes a noun as a complement; however, as noticed by Alexiadou & Wilder (1998), Cinque (2010, 44-49), and Roehrs (2018) among others, a challenge for this structure comes from internally complex adjectival phrases.[16] In this section I show that branching 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; see (90).

(90) 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 (91). 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.

[16] An anonymous reviewer raises other questions related to the modifier-over-noun structure. First, they suggest that since AP, PartP, nP etc. can all be complements of an adjective, such structure requires very broad selectional restrictions. This is indeed one option. Another possibility is that selection is sensitive to [+N] feature that all these projections share by virtue of being extended nominal projections. Note also that this issue is by no means unique to AP-over-NP; see Adger (2003, 133-158) on optional Neg, Perf, and Prog projections between T and v that lead to the same questions in the verbal domain. Second, the reviewer asks which feature specification [E]-feature has if the elided nominal constituent includes an adjective, i.e., it is AP. Again, since all nominal extended projections have some nominal feature, the categorial feature on [E] can (but does not have to) be the same as with nP ellipsis. Third, the reviewer wonders whether Moksha has the left branch extraction. Moksha allows for extraction of possessors and some arguments of the noun, but the extraction of modifiers that get inflection under ellipsis (adjectives, numerals, demonstratives) is ungrammatical. Even though it is tempting to use this as an argument for the DP-structure adopted here, there are various analysis of extraction out of the noun phrase that are fully compatible with modifier-over-noun structure; see, e.g., remnant movement (Franks & Progovac, 1994), distributed deletion (Fanselow & Ćavar, 2002).

(91) Complex participle phrase



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. Application of Agree only under c-command 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)). 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. Another option is to allow agreement in Spec-Head configurations (see Chomsky (1993) and Koopman (2006)). In order to do so, c-command can 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 favored 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 (91). 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 Agreeing and non-agreeing modifiers

As shown in sections 2.4 and 2.5, modifiers without ϕ-features display concord under ellipsis while modifiers with their own ϕ-features license ellipsis without attachment of inflection. The analysis developed above derives inflection on some modifiers without ϕ-features, in particular, on adjectives and on participles. It easily extends to numerals and demonstratives. These modifiers, like adjectives, have unvalued concord probes and head corresponding nominal projections: NumeralP for numerals and DemP for demonstratives.

Modifiers marked for genitive of the indefinite declension, caritive, elative, or equative pattern with modifiers without ϕ-features and show concord under ellipsis. These suffixes also appear on arguments and modifiers of a verb and can be therefore viewed as case inflection. Properties of these forms in the adnominal position are however different, and another syntactic process – agreement in the predicative position – diagnoses as well that they lack ϕ-features. For these reasons, I suggested that along with indefinite genitive, caritive, elative, and equative cases Moksha has attributivizers with the corresponding meaning. Morphological syncretism between them arises because a single vocabulary item spells out both a case affix and an *a* head. The semantic of the case and the corresponding *a* head have a clear intersection, and a vocabulary insertion rule targets this semantic feature; see, e.g., /ftəmə/ $\leftrightarrow$ CAR.

Attributivizing heads can take different objects as its complement. For instance, attributivizer *nʲ* can appear on adverbs and turn them into nominal modifiers: *isʲak* 'yesterday', *isʲak-ənʲ kši-sʲ* 'yesterday-GEN bread-DEF.SG' (see (33)-(34)). Attributivizers can be also attached to a nominal structure. Evidence for this comes from examples (92) with genitive and (93) with caritive (see also (16), (21)). In these examples, modifiers show concord with an elided noun (that disambiguates between the case and the attributivizer in favor of the later) and are modified by adjectives.

(92) Son molʲ-sʲ [ocʲu oš-ənʲnʲə-tʲi].
he go-PST.3[SG] big city-GEN-DEF.SG.DAT
'{Context: Which doctor did he go to?} He went to the one from a big city.'

(93) Tʲejə-n af mɛlʲ-əzə-n [mazi kartʲinka-ftəmə-sʲ].
PRON.DAT-1SG.POSS NEG wish-ILL-1SG.POSS beautiful picture-CAR-DEF.SG
'{Context: Which book you do not like?} I do not like the one without beautiful pictures.'

Attributivizers cannot be attached to a nominal structure with ϕ-features. As shown in (94), genitive case marker *nʲ* can follow inflection that cumulatively expresses definiteness and plurality. Being a remnant under nominal ellipsis, this form cannot show concord with an elided noun, see (95). This indicates that *nʲ* after definiteness and number is case, and it

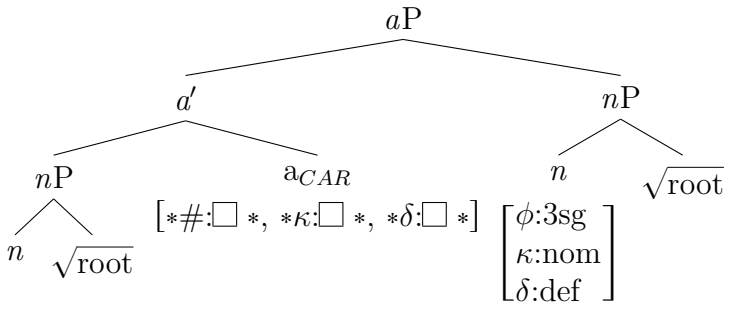
cannot be the attributivizer.

(94) Mon nʲɛj-inʲə tʲɛ alʲɛ-tʲnʲə-nʲ
I see-PST.3.O.1SG.S this man-DEF.PL-GEN
'I saw these men.'

(95) Mon pelʲ-an [tʲɛ alʲɛ-tʲnʲə-nʲ pinʲə-də] / *[tʲɛ
I fear-NPST.1SG this man-DEF.PL-GEN dog-ABL this
alʲɛ-tʲnʲə-nʲnʲə-də]
man-DEF.PL-GEN-DAT
'{Context: Which dog are you afraid of?} I am afraid of a dog of these men.'

I assume that attributivizers in Moksha select for nominal structure without ϕ-features. Head n without ϕ-features is independently attested in a construction with an unmarked noun (see (31)-(32)). (96) illustrates a structure of modifiers with an attributivizer. The a head takes concord probes that agree with a head noun and are overtly realized under ellipsis.

(96) The modifier with the caritive attributivizer



Further questions that can be raised with respect to structures with attributivizers deal with the order of affixes. First, number, case, and definiteness exponents that result from concord with an elided noun follow an attributivizer that is syncretic to case exponents. This creates a configuration that at least on the surface appears to violate restrictions on affix ordering in Moksha: an affix that has the same phonological shape as case inflection is followed, for instance, by a number exponent. Second, concord markers that follow the attributiver are ordered in the same way as the corresponding exponents on nouns.

Answers to both questions must be provided by morphological principles that in general underlie ordering of affixes in a languages. In particular, it has to be ensured here that the order between nominal features is determined by the type of features (i.e., number or case) but is independent of a categorial identity of a head on which these features appear and of specific phonological realizations. Such issues must be addressed by any morphological model, and I will identify some options here. In Distributed Morphology, affix order often follows from the hierarchical structure, and if the structure is not present in the output of

syntax, it can be created by Fission (see Halle & Marantz (1993)). Order of projections can be then determined by morphological principles; e.g., $a \prec$ NUM, DEF, CASE or NUM, DEF $\prec$ CASE.[17] For instance, applied to a node that contains [a_{CAR}, #:sg, κ:dat, δ:indef], Fission must create the following structure: [[a_{CAR}] #:sg, κ:dat, δ:indef]. Fission is not the only option to derive order of affixes in DM. Alternatively, order can be derived by morphological templates (as in Bonet (1991)) or by feature hierarchies (see Noyer (1992)). A different type of approaches to morphological realization is based Optimality Theory and uses alignment constraints to derive linear orders (see Prince & Smolensky (1993)). An account of Moksha data will require a constraint like $a \Leftarrow$NUM/DEF/CASE as well as constraints that derive order between number, definiteness, and case without specifying whether these features are realized on an a or an n head.[18]

Next, let's turn to the analysis of modifiers marked for genitive of the definite declension, dative of the definite declension, dative of the indefinite declension, or lative. These modifiers have their own ϕ-features and do not show concord under ellipsis. Due to the presence of their own ϕ-features, they cannot be heads in extended projections of another noun but depending on their relation to a head noun they can be complements, specifiers, or adjuncts. A noun phrase in (97) illustrates an argument of a noun marked by the dative case. I assume that it is first-merged as a complement of a nominal root and then moves to a specifier of DP to take its usual position before the noun (and modifiers such as adjectives). If a noun is elided, [E]-feature will be located in the D head here. Modifiers marked for dative or lative can be also adjuncts to nP (see (98)). If nP is elided, they can also move to a higher position to escape deletion. Finally, genitive can be used to mark possessors (see (99)). I assume that it

[17] As briefly outlined in section 2.1 and table (2), Moksha nominal morphology shows non-trivial restrictions on co-occurrence and cumulative expression of features. These restrictions are uniform for nouns and modifiers, and I believe that a full morphological analysis on nominal inflection in Moksha goes beyond the scope of this paper.

[18] An anonymous reviewer points out a more complicated case attested in Turkish:

(i) arab-m-da-ki kişi-ler-in
car-POSS1S-LOC-KI person-PL-GEN
'of the people in my car'

(ii) arab-m-da-ki-ler-in
car-POSS1S-LOC-KI-PL-GEN
'of the ones in my car'

In (ii), possessive and locative markers realize features of the modifier, while plural and genitive realize concord with the elided noun. Following Hankamer (2005), *ki* marker that appears between them is an attributivizer, and the noun phrase has the following structure: $[_{aP}\ [_{a'}\ [_{DP}\ [_{nP}\ \sqrt{\text{root}}\ n_1\ ]\ D\ ]\ a\ ]\ [_{nP}\ \sqrt{\text{root}}\ n_2\ ]\ ]$. Inherent features of the modifier are on n_1, *ki* has probes for concord with n_2 head. Ultimately, both sets of features are realized within one phonological word, and then all features of the modifier precede all concord features. This leads to an order where the case marker (of the modifier) precedes the number marker (concord inflection). Such an order is ungrammatical if these markers realize features of a single noun. Existing morphological theories are also well equipped to deal with this type of data. In Distributed Morphology, ordering of affixes is largely based on a hierarchical structure coming from syntax. Features of a modifier are on n_1 that is clearly more deeply embedded then *ki* that has concord probes, i.e., features on n_1 will be realized before the ones on *ki*. In Optimality-Theoretic approaches, the ordering can the derived by a high ranked constraint that requires inherent features to precede concord features or by constraint COHERENCE that is violated if features indexing one DP have a discontinuous realization (see Trommer (2001)). Finally, note that sequential realization of two feature sets from different nouns within one phonological word is widely attested; for instance, it is present in verb forms with subject and object agreement.

is in the specifier of a dedicated functional projection PossP. If the noun is elided, the Poss head bears [E]-feature.

(97) sʲtʲərʲ-ənʲdʲi kazʲnʲə-sʲ
girl-DAT present-DEF.SG
'the present for a girl'

(98) virʲ-i ki
forest-LAT road
'a road to a forest'

(99) Petʲɛ-n pinʲə-də
Petia-GEN dog-ABL
'from Petia's dog'

Due to the presence of ϕ-features of their own, these modifiers cannot agree with a head noun in Moksha as well as in languages with regularly overt nominal concord like Russian. 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 modifiers, and there is no need for FP. If a modifier is a noun phrase and it bears unvalued concord probes, then independently of the exact position of 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 and 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.[19]

[19] An anonymous reviewer suggests an interesting alternative analysis. Under this analysis, the assumptions about the DP-structure are the same as in this paper, i.e., modifiers are heads of extended nominal projections, all nominal features are on the n head. However, modifiers do not have the concord probes and only a nominal root is elided. Under ellipsis, the following algorithm applies. First, n tries to lower to the root, but this fails due to ellipsis. After this, n tries to raise to a higher head. If the higher head is occupied by a nominal modifier, the features are realized there. If there is no lexical material in the head (for instance, it is the Poss head), the derivation turns to another repair operation – deletion of features in n. This simple and elegant proposal nevertheless faces three further challenges. First, as shown in (i), a verb cannot function as an antecedent for ellipsis of a noun with the same root, so that the assumption that the elided constituent is nominal root is unfeasible. Second, given that adjunction to nP is possible, raising of n should be able to cross an adjunct. This wrongly predicts *adjective-infl adjunct* to be grammatical. Third, the analysis requires to keep track of the previously failed operations: After raising, the derivation turns to deletion instead of applying raising again.

(i) Monʲ kɛmə-nʲə urdaz-ijə-sʲ sʲa-də ingəlʲʲə məzʲardə mon arsʲə-nʲ
I.GEN boot-2SG.POSS.PL mud-VB-PST.3[SG] that-ABL before when I understand-PST.1SG
štə tʲasə [tʲaftamə kə̹rka urdaz-sʲ] / *[tʲaftamə kə̹rka-sʲ].
what here such deep mud-DEF such deep-DEF
'My boots got muddy before I realized that there is such a deep mud here.'

5.4 Inflection in the verbal domain

Moksha has overt predicative agreement with respect to ϕ-features; see multiple examples above and (100)-(101) 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.

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

(101) T^{j}in^{j} luv-tadə.
you.PL read-NPST.2PL
'You (pl) read.'

In Moksha, concord probes on a nominal modifier always agree together . 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; see case assignment in non-finite clauses in (102). Φ-agreement can also proceed without case assignment; see (103), where a noun with a genitive case assigned by the infinitive controls number agreement on a modal verb.

(102) S^{j}t^{j}ər^{j}-n^{j}ɛ-s^{j} mašt-i pɛn^{j}akud-ən^{j} uš-n^{j}ə-mə.
girl-DIM-DEF.SG can-NPST.3[SG] chimney-GEN fire_up-FREQ-INF
'A girl can fire up a chimney.' (Egorova, 2018)

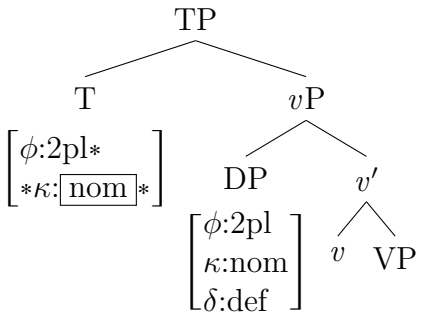
(103) Modamaŗ̥-n^{j}ə-n^{j} možnə-t vatka-m-s.
potato-DEF.PL-GEN can-PL peel-INF-ILL
'One can peel potatoes.' (A. Kozlov p.c.)

Recall from section 4.4 that case originates on the n and a higher head (e.g., T or v) has a case probe 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 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 case probes.[20] This means that there is an unsatisfied case feature after ϕ-agreement, and conditions for Spell-Out are not met. Spell-Out applies after case checking so that ϕ-agreement is overtly realized on a predicate, while case is not. This is shown in (104)-(106).[21]

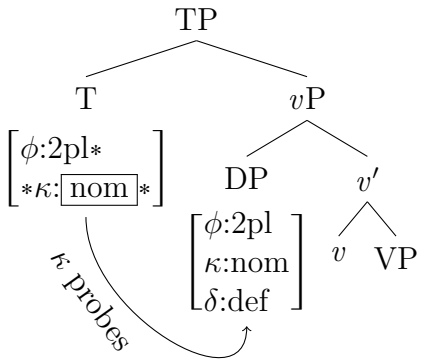
[20]Section 2.5 provides data on number agreement on non-verbal predicates. For number exponents to be realized, case and # should be on the same head, be it PredP or the non-verbal predicate itself.

[21]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 clausal domain.

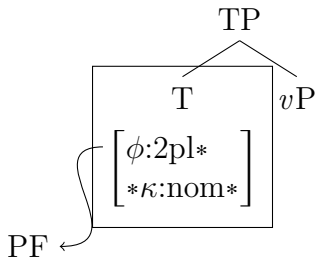
(104) ϕ Conversion



(105) κ-agreement



(106) Spell-Out



5.5 Ellipsis without a linguistic antecedent

Moksha has two further cases when the absence of a noun leads to inflection on a nominal modifier: human construction (or people-deletion; see Pullum (1975)) and exophoric ellipsis. In this section I will show that both can be analyzed as regular nominal ellipsis.

Let's start with the human construction. It is illustrated in (107): The absent noun is interpreted as [+human], and the adjective shows concord inflection.

(107) Koz^{j}ə-t^{j}n^{j}ə sid^{j}əstə juks-n^{j}ə-saz^{j} mez^{j}-stə osnava-s^{j}-t^{j}.
rich-DEF.PL often forget-FREQ-NPST.3.O.3PL.S what-EL start-PST.3-PL
'The rich often forget from what they started.'

While in some languages the human construction is unproductive and the adjective cannot have its own modifiers (see Giannakidou & Stavrou (1999) on Greek), in Moksha it can be modified by adverbs (see (108a)) or have arguments (see (108b)).

(108) a. Pɛk s^{j}ɛr^{j}ɛd^{j}-i̊j-n^{j}ə-n^{j}d^{j}i sakə er^{j}a-m-s samostojatel^{j}nə.
very sick-PTCP.ACT-DEF.PL-DAT hard live-INF-ILL alone
'For very sick people, it's hard to leave by themselves.'

b. Grip-sə s^{j}ɛr^{j}ɛd^{j}-i̊j-n^{j}ə aščˇ-i̊j-t^{j} kucə.
flu-IN sick-PTCP.ACT-DEF.PL be-NPST.3-PL house.IN
'People sick with flu are sitting home.'

A distinctive property of human construction is that an absent noun does not require an antecedent and its meaning is obligatory [+human]. This led to analyses under which human construction does not involve ellipsis but contains some nominal element endowed with a [+human] feature. This null element can be *pro* (see Kester (1996a,b)), *n* nominalizing an adjective in syntax (see Sleeman (2013)), intransitive *n* (see Hankamer (2005), Saab (2010, 2019)), or a regular root with an empty phonological realization (see Panagiotidis (2003)).

I would like to suggest that human construction can be unified with nominal ellipsis. If an elided noun has no antecedent, the interpretation of the ellipsis site is resolved by a default [+human] meaning. The evidence for [+human] being a default comes from other cases of phonologically null nominal structures: Null arguments that have no antecedent in the previous context (so-called arbitrary *pro*) are obligatory [+human] (see Rizzi (1986), Jaeggli (1986)). Similarly, empty elements in non-obligatory control contexts are interpreted as [+human] (see Landau (2013, 230-236)). In the human construction, insertion of a default [+human] interpretation yields a correct semantics if 'human/people' is an elided noun. Since 'human/people' has no arguments and does not assign idiosyncratic cases, connectivity tests that diagnose presence of the syntactic structure in the ellipsis site are inapplicable.

I conclude that inflection on a nominal modifier in the human construction is due to the [E]-feature that appears on the modifier, licenses ellipsis of a noun, and allows Probe Conversion of concord probes to apply before the Spell-Out.[22]

Another construction where a noun can be absent without an antecedent in the surrounding text is exophoric ellipsis. Example (109) shows that a nominal modifier is inflected in this case.

(109) A mon isʲak pidʲ-inʲə griba-nʲnʲə-tʲ.
and I yesterday cook-PST.3.O.1SG.S mushroom-GEN-DEF.SG.GEN
'{Situation: I am entering my neighbor's kitchen and seeing fish soup on the stove.}
I cooked the mushroom [soup] yesterday.'

Despite initial suggestions that absent constituents with extra-linguistic antecedents differ from ellipsis (see Hankamer & Sag (1976), Hankamer (1978)), it was later shown that suggested differences do not depend on the linguistic presence of an antecedent (see Hardt (1993) and also Merchant (2013) on a missing antecedents test and Schachter (1977), Miller & Pullum (2014) on availability of exophoric ellipsis with different constituents). For Moksha, the ellipsis analysis is supported by the connectivity effects. Example (110) (modified from (19c) above) shows that idiosyncratic markings coming from an elided noun are available under

[22]Here I will briefly discuss whether other approaches to inflection under ellipsis can provide a uniform treatment of inflection in regular ellipsis contexts and in the human construction. Approaches that tie inflection to the presence of *pro* or to the nominalization can be extended only if human construction involves *pro* or nominalization, correspondingly. Extension of the cliticization analysis to the human construction encounters the following complication. If the position of the absent noun is taken by an intransitive *n* or a regular root with an empty realization, the absence of a proper host for nominal inflection becomes evident only after Vocabulary Insertion: Before that these are usual syntactic heads with certain features. This means that Local Dislocation that brings about cliticization must apply after Vocabulary Insertion. If so, the new host cannot influence the shape of exponents beyond superficial phonological processes. Examples in (12) above show that in Moksha attachment to another item can alter a set of features realized by inflection. This creates a paradox: Vocabulary Insertion gives a context for cliticization and therefore Vocabulary Insertion has to apply first. Inserted vocabulary items depend on the object created by cliticization so that cliticization has to apply first. This problem does not arise if the human construction involves nominal ellipsis.

exophoric ellipsis.

(110) mon^{j}-d^{j}ejə-n [t^{j}ɛ zadača-t^{j} esə kuvaka-s^{j}]
I.OBL-PRON.DAT-1SG.POSS this problem-DEF.SG.GEN in.IN long-DEF.SG
iz^{j} pomaga.
NEG.PST[3SG] help.CN
'{Situation: I see my sister reading a short explanation of the math problem we could not solve yesterday.} The long [explanation] of this problem didn't help me.'

Thus, ellipsis with and without a linguistic antecedent receives the same analysis and nominal modifiers in both cases are inflected because [E]-feature postpones Spell-Out of a modifiers so that Probe Conversion feeds PF.

6 Conclusions

6.1 Summary

On the basis of original data from Moksha Mordvin, I have proposed the new analysis of the well-known phenomenon: In a language without 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 its value by the last syntactic operation induced by features on the node and Spell-Out is ordered before Probe Conversion. These conditions are met in non-elliptical contexts in Moksha. If the noun is elided, valuation of concord features is not the last syntactic operation, so that features are converted before Spell-Out and are therefore morphologically realized. 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 induces Agree or Merge.

Second, valuation does not imply realization. Probe features are ineligible at PF. They are subject to Probe Conversion and only after that they get accessible to PF processes.

Third, order between some operations is not 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.

6.2 Further applications

The proposed analysis predicts that if an element has additional operation-inducing features, it can have more morphological exponence than usual. To conclude this paper, I would like to present three further phenomena, where this is indeed the case.

The first example comes from subject agreement asymmetries in Standard Arabic. As shown in (111a), preverbal subjects trigger number agreement, while postverbal subjects do not; see (111b).

(111) a. ṭ-ṭaalibaat-u ʔakal-na/*at
the-student-F.PL-NOM eat.PST-3F.PL/*3F.SG

b. ʔakal-at/*na ṭ-ṭaalibaat-u
eat.PST-3F.SG/*3F.PL the-student-F.PL-NOM
'The students ate.' (Benmamoun, 2000, 121)

Let us assume that Spell-Out precedes Probe Conversion in the clausal domain in Arabic and that number probes separately after person and gender. If so, the agreement asymmetries instantiate the wanted pattern: The presence of an additional feature gives rise to the realization of inflection not spelled out otherwise. This additional feature is [EPP] on the T head, it triggers movement of the subject to the preverbal position, as in (111a). T always agrees with the subject in number. If it also has the [EPP] feature, this creates a window when the number probe can be converted before Spell-Out applies. This derives the presence of number agreement in (111a). If the subject is in the postverbal position, the number probe is the last unsatisfied feature on T, so that it cannot get converted before Spell-Out and remains without realization; see (111b).

The second example deals with the realization of object agreement. In some Bantu languages, object agreement is possible only if the object is in a dislocated position. This is illustrated in (112) from Zulu. In (112a), the direct object is moved outside the verb phrase and the verb agrees with it. In (112b), the object is in its base position and there is no object agreement.

(112) a. Si-(*zi)-bon-e i-zi-tshudeni kaningi.
1P-(*OM8)-SEE-PST AUG-8-STUDENT often

b. Si-zi-bon-e kaningi i-zi-tshudeni.
1P-OM8-SEE-PST often AUG-8-STUDENT
'We saw the students often.' (Van der Spuy, 1993, 346)

There is no consensus on object's landing site, e.g., Buell (2005) suggests that it is Spec,AgrOP, while Cheng & Downing (2009) and Zeller (2012) claim that object is right-adjoined to vP. Regardless of the exact label of the landing site, I assume that the head responsible for ob-

ject agreement is the same as the one that is responsible for movement of the object. Thus, object agreement is always present in syntax, but it receives morphological realization only if Agr,OP or vP has an additional feature that triggers dislocation of the object. This feature postpones Spell-Out in the same way as licensing of [E]-feature in Moksha.

The third case differs in that a constituent that is moved is not the one that is agreed with. The data come from Northern Ostyak, where object agreement is obligatory if there is extraction from a noun phrase located in the direct object position:

(113) a. Ma tăm kălan wel-s-əm.
I this reindeer kill-PST-1SG
'I killed this reindeer.' (Nikolaeva, 1999, 64)

b. Juwan motta [xot-əl __] kăśə-s-e:m/əm
John before house-3SG see-PST-SG.O.1SG.S/*1SG
'I saw John's house before.' (Nikolaeva, 1999, 67)

Following Branan (2018), I assume that v bears probes for object agreement and the feature that triggers at least the first step of possessor extraction. I suggest that object agreement is not restricted to extraction. It is present uniformally, but Conversion of agreement probes counterfeeds Spell-Out unless an additional feature – the one that triggers extraction – is present as well.[23]

To conclude, the relevant pattern of additional operation inducing features leading to more morphological exponence replicates cross-linguistically and the current analysis naturally extends to account for these seemingly unrelated phenomena.

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[23] An anonymous reviewer suggests another phenomenon that can be analyzed in this way. In Spanish, masculine indefinite article is *un* in the presence of a noun but *uno* if the noun is absent (see Bernstein (1993)). A similar patter is also attested in German, where some adjectives (most famously *lila*) do not have obligatory concord inflection in the presence of a noun but are inflected under ellipsis (see Muysken & van Riemsdijk (1986)). To extend the current proposal to these cases, one needs to assume that in Spanish and German Spell-Out is ordered before Probe Conversion. Then, [E]-feature postpones Spell-Out of a modifier and allows concord probes to be converted prior to Spell-Out. However, Spanish as well as German are languages with overt nominal concord, which means that Probe Conversion precedes Spell-Out but the analysis sketched above requires the reverse order. This can be addressed by opening a possibility that the order between Probe Conversion and Spell-Out is established for individual heads, not for a language in general. For now I will not pursue this option but leave it for future research.

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