# Mari/Udmurt Negation Does Not Require Post-Syntactic Operations (A Reply to Georgieva et al. 2021)

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**Abstract**

Georgieva et al. (2021) argue that negation in Mari and Udmurt requires the Distributed Morphology conception of grammar with a post-syntactic level of grammar where extra-syntactic operations take place. I show that, by modifying one of their assumptions, a purely syntactic head movement account becomes available that uses no operations other than those of the phrasal syntax. I argue that the post-syntactic conception of grammar is conceptually problematic, as it violates the Strict Cycle Condition and therefore cannot ensure that operations take place in the correct order. The default view of grammar should be one where there are no operations other than those of the phrasal syntax, and there is only one level of grammar, the morphosyntax.

## 1 Introduction

There are many good arguments that we do not need a separate component of morphology in our model of grammar, all we need is a single component of morphosyntax. See, for example, Bruening (2018). Conceptually, the simplest model of grammar would be one where the only operations that are necessary for morphology are the ones that are independently necessary for syntax. Few approaches to morphology adopt this conception, however. For instance, one of the leading approaches to morphology that views it primarily as syntax is Distributed Morphology (Halle & Marantz 1993). Distributed Morphology does not reduce morphology to syntax; instead it has a post-syntactic level of Morphological Structure where morphology-specific operations permute the output of the syntax. For the most part, proponents of Distributed Morphology have just assumed that this must be how things work; the assumption is that there are mismatches between the syntax and the morphology, and so we need some way to capture those mismatches. Few researchers have given actual arguments that such post-syntactic operations are *necessary*.

One example of such an argument is presented by Georgieva et al. (2021). Georgieva et al. (2021) argue that negation in Mari and Udmurt requires a post-syntactic level of grammar where an operation of Lowering (Embick & Noyer 2001) takes place. In this brief remark, I show that this is not necessary at all. By changing one of their assumptions (that negation heads a projection in the clausal spine), a simple syntactic head movement account becomes available. This account is actually superior to the Lowering account that Georgieva et al. (2021) propose.

While this is just one case, it happens to be one of the few where the facts have been claimed to *require* post-syntactic operations. The argument does not go through, since a simple syntactic analysis is available. In most other cases in the literature where people have proposed post-syntactic analyses, they have not argued that that is the best analysis; they have only presented one possible analysis. I argue that the default view of morphology should be that post-syntactic operations do not exist; the only operations that we should countenance are those that we need for the syntax anyway, and they take place in the component of syntax. As I will show, positing post-syntactic levels of grammar is conceptually problematic. I suggest that all other cases where post-syntactic analyses have been proposed should be (and can be) reanalyzed in purely syntactic terms.

Section 2 presents the facts of negation in Mari and Udmurt and the Lowering account proposed by Georgieva et al. (2021). Section 3 shows that a simple syntactic head movement account captures the basic facts, without any need for post-syntactic operations. Section 4 shows that the head movement analysis enables a simpler analysis of the adverbial clitics discussed by Georgieva et al. (2021). Section 5 shows that the head movement analysis also accounts for the appearance of a dummy verb, and section 6 shows that the Lowering analysis of Georgieva et al. (2021) makes an incorrect prediction regarding fragment answers. Section 7 argues that the model of grammar that Georgieva et al. (2021) end up with is conceptually problematic, as it violates the Strict Cycle Condition and so cannot ensure that post-syntactic operations take place in the correct order. This section further argues that having any post-syntactic level at all runs afoul of the Strict Cycle Condition, and so post-syntactic levels should be rejected. Section 8 concludes with discussion of the kind of model that a purely syntactic approach would lead to.

# 2 Negation in Mari and Udmurt and the Lowering Account

Mari and Udmurt are Finno-Ugric languages. They are nominative-accusative, agglutinating SOV languages. Georgieva et al. (2021) show that negation occurs immediately before the highest verb in the clause, and takes the tense and agreement that go on that verb in the corresponding affirmative. The highest verb is then in a form called the "connegative" (abbreviated "CN" in the glosses):

(1) Udmurt (Georgieva et al. 2021: (16b), (21a))

a. Ta peśanaj kartoška merttį-nį bįgate.
this grandma potato.Acc plant-Inf can.Prs.3Sg
'This grandma can plant potatoes.'

b. Ta peśanaj kartoška merttį-nį **ug** bįgatį.
this grandma potato.Acc plant-Inf Neg.Prs.3 can.CN.Sg
'This grandma cannot plant potatoes.'

The following examples illustrate the morphology more clearly, as well as the alternation with the affirmative:

(2) Mari (Georgieva et al. 2021: (1a–b))

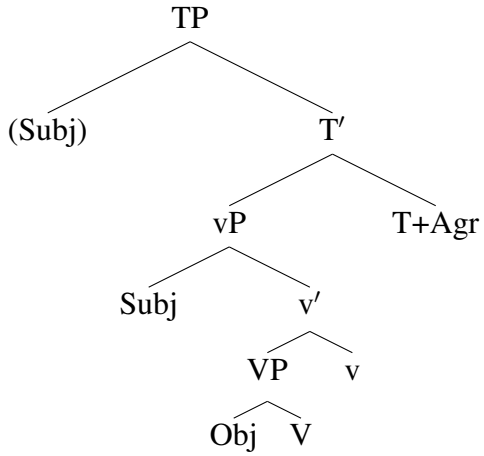
a. purə̑-š-na
go.in-Pst-1Pl
'We went in.'

b. **ə̂-š-na** puro
Neg-Pst-1Pl go.in.CN
'We didn't go in.'

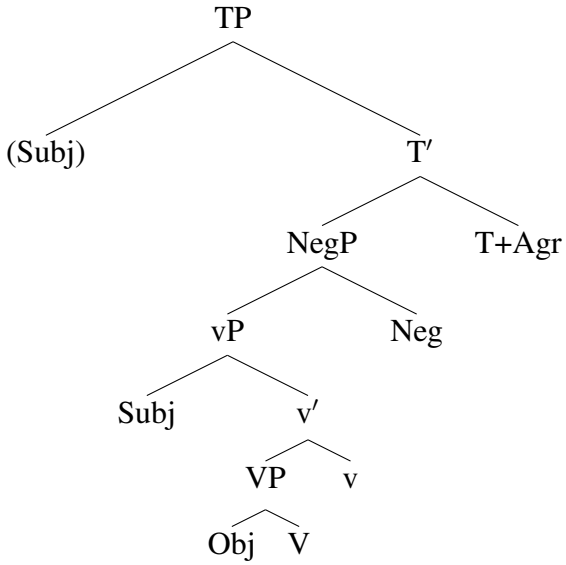
As can be seen, there is a Tense suffix and an Agr suffix, which occur on the verb in that order in the affirmative. In the negative, they instead occur on the Neg head.

Georgieva et al. (2021) argue that negation, bearing tense and agreement, forms a complex head with the highest verb in the clause. They propose that the clause structure of both languages is the following, with a head v above the lexical verb, then Neg if the clause is negative, then T+Agr (which they do not spell out):

(3) a. Affirmative

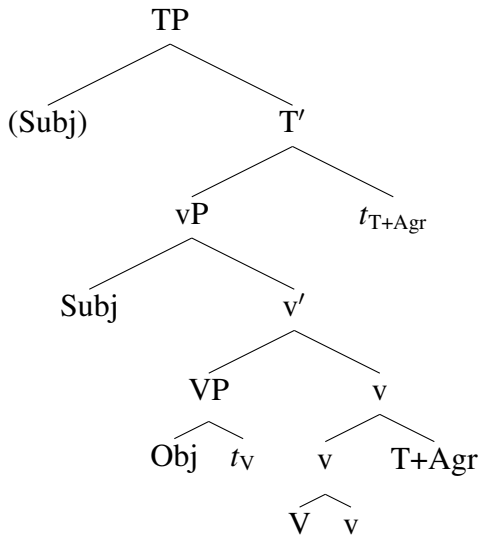



b. Negative




The subject optionally moves to Spec-TP. The lexical verb V always undergoes syntactic head movement to v (it bears voice morphology, even in the negative). Then, in a post-syntactic component of grammar, T+Agr undergoes Lowering (Embick & Noyer 2001) to the head of its complement. In the affirmative, this is the lexical verb in v:

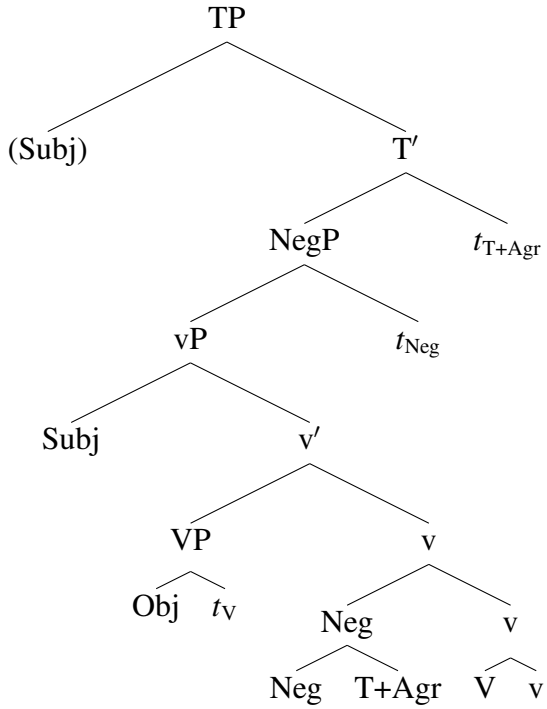
(4) Affirmative after Lowering (based on Georgieva et al. 2021: (37)):




This locates tense and agreement as suffixes on the lexical verb.

In the negative, T+Agr again Lowers to the head of its complement, but this is now Neg. Subsequently Neg, carrying T+Agr, Lowers to the head of its complement, but it specifies that it must adjoin on the left:

(5) Negative after Lowering (based on Georgieva et al. 2021: (37)):




This correctly locates T+Agr on Neg, while that whole complex head immediately precedes V+v, forming a complex head with it.

Georgieva et al. (2021) argue against other possible accounts, in particular syntactic head movement. Given the clause structure that they assume in (3b), V would first move to v, then to Neg. That whole complex would then move to T+Agr. But this makes Neg and V+v a constituent, either

[Neg V+v] or [V+v Neg]. T+Agr could attach on either side of one of those, to yield one of the following orders:

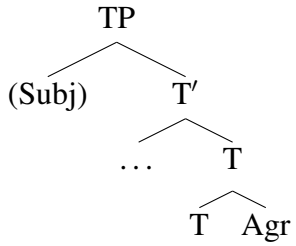
(6) a. [T+Agr [Neg V+v]]
b. [[Neg V+v] T+Agr]
c. [T+Agr [V+v Neg]]
d. [[V+v Neg] T+Agr]

None of those is the right order, which is Neg-T-Agr-V-v. The only order of adjunction that correctly locates T+Agr immediately following Neg (6d) has V+v on the wrong side of Neg.

This argument against head movement depends on the assumed structure. If we make a minor change to this structure, head movement gives us the right result, as I show in the next section.

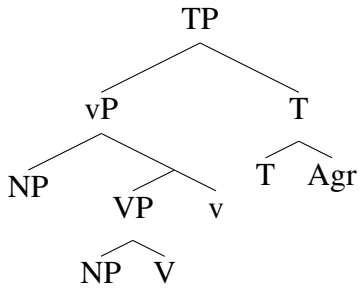
# 3 Proposed Head Movement Analysis

Georgieva et al. (2021) do not spell out "T+Agr." Given their evident assumption that T is the head of TP, and their following of Distributed Morphology where Agr nodes are adjoined to syntactic heads (Halle & Marantz 1993), we can assume that Agr is adjoined to T:

(7)


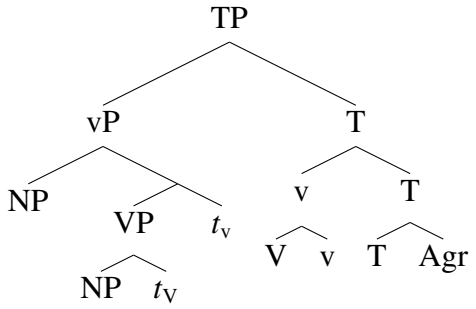

The change to the clause structure that I propose is to view Neg not as a head in the clausal spine, but as adjoined to T, just like Agr. Analyzing Neg as an adjunct is not new, it has been proposed many times before. In fact, viewing Neg as an adjunct in English is probably the traditional view, dating back to Jespersen (1917). It has been revived in the theoretical literature more recently by Zeijlstra (2004) and in work on English do-support (Baker 1991, Bruening 2010). There is specifically a proposal where Neg can be a *head adjunct*, like Agr, meaning that it is a head adjoined to a head (Bruening 2024b).

The clause structure that I propose for the affirmative is the following, essentially following Georgieva et al. (2021):

(8)



V moves to v and then to T, adjoining on the left by default:

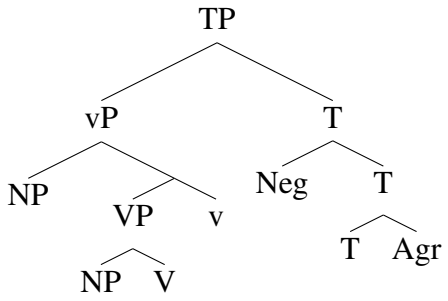
(9)




Along with Georgieva et al. (2021), I assume that when a head adjoins to a complex head, it adjoins to the highest segment of that complex head, as shown. This correctly locates T and Agr as suffixes on the verb, in that order, in the affirmative.

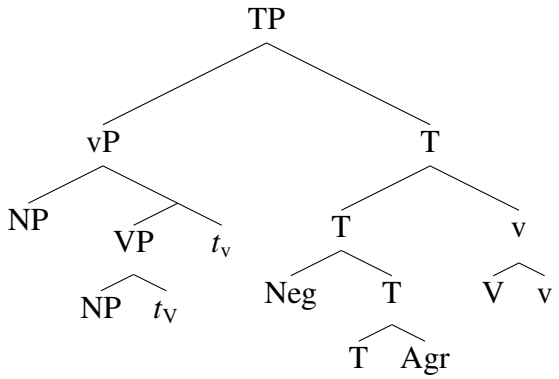
In the negative, Neg is a head adjoined to T, just like Agr, except that it appears on the left:

(10)




V moves to v and then to T, but, as in Georgieva et al. (2021), Neg overrides the typical linear order of adjunction (on the left) and forces v to adjoin on the right instead:

(11)




(We can assume that Neg is subject to a strong Leftmost constraint that forces it to be leftmost in the complex head it is part of. Any way of formalizing this will do.) This yields exactly the attested order: T and Agr are suffixes on Neg, in that order, and they are followed by V+v.

As can be seen, a syntactic head movement account is a perfectly viable one. All one has to say is that Neg is an adjunct on T rather than a head in the clausal spine, and the facts follow. Analyzing Neg as a head adjunct is not unprecedented and is a perfectly reasonable analysis. There is no reason Neg needs to head its own projection, and it not doing so arguably makes stating selection easier: T always selects v. As for scope, the scope of negation will be the sister of the complex head that Neg is a part of, vP. As Georgieva et al. (2021) show, a quantifier that moves to Spec-TP takes scope over negation, but negation takes scope over everything else in the clause.

# 4 Adverbial Clitics

Georgieva et al. (2021) also show that two adverbial clitics, which normally attach to the final verb in the clause, can optionally appear between Neg and V when the clause is negative:

(12) Udmurt (Georgieva et al. 2021: (45a–b))

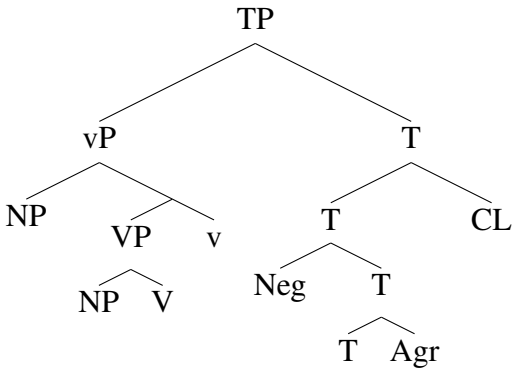
a. Ta peśanaj ug kɨ̆rdźa=**ńi**.
this grandma Neg.Prs.3 sing.CN.Sg=anymore

b. Ta peśanaj ug=**ńi** kɨ̆rdźa.
this grandma Neg.Prs.3=anymore sing.CN.Sg
'This grandma does not sing anymore'

Georgieva et al. (2021) propose that these clitics appear between Neg and T. They can optionally project. If they project, they are treated as heads, and T+Agr lowers first onto the clitic and then down onto Neg. Neg then moves along with T+Agr and the clitic down onto V+v. This gives the order in (12b). If the clitic does not project, it is treated as an adjunct and lowering skips over it. The clitic is then the last thing in the clause once T+Agr has lowered onto Neg and then onto V+v, so it cliticizes onto what is next to it, which is V+v. This gives us the order in (12a).

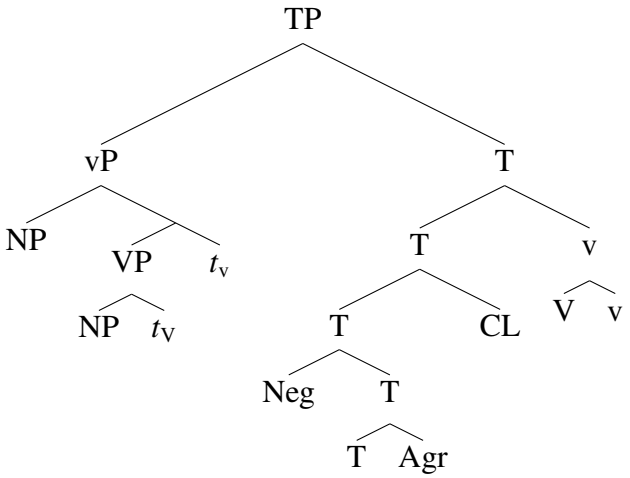
A very simple account of these clitics is available in the head movement account. Suppose they, like Agr and Neg, adjoin to T:

(13)



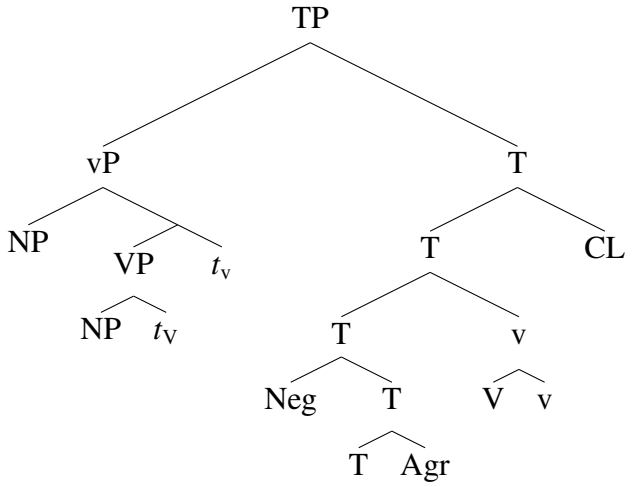

If this adjunction takes place before head movement, as in the tree above, then when V moves to v and then on to T, it will adjoin outside of the clitic:

(14)



This is the order in (12b). If head movement takes place first, and then the clitic adjoins to T, we get the order in (12a):

(15)




In short, all of the facts discussed in Georgieva et al. (2021) receive a very simple account in terms of syntactic head movement.[1] All that is necessary is to revise one simple assumption about the underlying syntax.

# 5 Be-Support

Georgieva et al. (2021) also observe that in contexts of constituent negation, the form of Neg includes a default present tense T, default third person singular (null, or a portmanteau with T), and a reduced copula:

(16) Mari (Georgieva et al. 2021: (78))

Tə̑j šaχmat dene **o-g-ə̑l**, a šaške dene mod-ə̑ć́.
2Sg chess with Neg-Pres.3Sg-be but checkers with play-Pst.2Sg
'You played not (with) chess but (with) checkers.'

Georgieva et al. (2021) analyze this as last-resort insertion of a dummy copula (plus tense and agreement, which they do not comment on). Neg is simply adjoined to the constituent it negates, here a PP. It has a morphosyntactic requirement that it combine with a V. In the case of clausal negation, this is satisfied by Lowering Neg onto V+v. In the adjunct case, no Lowering is possible, so the grammar inserts a verbal head v through an operation of node sprouting.

In the current analysis, Neg adjoins to T in the case of clausal negation. I propose that it must always be sister to T (which we can state in terms of selection). In the case of constituent negation, Neg adjoins to PP, but since it must also be sister to T, a T node with default feature values (present tense) is adjoined to it. T always has an Agr adjoined to it (which we can state in terms of selection again), so Agr is also merged, again with default feature values (third person singular, which is null in this context). In the current analysis, it is T that must be in a sister relation with a verb,

[1] Georgieva et al. (2021) note that the clitic can sometimes be pronounced in both positions. They do not provide an account of this. I will not attempt to here, either.

not Neg (this is what drives head movement in the clausal case). So T now also requires a verbal category. The semantically contentless copula is then merged to satisfy this requirement. Note that all of this is taking place in the syntax, at the point where Neg is merged with PP. It is therefore not post-syntactic and it is not syncategorematic; rather, items are taken out of the lexicon and merged with Neg to fulfill its requirements, as takes place normally with Merge at any given point in the derivation (driven by selectional requirements of the items previously merged). This case, too, falls out simply from the way syntax works, driven by selection, without the need to appeal to extra mechanisms like node-sprouting.

# 6 Fragment Answers

Georgieva et al. (2021) also show that Neg+T+Agr can be stranded by ellipsis, as for example in fragment answers:

(17) Udmurt (Georgieva et al. 2021: 92)

Q: Lı̣mı̣ Tẹd'ı̣-jez kı̣rdźal-o-dı̣=a? A: **U-m**.
snow white-Acc sing-Fut-2Pl=Q Neg.Fut-1

Q: 'Will you sing *Snow is White*?' A: 'No.'

This seems on the face of it to be evidence against the contention of Georgieva et al. (2021) that negation forms a complex head with the following verb. However, there are cases where sub-parts of complex heads can be elided (see Bruening 2018 for examples and references). For the purposes of this paper I will not question the complex head status of negation plus the following verb. What I want to observe here is that the analysis of Georgieva et al. (2021) leads to an incorrect prediction. What they say is that the complement of Neg (vP) is marked for deletion in the syntax, prior to Lowering taking place in the post-syntax. So Neg+T+Agr lowers down into a constituent that is marked for deletion. All of the rest of that constituent is not pronounced, while Neg+T+Agr is, since it was not marked for deletion.

Recall that Georgieva et al. (2021) also posit lowering of T+Agr in an affirmative. So this analysis predicts that an affirmative answer to a question would be to pronounce just T+Agr. This is an incorrect prediction. According to Saarinen (2015: 344), affirmative answers in (Eastern) Mari take one of three forms: (1) repeating the verb; (2) the word *aṅe*, 'yes' (seldom used); (3) the word *tuge*, 'so':

(18) Eastern Mari (Saarinen 2015: 344 ,(36a))

Q: Tače tol-at mo? A: Tol-am. / Aṅe. / Tuge.
today come-2Sg Q come-1Sg / yes / so

Q: 'Will you come today?' A: 'Yes.'

I do not have comparable data for Udmurt, but Edygarova (2015) does give an example of an affirmative answer to a negative question, where the answer is the inflected verb:

(19) Udmurt (Edygarova 2015: 280, (30))

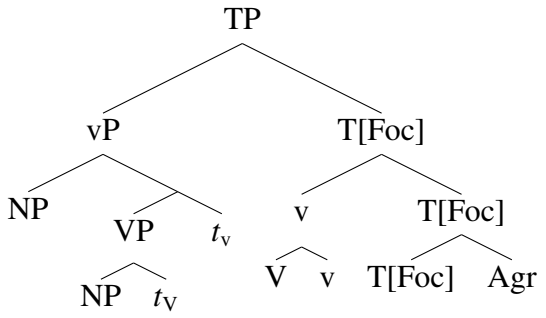
Q: ton u-d-a mı̣n-iśk-ı̣? A: mı̣n-iśko.
2Sg Neg.Prs-2-Int go-Prs-Sg go-Prs.1Sg

Q: 'You don't go, do you?' A: 'I do go.'

It seems most likely that T+Agr can never be pronounced without a verb in an affirmative sentence, whether elliptical or not, in either language.

I propose that, in these fragment answers, the entire TP is being elided. However, a focused element cannot be deleted. In the case of affirmation, I locate focus on T:

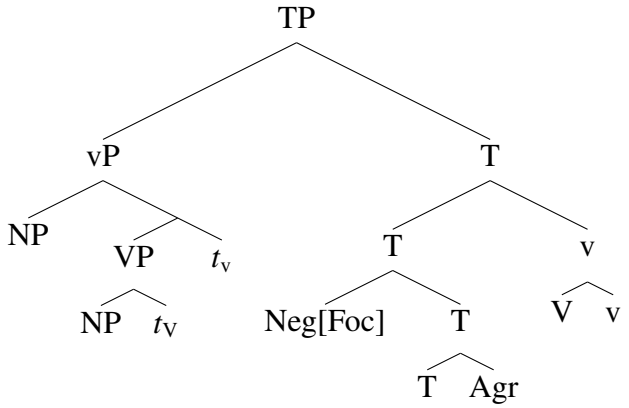
(20)




All segments of T are identical, so they all bear [Foc]. Everything in TP is then elided except for the complex head T, which is focused. This correctly leaves the full verb plus T and Agr pronounced.

In a negative clause, what is focused is instead the head Neg:

(21)




This would leave only Neg pronounced when TP elides. However, I assume that there is also a prosodic Minimal Word condition on fragments. To be pronounced, a string must be a minimal prosodic word. While I do not have data on Mari/Udmurt prosody to support this (other than the fragment answer itself), I hypothesize that Neg does not form a minimal prosodic word, but Neg+T+Agr do. This correctly permits a fragment answer to be Neg+T+Agr in the negative case.

# 7 Discussion: The Strict Cycle Condition

For Georgieva et al. (2021), it is important that Lowering take place successive-cyclically, starting with the highest head and proceeding downward. Typically, movement occurring in a successive-cyclic manner is enforced by a combination of the Strict Cycle Condition and locality conditions on movement. For instance, V could not move to T skipping v, because of the locality conditions on head movement (Relativized Minimality or whatever takes its place, see Rizzi 1990, Chomsky 1993). We also could not move v to T, and then move V to v, because that would violate the Strict Cycle Condition: The derivation would currently be working on TP, but an operation would affect only a subpart of TP, namely vP.

The thing to note is that *everything* in Distributed Morphology's post-syntactic component of grammar violates the Strict Cycle Condition. Lowering T to Neg certainly does, since the derivation will presumably have completed a CP above TP (or even more structure, in an embedded clause). Vocabulary Insertion, assumed to proceed from most deeply embedded position outward, also violates the Strict Cycle Condition in the worst possible way. The problem is, once the Strict Cycle Condition is violated, how can it be ensured that operations will proceed in any particular order? Nothing can force Vocabulary Insertion to proceed from most deeply embedded outward, because all orders of doing Vocabulary Insertion, including this one, violate the Strict Cycle Condition equally. Turning back to Lowering, there is no way to ensure that it will take place successive-cyclically, because the Strict Cycle Condition is violated by every instance of Lowering. Nothing could block first lowering Neg onto V+v (on the left, as Neg requires), and then T+Agr onto (now empty Neg) and then V+v independently (on the right, since Neg is not part of T+Agr to force it to go on the left). This would result in the incorrect order Neg-V-v-T-Agr.

The model of grammar that the analysis of Georgieva et al. (2021) requires is one where the derivation is first built up successive-cyclically, from bottom to top, and then the grammar reverses and runs itself back down, performing Lowering as needed. This is a bizarre model of grammar, and one with no way to force the second, downward, pass to occur in a successive-cyclic manner.

A conceptually much better model of grammar is one where there is only a single component of morphosyntax, where everything is assembled in a way that obeys the Strict Cycle Condition. The syntactic head movement account proposed here does that. Movement is only upward, the Strict Cycle Condition is obeyed at every step, and all the locality conditions are, too. One thing to note is that this model cannot have late insertion of vocabulary items, the way Distributed Morphology does, because that would violate the Strict Cycle Condition. Syntactic heads must be merged with their phonological features from the beginning. (Having phonological features present in the syntax does not predict that the syntax would refer to them; the syntax routinely ignores most information that is accessible to it. See Bruening 2017: section 2.2.)

# 8 Discussion: Morphology-Syntax Mismatches?

The model of grammar that we are led to is one where there is no separate module of morphology. There is only the syntax, and only syntactic operations. There is no such thing as a post-syntactic operation. This, I believe, should be the default: It is clearly the simplest model of grammar we could have, and should be pursued until it has been proven to be unworkable. So far it has not been, and the few cases where people have claimed that post-syntactic analyses are necessary, like Mari/Udmurt negation, do not actually require post-syntactic operations. English "affix-hopping," for instance (the canonical instance of Lowering), has been analyzed in purely syntactic terms many times (e.g., Gazdar et al. 1982, Chomsky 1993, Bruening 2010). As a few other examples, English comparatives and superlatives have been shown not to have the character that Embick & Marantz (2008) ascribe to them and analyze by means of post-syntactic operations; see Matushansky (2013). The Bulgarian definite marker, which Embick & Noyer (2001) analyze with Lowering (as do Harizanov 2018 and Adamson 2022), has been analyzed in purely syntactic terms by Franks (2001), Koev (2011), Bruening (2024b). There is, to my knowledge, no phenomenon in any language that has been definitively shown to require a post-syntactic operation. Practitioners of Distributed Morphology routinely give analyses using post-syntactic operations, but they rarely

argue that such analyses are necessary. Georgieva et al. (2021) is one of the rare exceptions, but this paper has shown that the post-syntactic analysis is unnecessary and even problematic. One other case is Salzmann (2019), but Bruening (2024a) shows that that case, too, is amenable to a purely syntactic analysis.

In the conception of grammar advanced here, there could be no such thing as a morphology-syntax mismatch. Morphology and syntax are the same thing. Such a mismatch would be like having a syntax-syntax mismatch, which is impossible. There are plenty of cases where something occurs on the surface in a position where it does not appear to be interpreted, but these kinds of cases are familiar from the domain of phrasal syntax and numerous tools have been proposed to address them (quantifier raising, agreement, abstract elements, etc.). If there are cases where some morpheme seems to be in a position where we would not expect it based on our prior assumptions about the syntax, those cases should be an invitation to reanalysis. We should re-evaluate our assumptions about the syntax. Such cases should not be taken as the basic ones on which to build a model of grammar, the way Distributed Morphology has done.

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